

5. Peak-Average Ratio

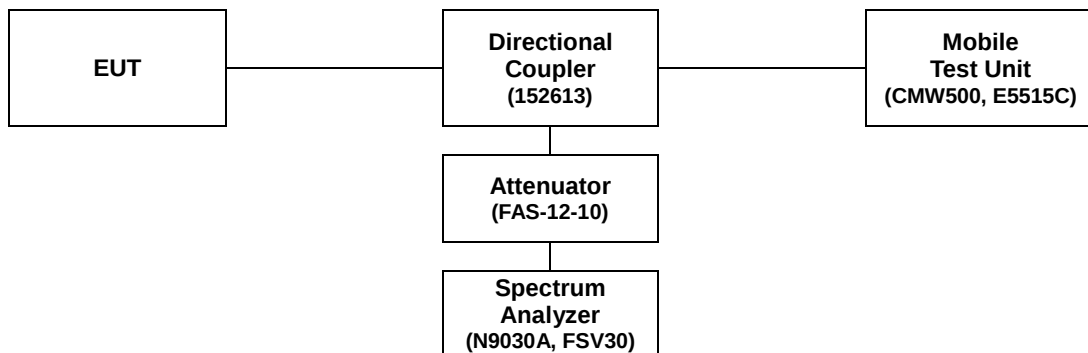
5.1. Limit

§24.232(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

§27.50(d)(5), Equipment employed must be authorized in accordance with the provisions of §24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

5.2. Test Procedure

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The CCDF function of the spectrum analyzer was set.
3. PAR was measured with spectrum analyzer for each channel.



5.2.1 Actual equipment used for Peak-Average Ratio

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due.
Spectrum Analyzer	Agilent	N9030A	US51350132	Oct. 08, 2013	Annual	Oct. 08, 2014
Spectrum Analyzer	R&S	FSV30	100768	Mar. 27, 2014	Annual	Mar. 27, 2015
Mobile Test Unit	Agilent	E5515C	GB43345198	Mar. 28, 2014	Annual	Mar. 28, 2015
Mobile Test Unit	R&S	CMW500	144035	Mar. 03, 2014	Annual	Mar. 03, 2015
Directional Coupler	KRYTAR	152613	140972	Jun. 07, 2013	Annual	Jun. 07, 2014
Attenuator	MCLI	FAS-12-10	1	Jun. 19, 2013	Annual	Jun. 19, 2014
DC Power Supply	Agilent	U8002A	MY50060028	Mar. 27, 2014	Annual	Mar. 27, 2015

Note;

- Mobile test unit(E5515C) is used to test for GSM 850 & 1900
- Mobile test unit(CMW500) is used to test for WCDMA 850 & 1900 and LTE band 7

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5.3 Test Results

Ambient temperature : (24 ± 2) °C
Relative humidity : 47 % R.H.

Please refer to the following plots.

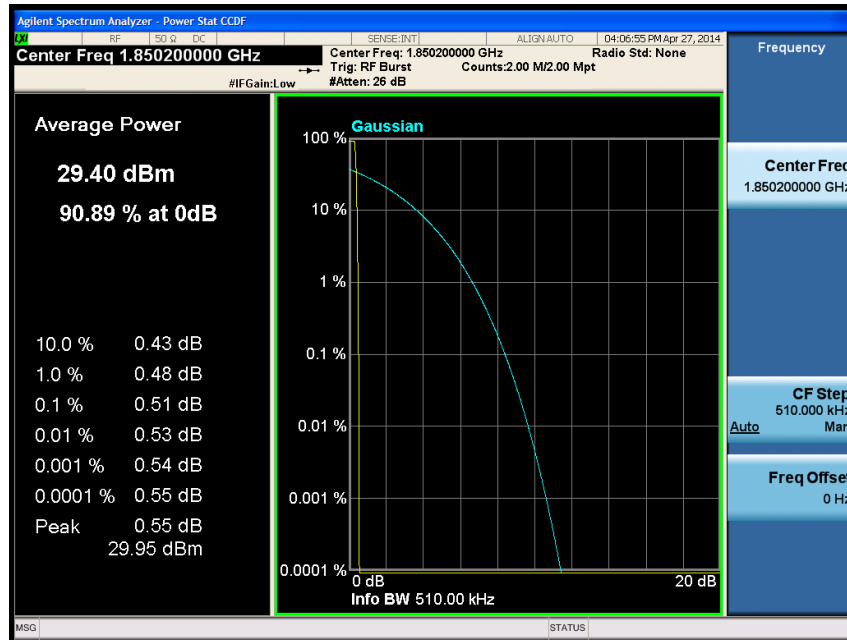
Band	Mode	Frequency (MHz)	PAR (dB)
GSM1900	GSM Voice	1 850.2	0.55
		1 880.0	0.56
		1 909.8	0.57
	EDGE	1 850.2	0.64
WCDMA1900	12.2 kbps (RMC)	1 852.4	3.62
		1 880.0	3.54
		1 907.6	3.55
LTE 7 (5 MHz)	QPSK	2 502.5	5.72
		2 535.0	5.90
		2 567.5	6.13
LTE 7 (10 MHz)	QPSK	2 505.0	5.87
		2 535.0	6.06
		2 565.0	5.98
LTE 7 (15 MHz)	QPSK	2 507.5	6.14
		2 535.0	6.36
		2 562.5	6.21
LTE 7 (20 MHz)	QPSK	2 510.0	6.03
		2 535.0	6.10
		2 560.0	5.84
LTE 7 (5 MHz)	16QAM	2 502.5	6.75
		2 535.0	7.03
		2 567.5	7.45
LTE 7 (10 MHz)	16QAM	2 505.0	6.95
		2 535.0	7.08
		2 565.0	7.06
LTE 7 (15 MHz)	16QAM	2 507.5	7.02
		2 535.0	7.32
		2 562.5	7.37
LTE 7 (20 MHz)	16QAM	2 510.0	7.46
		2 535.0	7.01
		2 560.0	7.08

