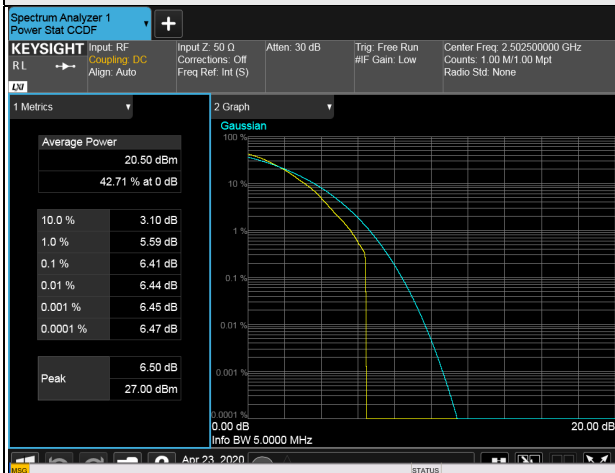
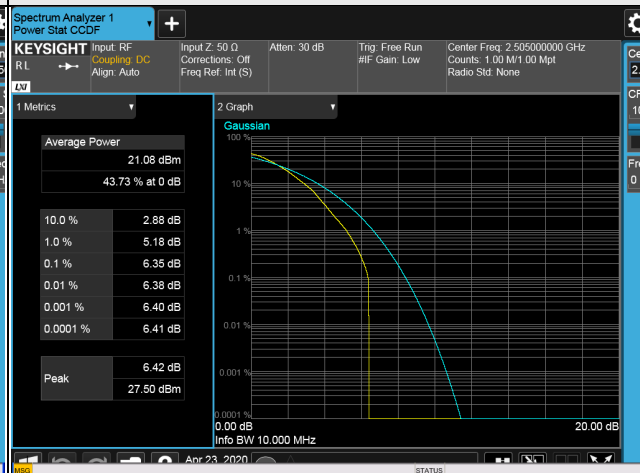