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

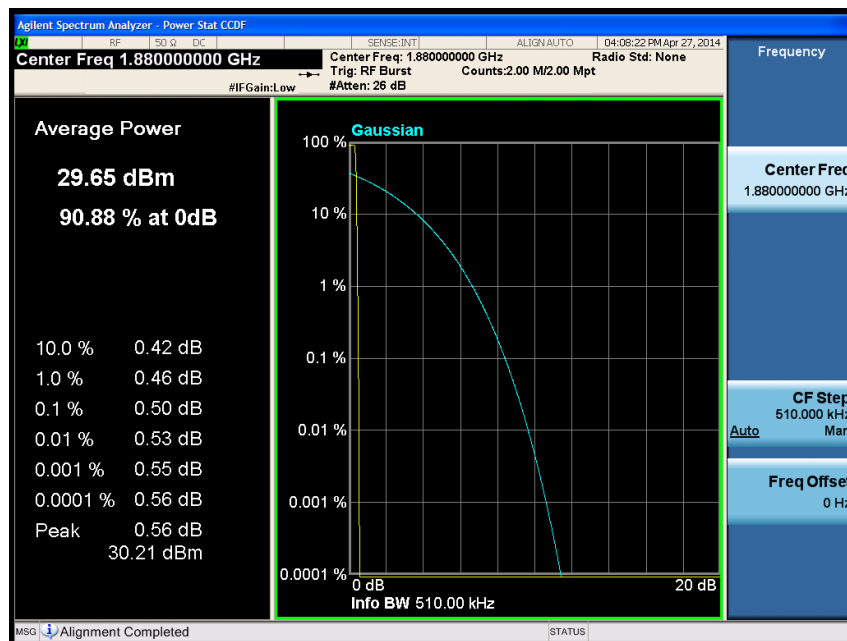
Peak-Average Ratio

GSM1900

Low Channel

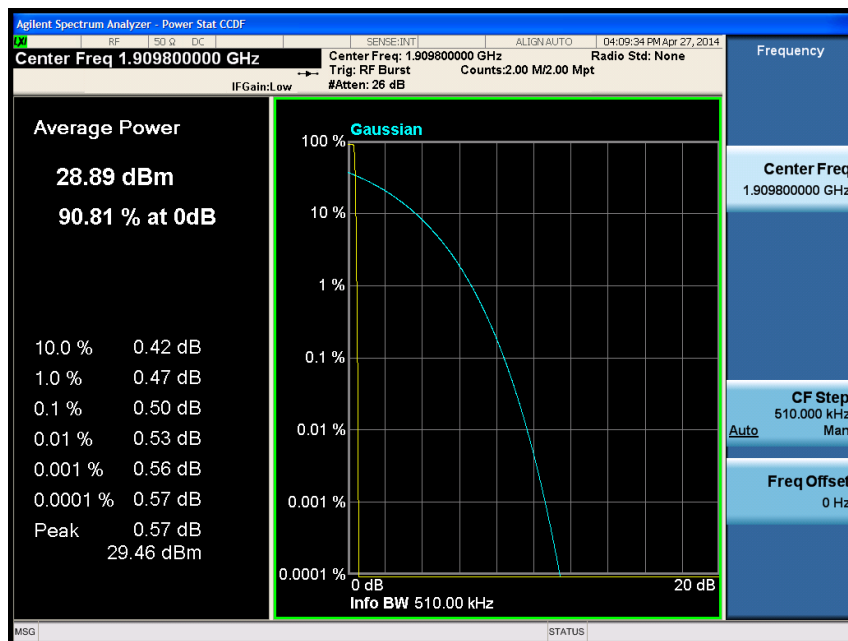


Middle Channel



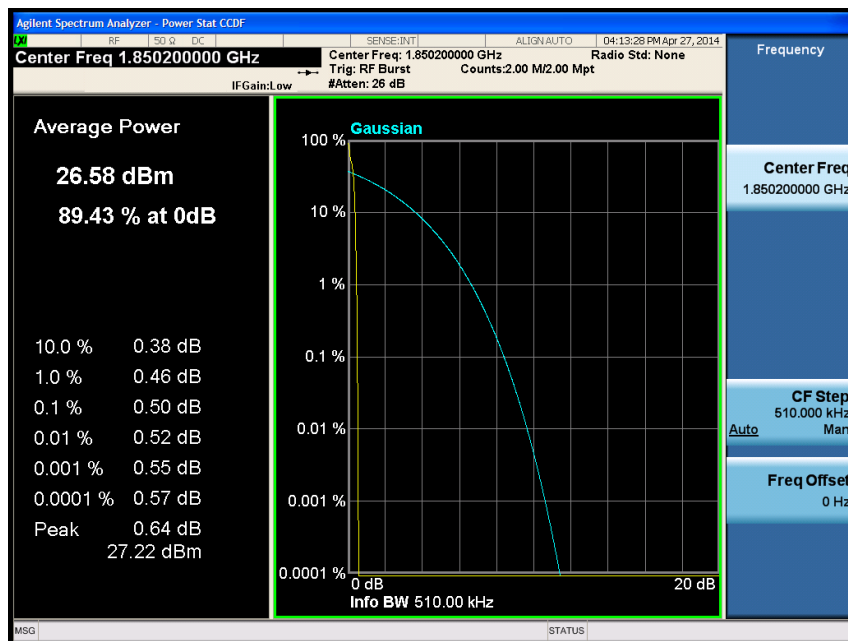
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

High Channel



GSM1900 EDGE

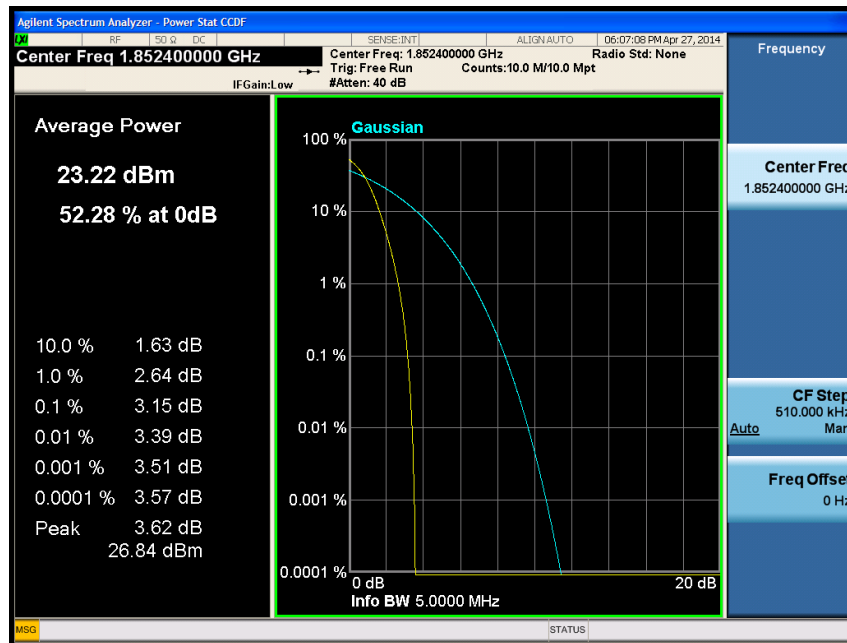
Low Channel



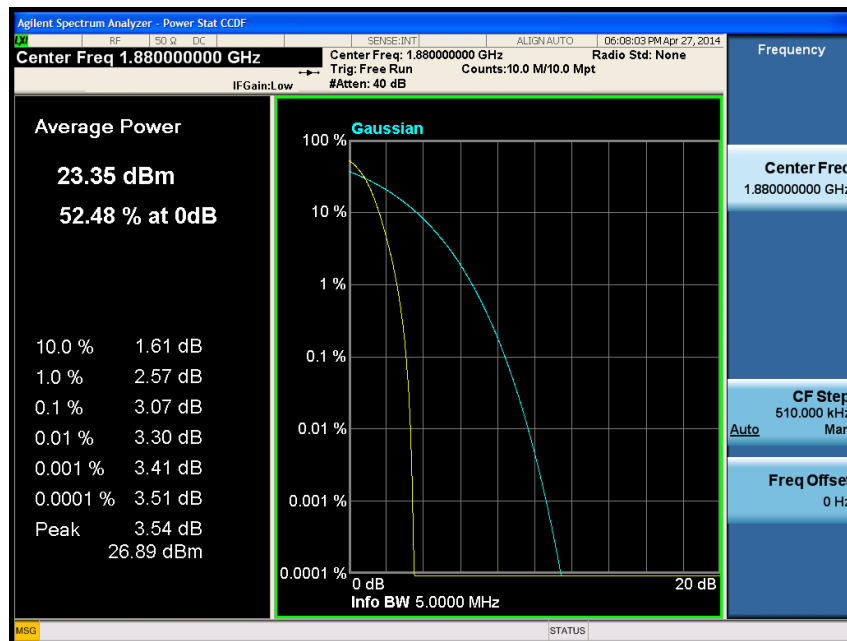
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