### Spectrum Plot of Worst Value

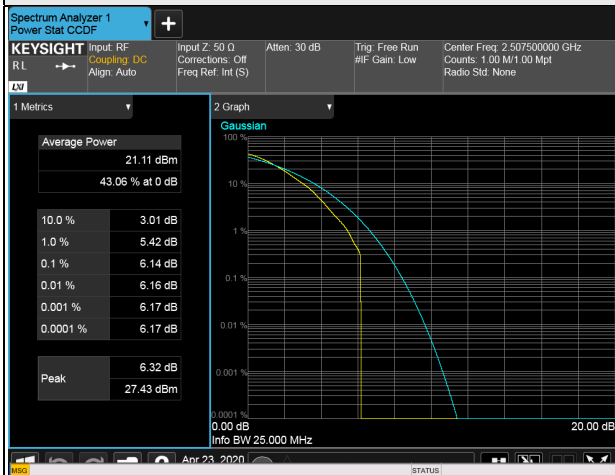
#### 5MHz / 64QAM



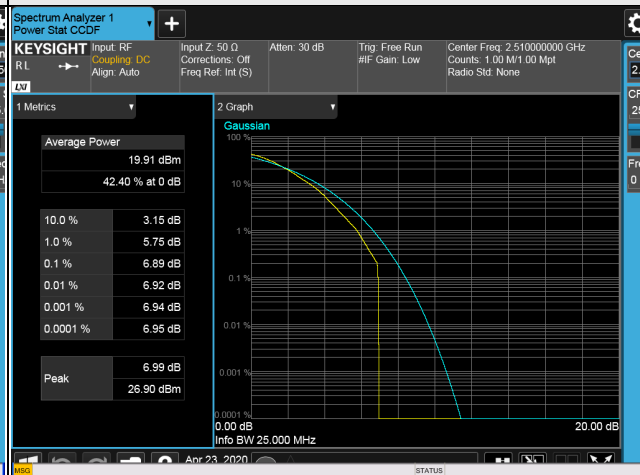
#### 10MHz / 64QAM



#### 15MHz / 64QAM



#### 20MHz / 64QAM

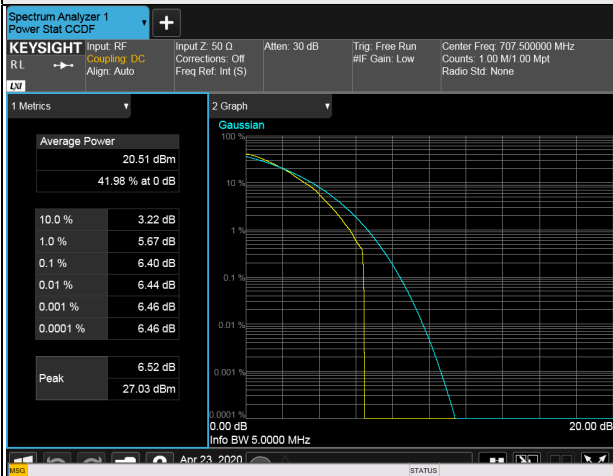


## LTE Band 12

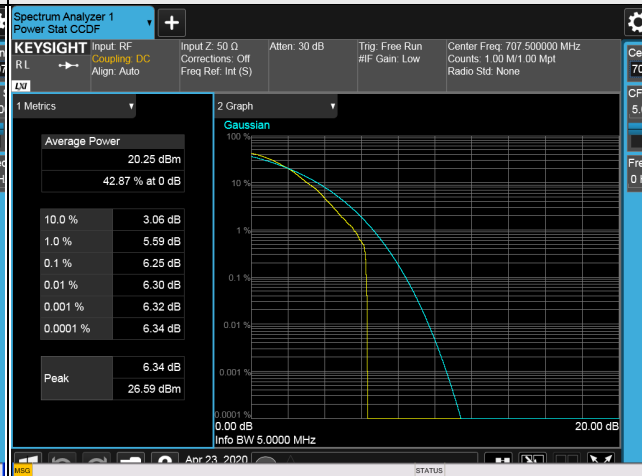
LTE Band 12, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
23017	699.7	3.60	4.28	5.94
23095	707.5	4.00	4.86	6.40
23173	715.3	3.63	4.76	5.72
LTE Band 12, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
23025	700.5	3.31	4.18	5.99
23095	707.5	3.72	4.64	6.25
23165	714.5	3.46	4.93	5.98
LTE Band 12, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
23035	701.5	3.40	4.18	5.92
23095	707.5	3.59	4.87	5.90
23155	713.5	3.55	5.05	6.48
LTE Band 12, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
23060	704.0	3.37	4.36	5.56
23095	707.5	3.42	4.68	5.80
23130	711.0	3.48	4.98	6.32