WCDMA1900

Low Channel

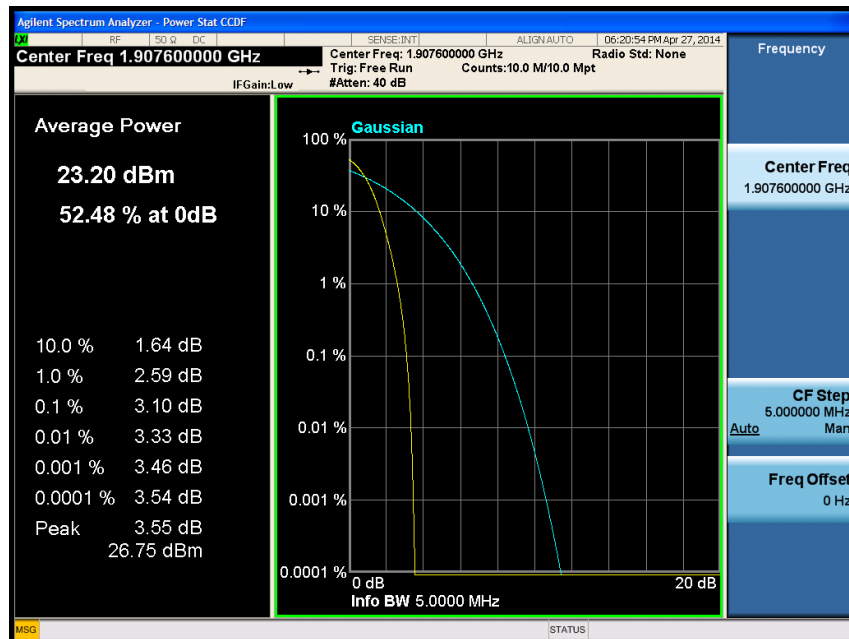


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

SGS Korea Co., Ltd. (Gunpo Laboratory)

4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 435-040

<http://www.sgsgroup.kr>

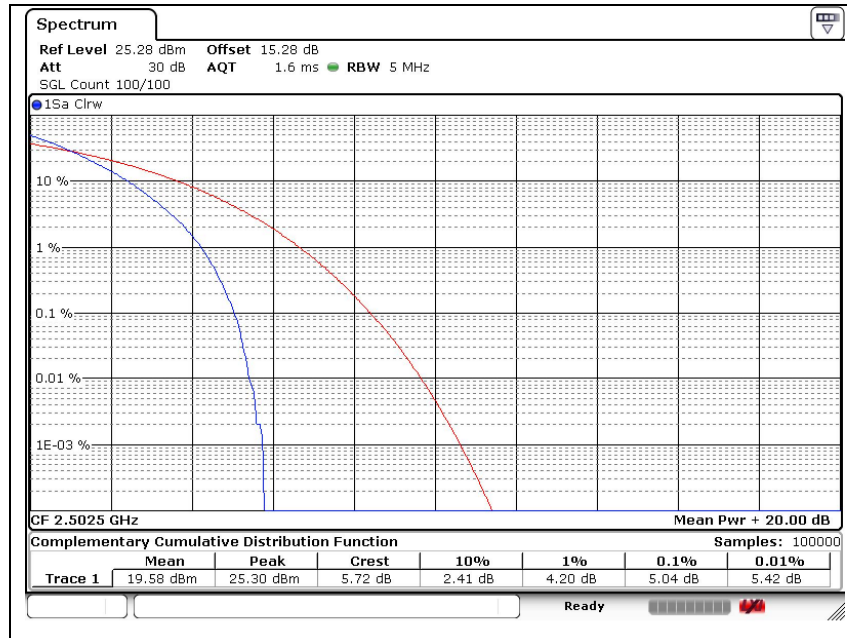
RTT5041-20(2014.01.20)(2)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

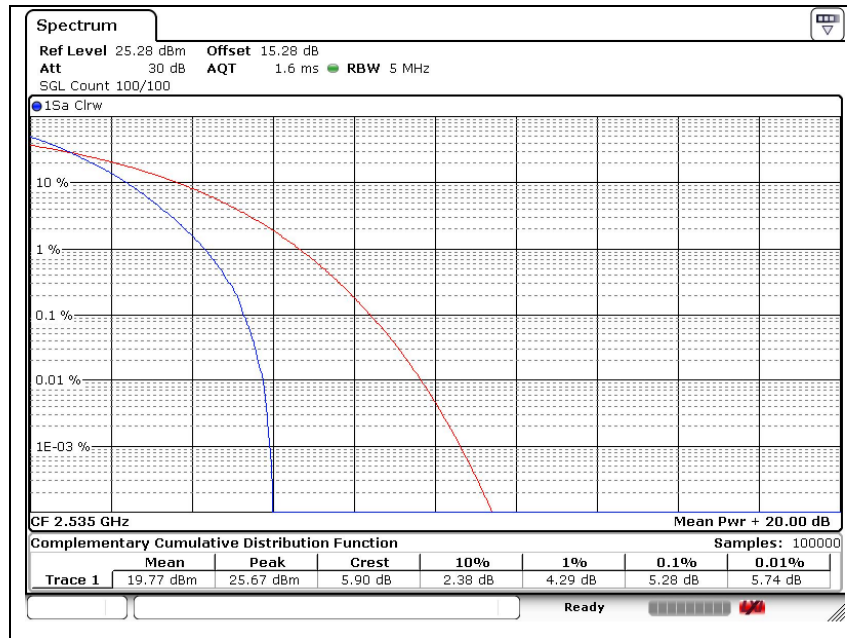
A4(210 mm x 297 mm)

LTE band 7 (5 MHz – QPSK_RB 25)

Low Channel

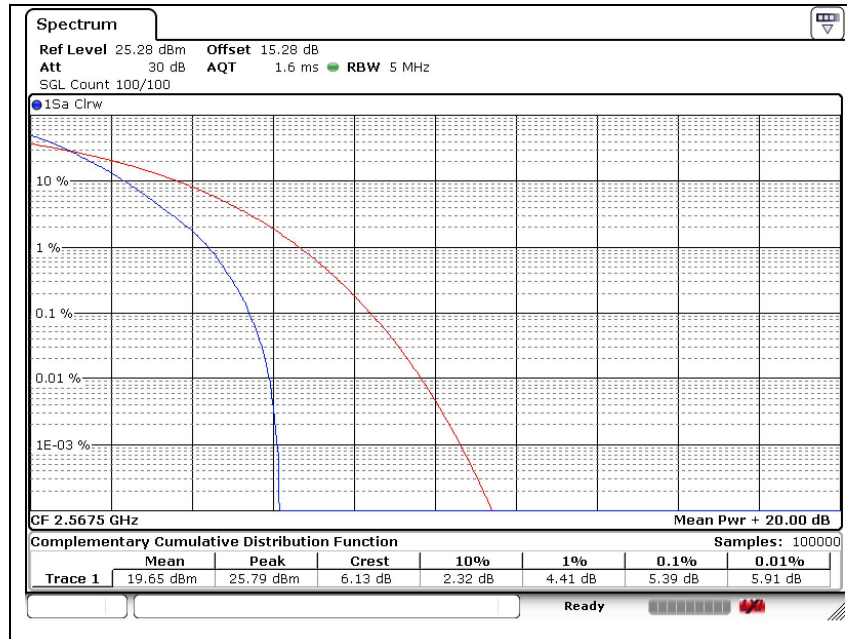


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

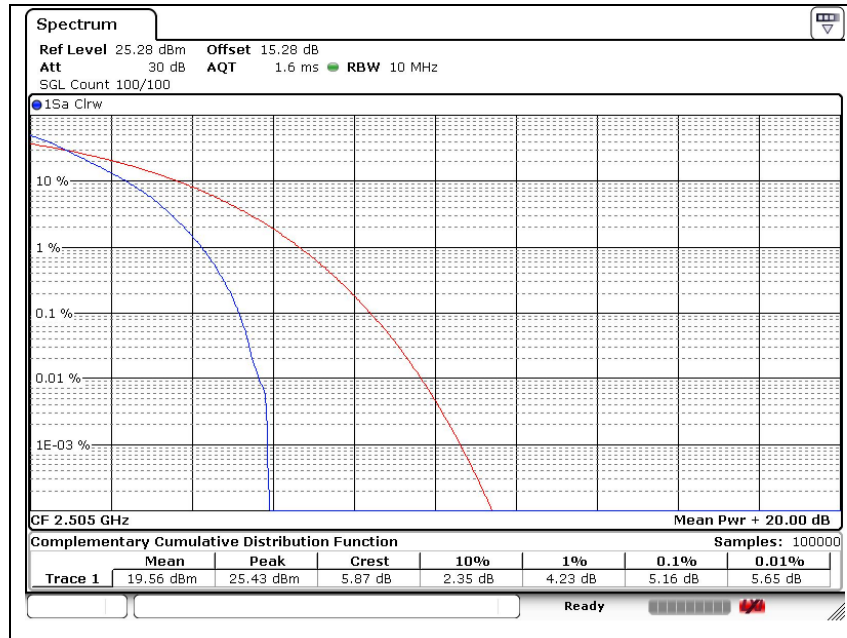
High Channel



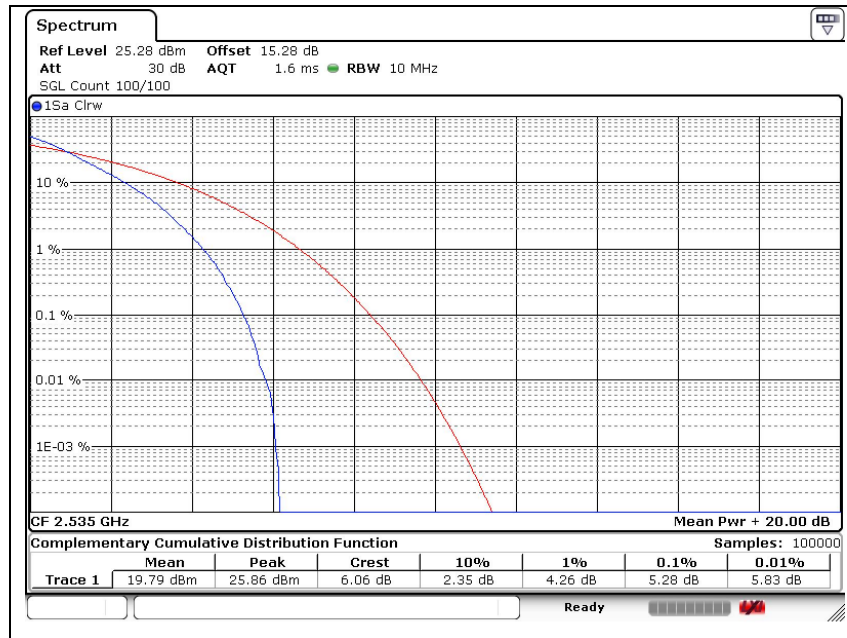
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (10 MHz – QPSK_RB 50)