### Spectrum Plot of Worst Value

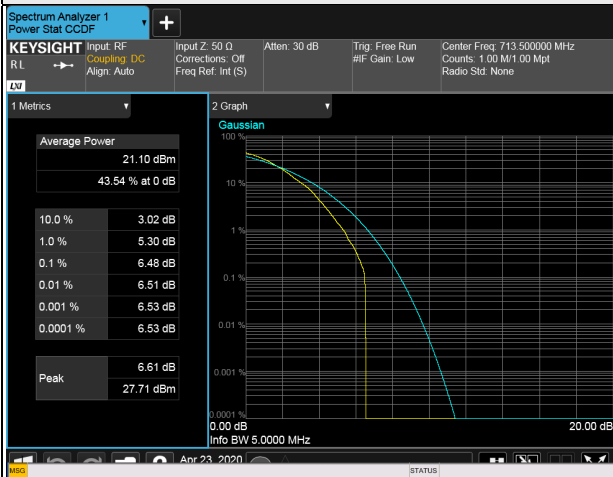
#### 1.4MHz / 64QAM



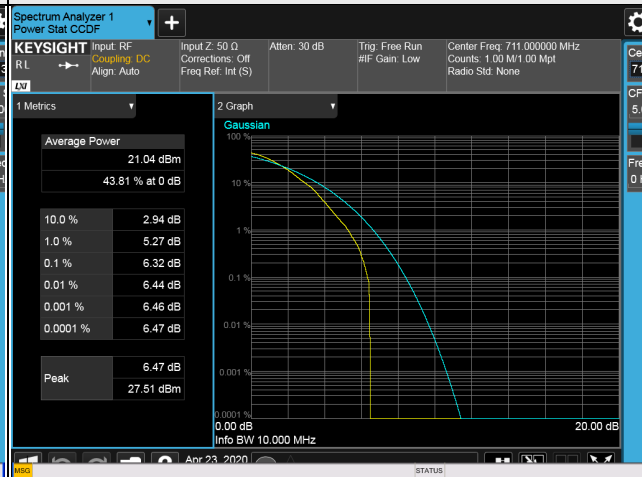
#### 3MHz / 64QAM



#### 5MHz / 64QAM



#### 10MHz / 64QAM

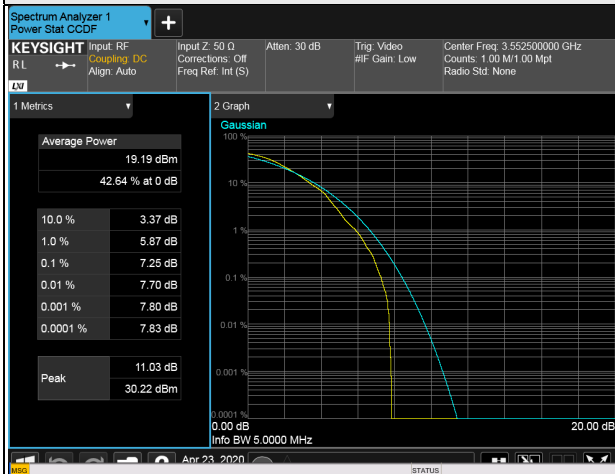


LTE Band 48

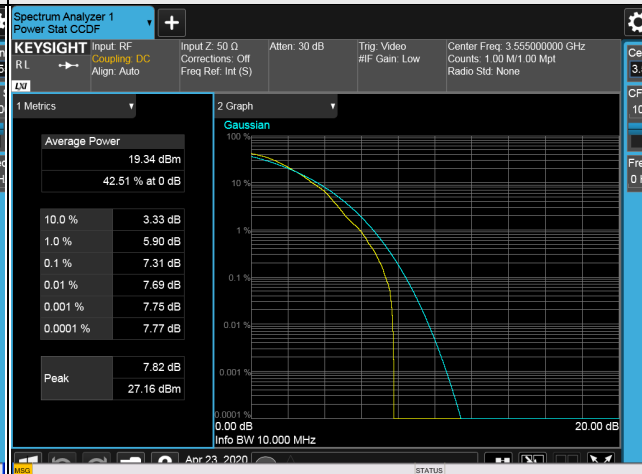
LTE Band 48, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
55265	3552.5	3.52	5.58	7.25
55990	3625.0	3.82	5.59	7.12
56715	3697.5	3.74	5.52	7.01
LTE Band 48, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
55290	3555.0	3.92	6.45	7.31
55990	3625.0	4.44	6.33	6.19
56690	3695.0	4.33	6.48	6.97
LTE Band 48, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
55315	3557.5	4.72	5.79	6.24
55990	3625.0	4.46	6.10	6.19
56665	3692.5	4.47	6.30	6.09
LTE Band 48, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
55340	3560.0	4.65	6.24	6.60
55990	3625.0	4.31	6.36	5.46
56640	3690.0	5.73	6.27	5.47