Low Channel

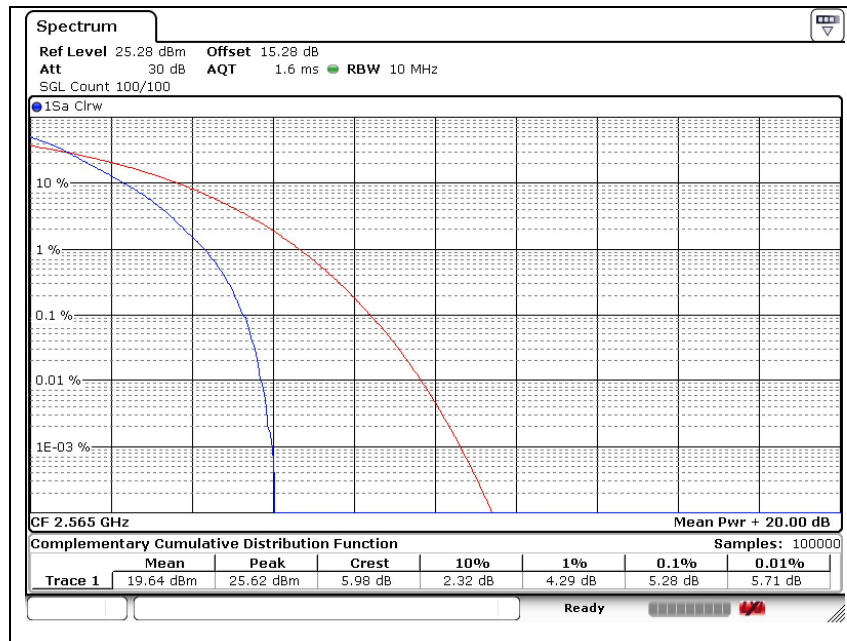


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

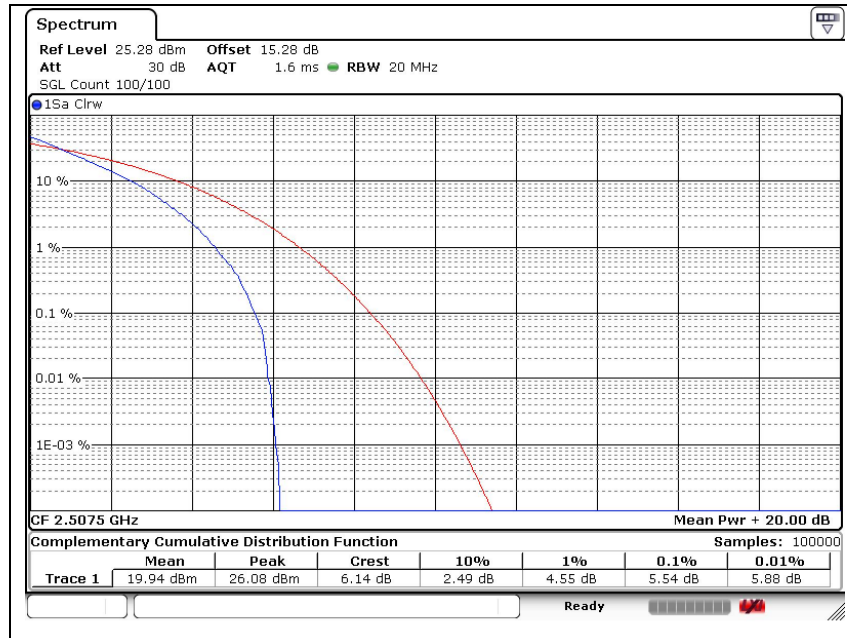
High Channel



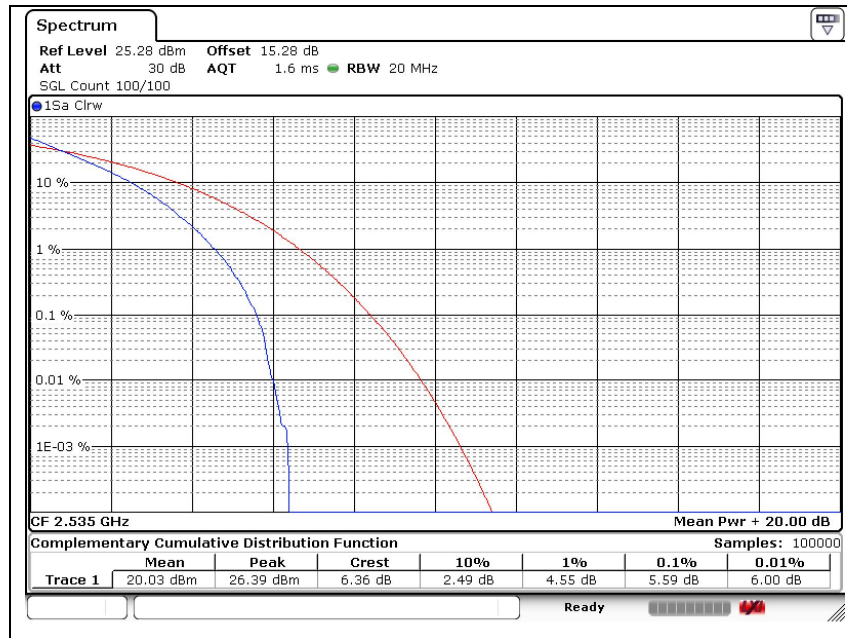
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (15 MHz – QPSK_RB 75)

Low Channel

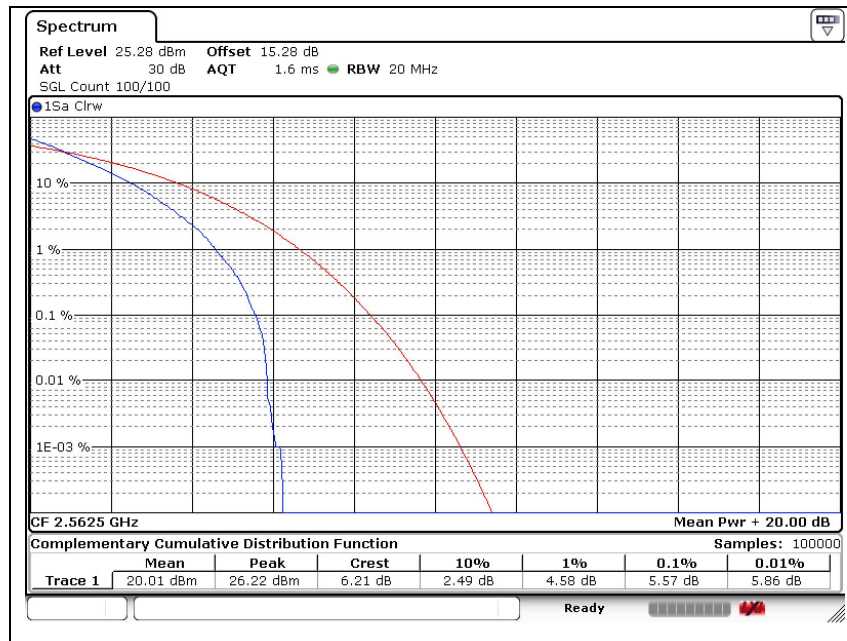


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

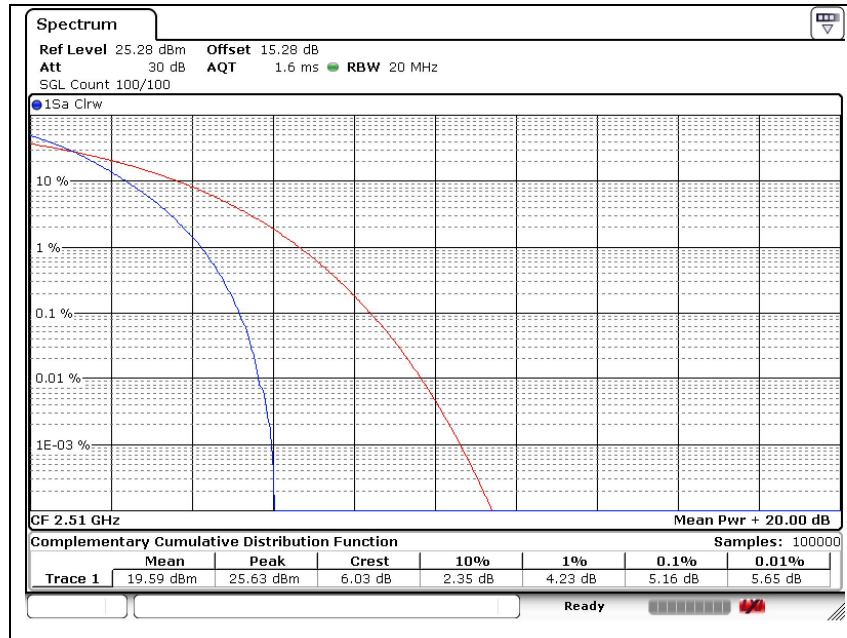
High Channel



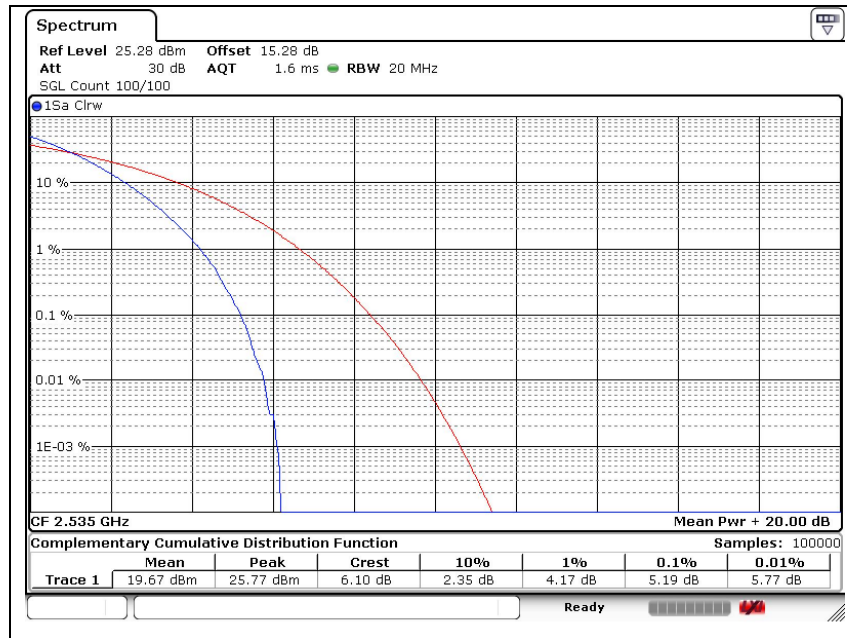
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (20 MHz – QPSK_RB 100)