### Spectrum Plot of Worst Value

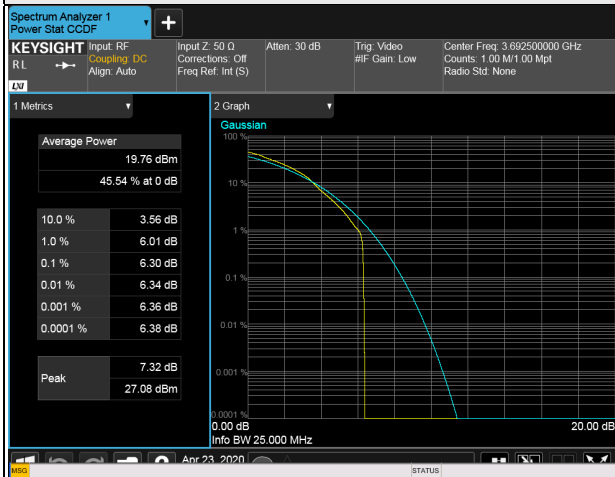
#### 5MHz / 64QAM



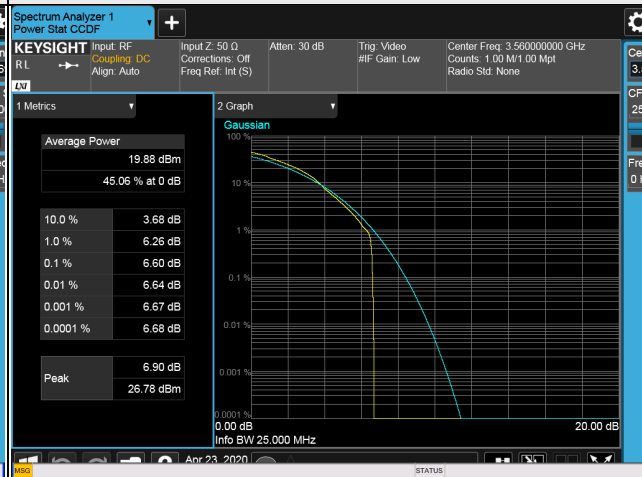
#### 10MHz / 64QAM



#### 15MHz / 16QAM



#### 20MHz / 64QAM



LTE Band 66

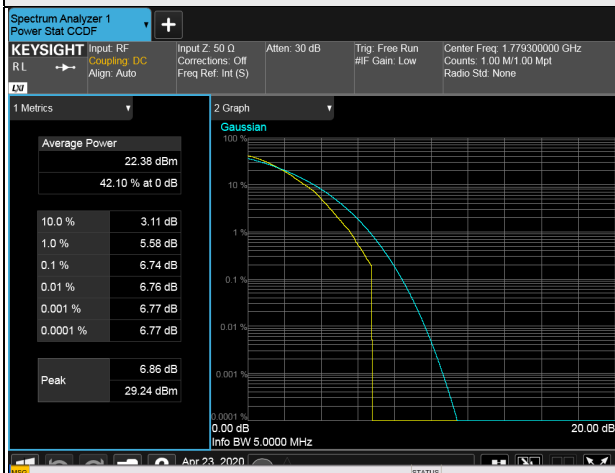
LTE Band 66, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131979	1710.7	3.65	4.45	6.62
132322	1745.0	3.86	4.60	6.55
132665	1779.3	3.97	5.31	6.74
LTE Band 66, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131987	1711.5	3.59	4.35	6.47
132322	1745.0	3.57	4.40	6.49
132657	1778.5	3.71	5.31	6.58
LTE Band 66, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
131997	1712.5	3.63	4.41	6.52
132322	1745.0	3.65	4.45	6.60
132647	1777.5	3.76	5.00	6.42
LTE Band 66, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132022	1715.0	3.77	4.57	6.79
132322	1745.0	3.70	4.50	6.79
132622	1775.0	3.58	4.38	6.61
LTE Band 66, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132047	1717.5	3.70	4.56	6.73
132322	1745.0	3.70	4.40	6.69
132597	1772.5	3.45	4.21	6.29

LTE Band 66, Channel Bandwidth 20MHz

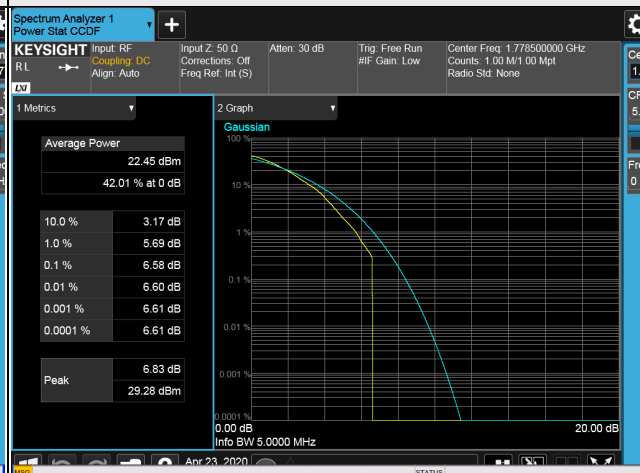
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
132072	1720.0	3.72	4.54	6.87
132322	1745.0	3.65	4.43	6.75
132572	1770.0	3.65	5.06	6.40