Low Channel

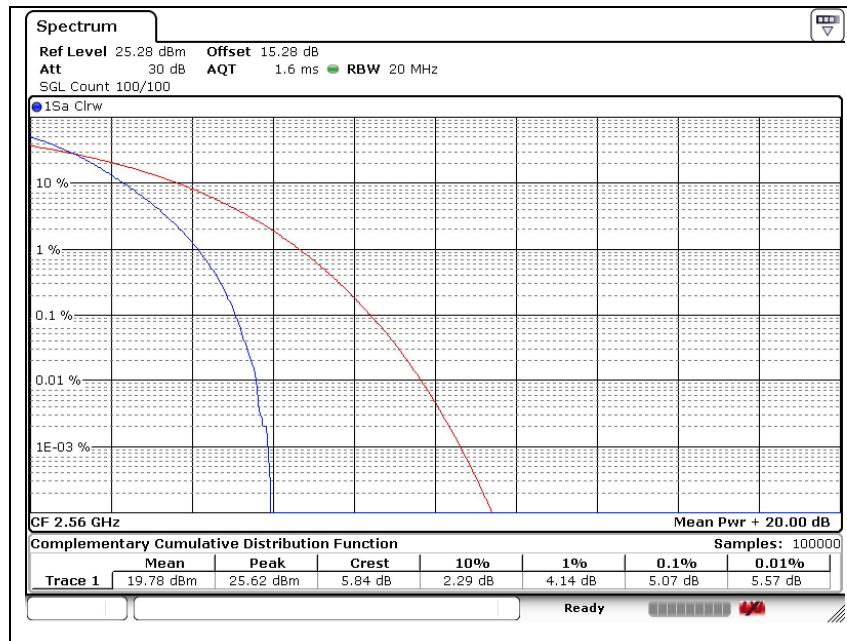


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

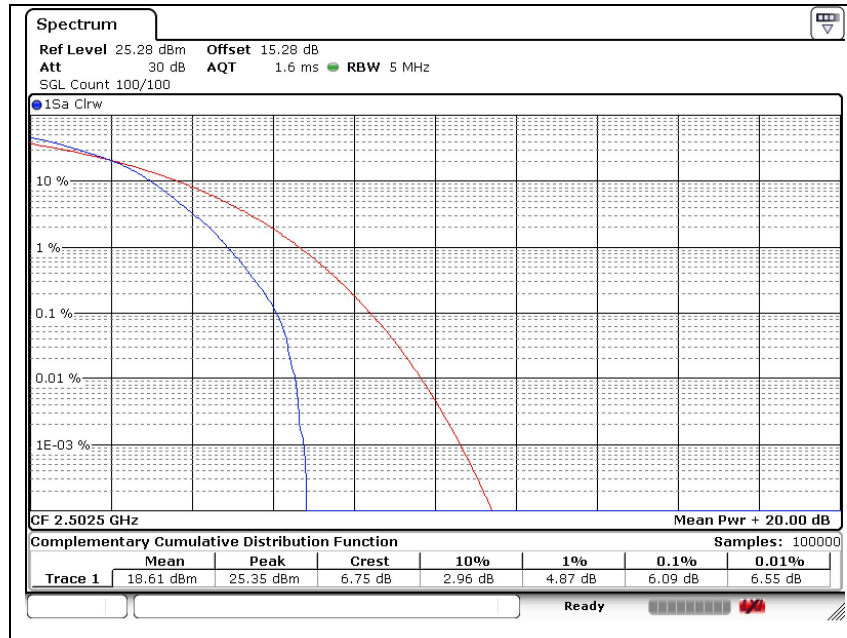
High Channel



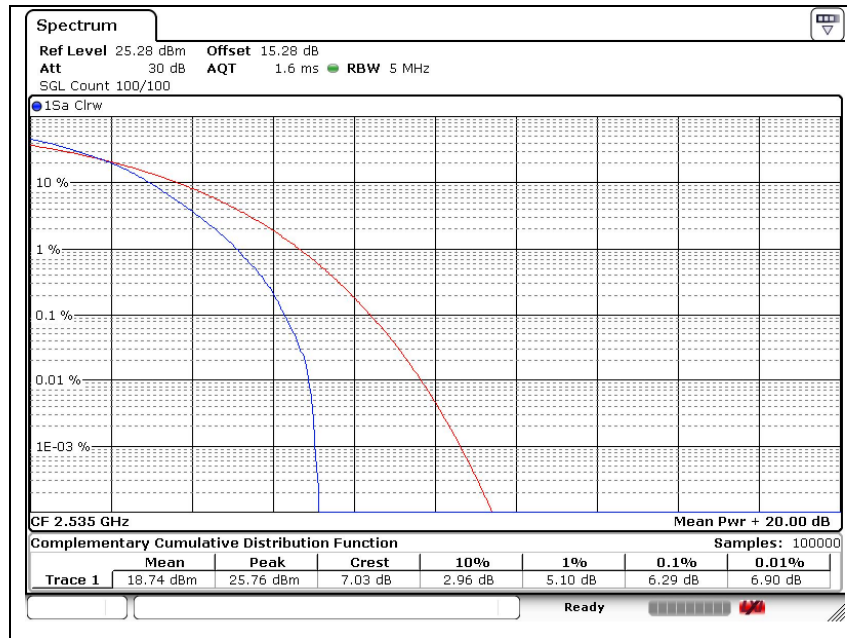
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (5 MHz – 16QAM_RB 25)