### Spectrum Plot of Worst Value

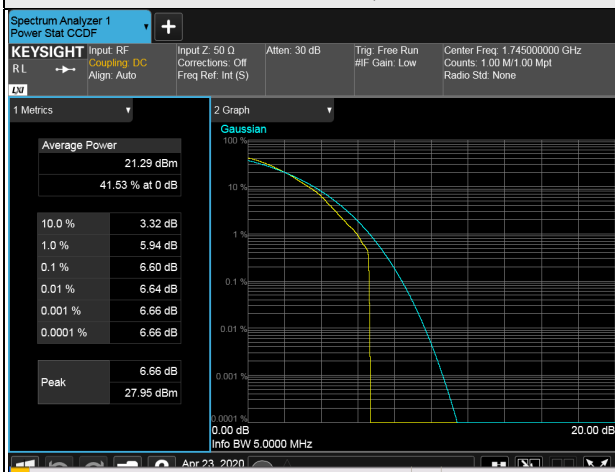
1.4MHz / 64QAM



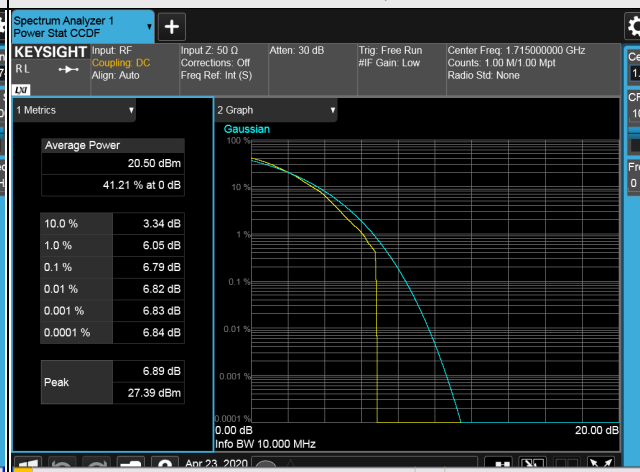
3MHz / 64QAM



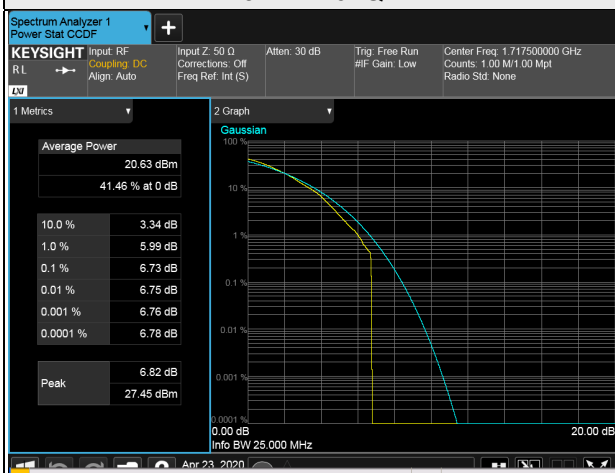
5MHz / 64QAM



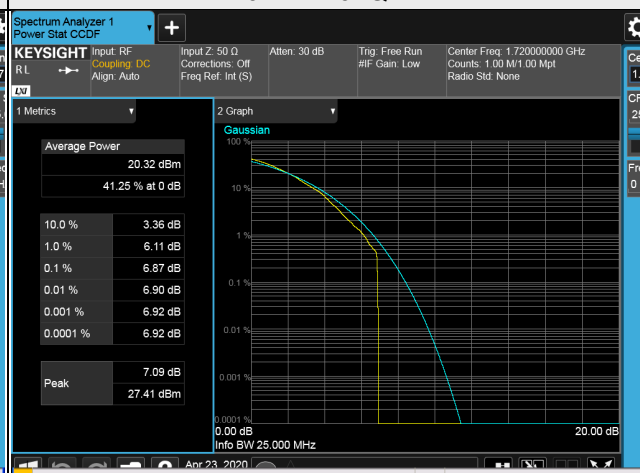
10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM





## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

For LTE Band 2

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

For LTE Band 7

In the FCC 27.53(m)(4), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least  $55 + 10 \log(P)$  dB. The emission limit equal to  $-25\text{dBm}$ .