Low Channel

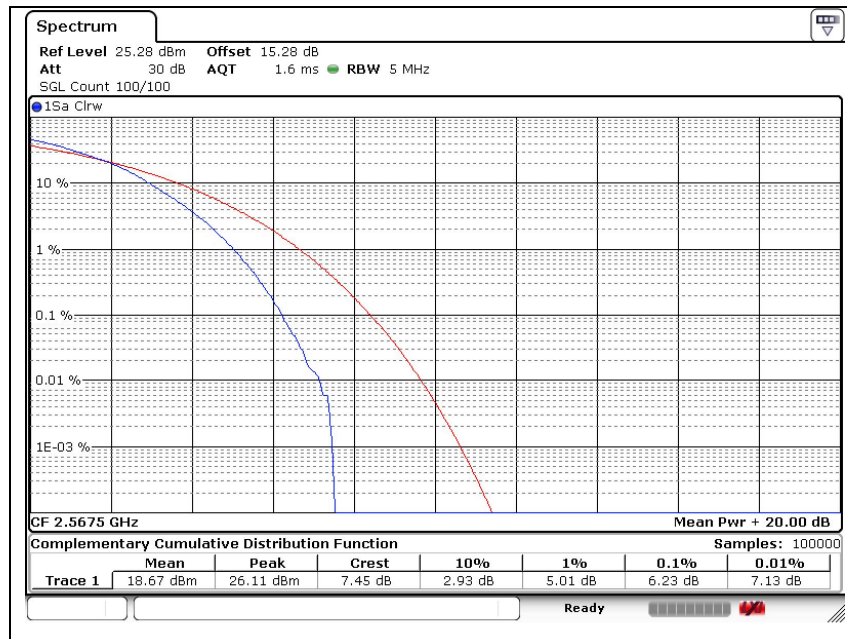


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

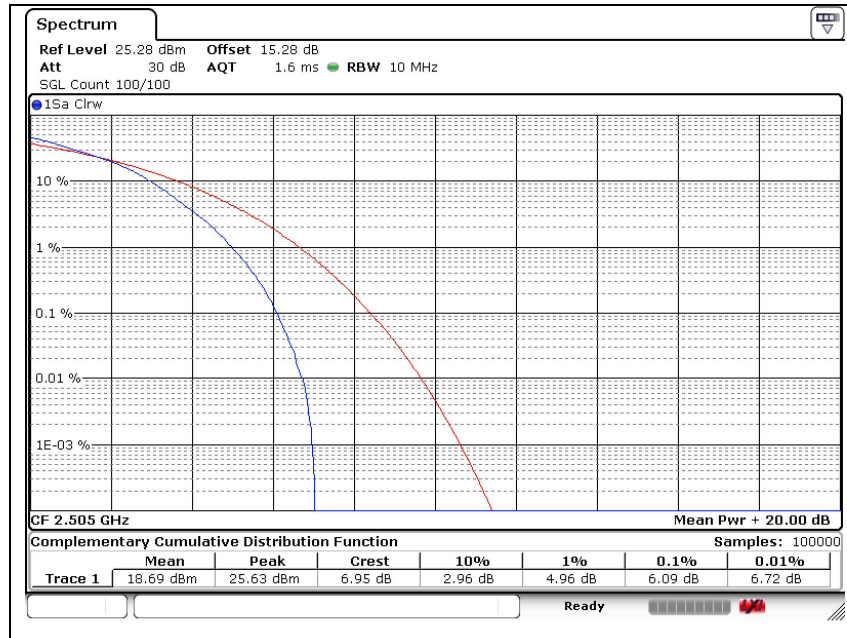
High Channel



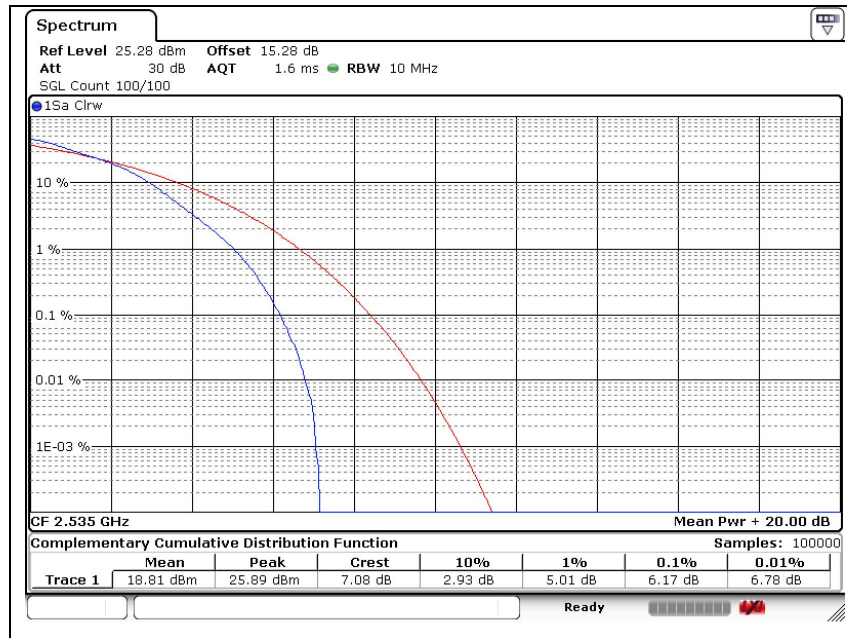
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (10 MHz – 16QAM_RB 50)

Low Channel

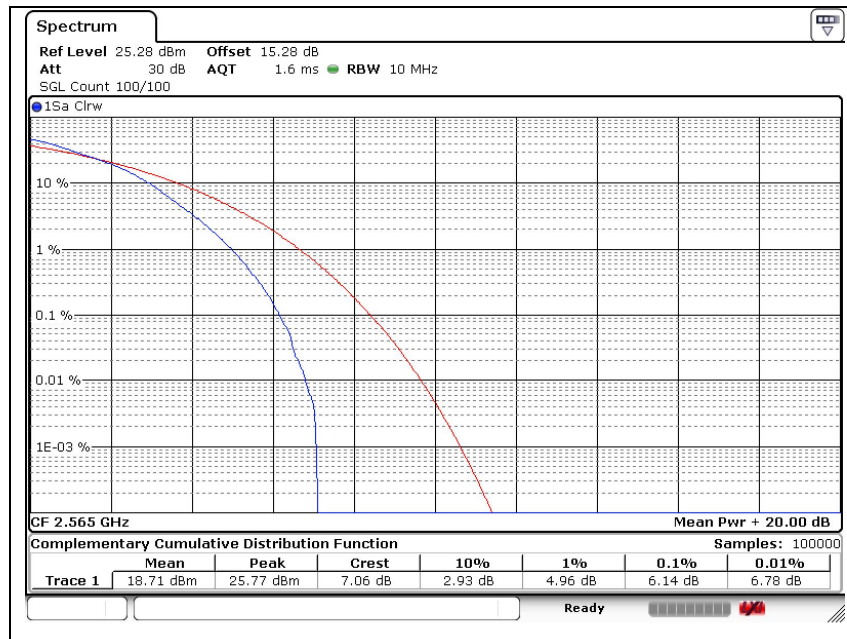


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

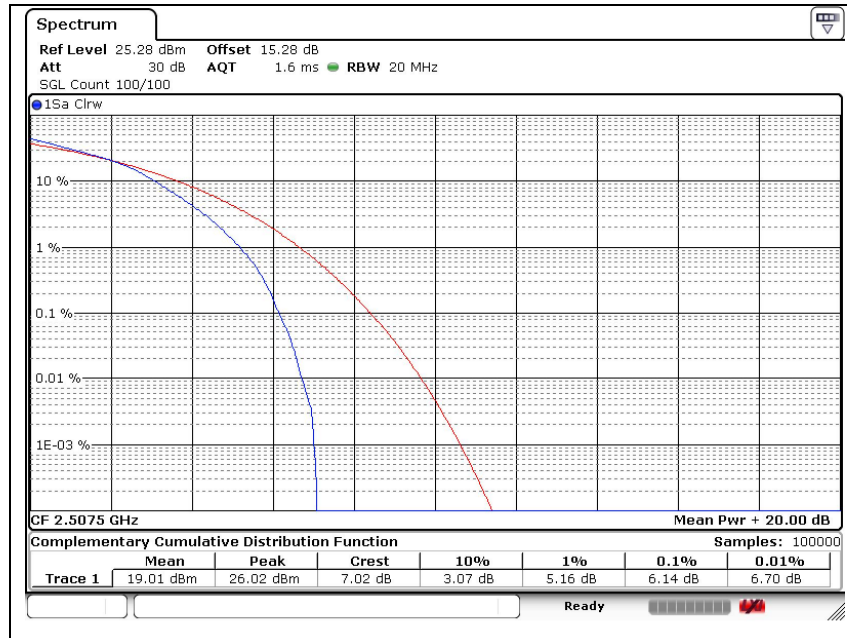
High Channel



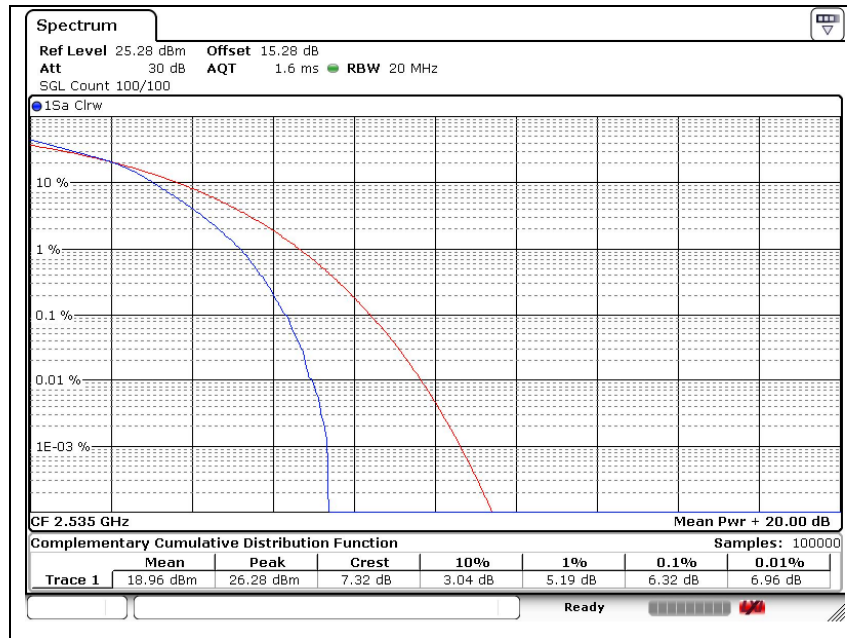
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (15 MHz – 16QAM_RB 75)

Low Channel

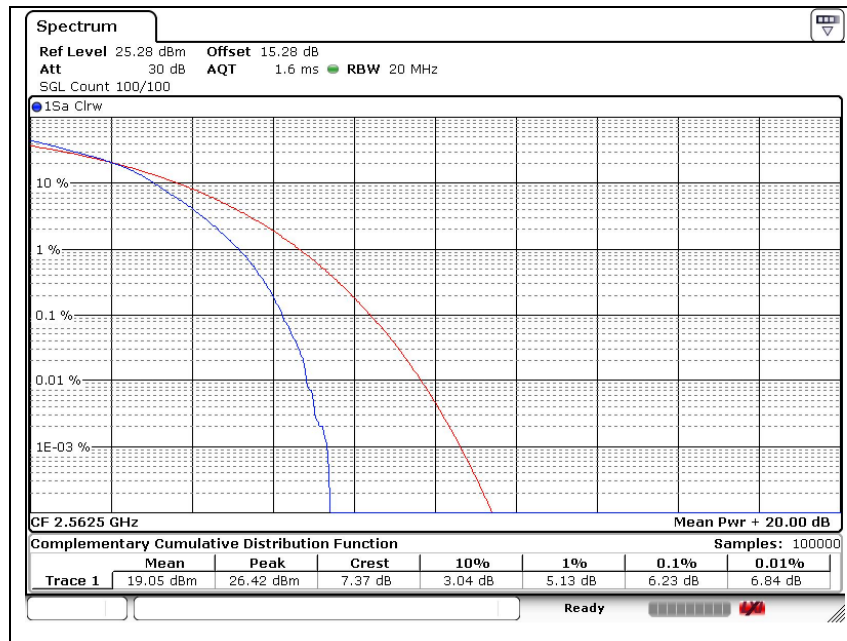


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

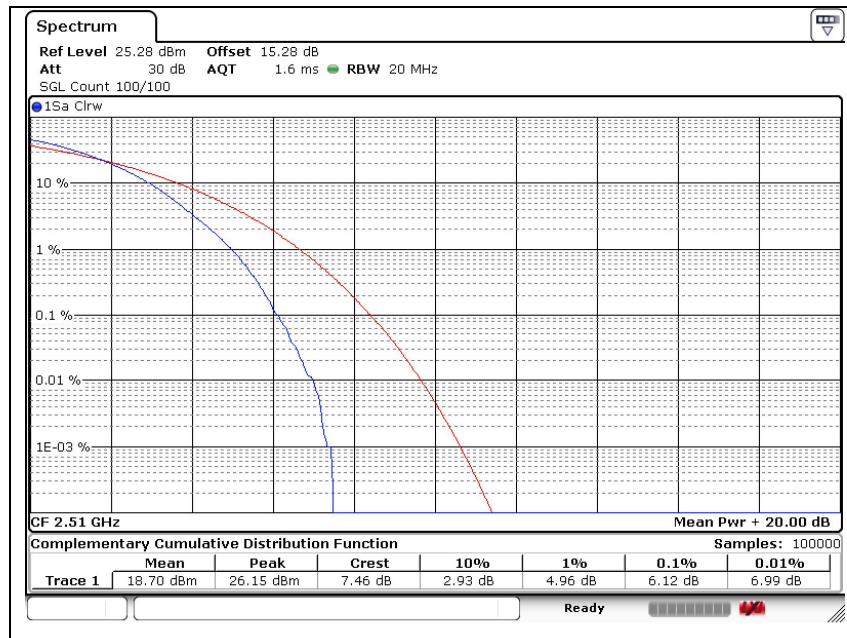
High Channel



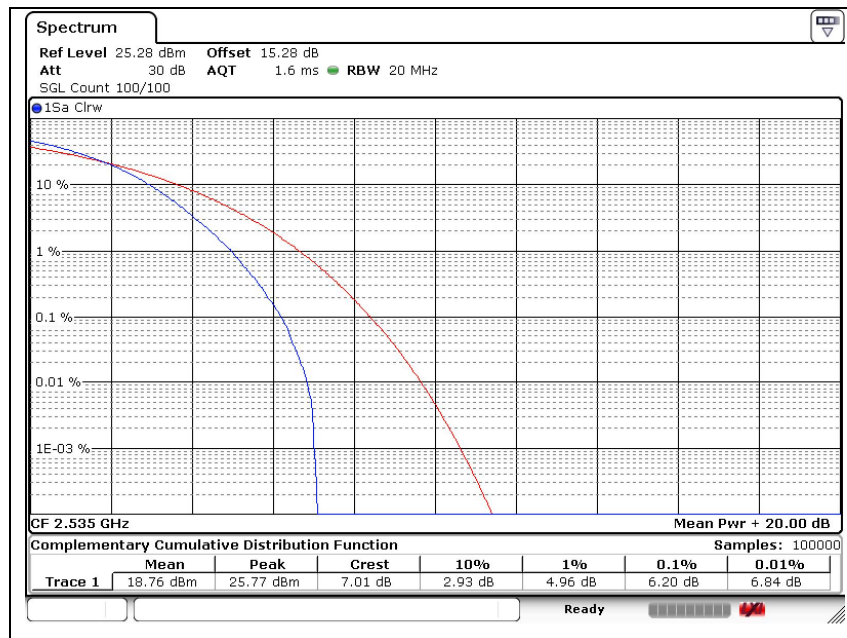
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

LTE band 7 (20 MHz – 16QAM_RB 100)

Low Channel

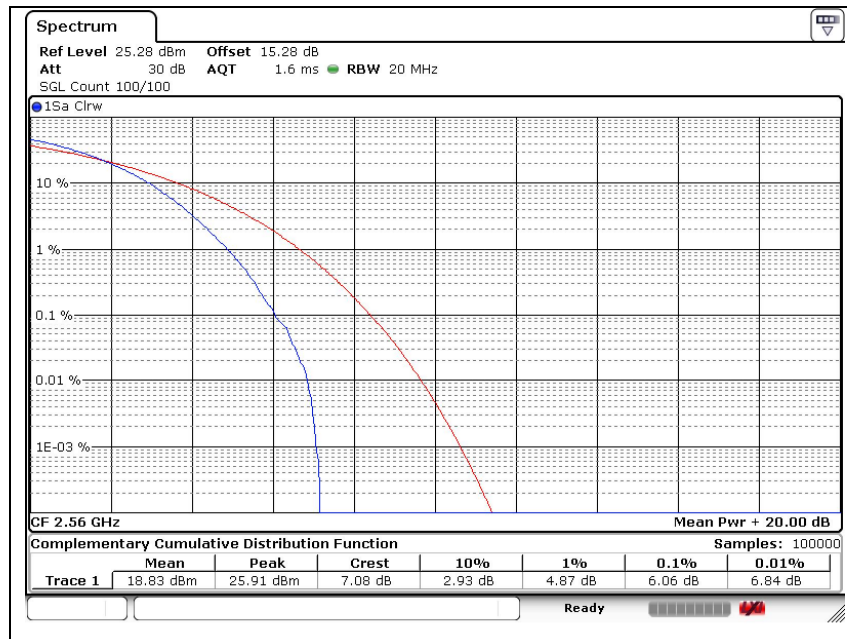


Middle Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.