For LTE Band 12

According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

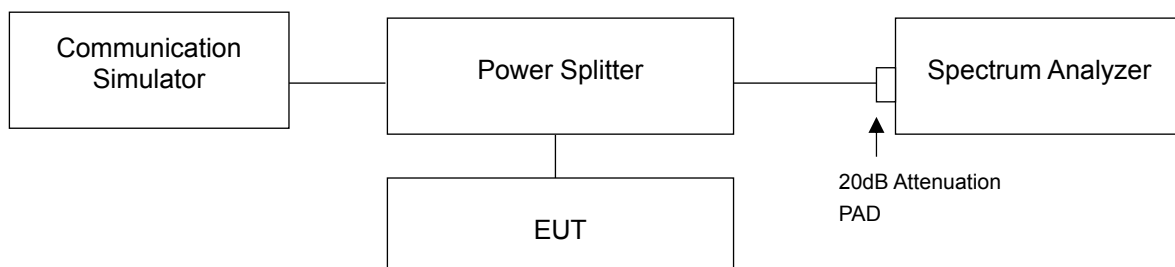
For LTE Band 48

Power of any emissions outside the Fundamental	Limit
Within 0-10MHz above the Assigned Channel	-13 dBm/MHz
Within 0-10MHz below the Assigned Channel	
Greater than 0-10MHz above the Assigned Channel	-25 dBm/MHz
Greater than 0-10MHz below the Assigned Channel	
Power of any emission below 3530MHz	-40 dBm/MHz
Power of any emission above 3720MHz	

For LTE Band 66

In the FCC 27.53(h), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

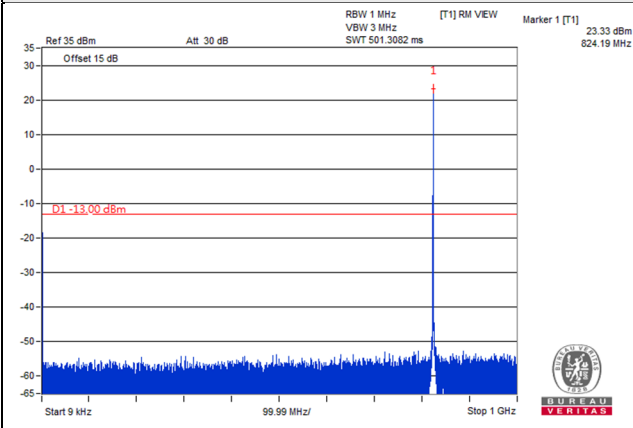
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

### 4.7.4 Test Results

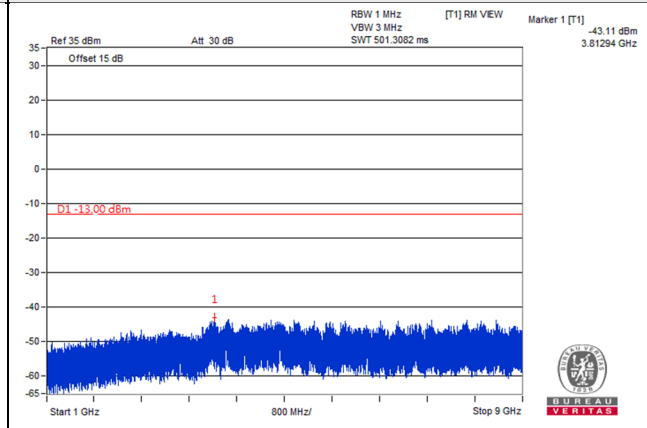
n5, Channel Bandwidth 5MHz

Channel 165300 (826.5MHz)

Frequency Range : 9kHz~1GHz

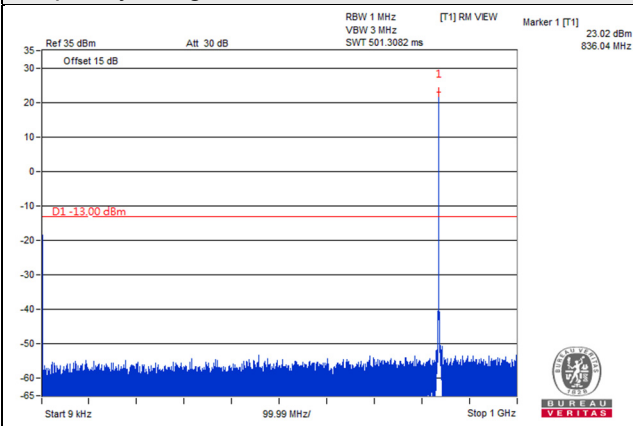


Frequency Range : 1GHz~9GHz

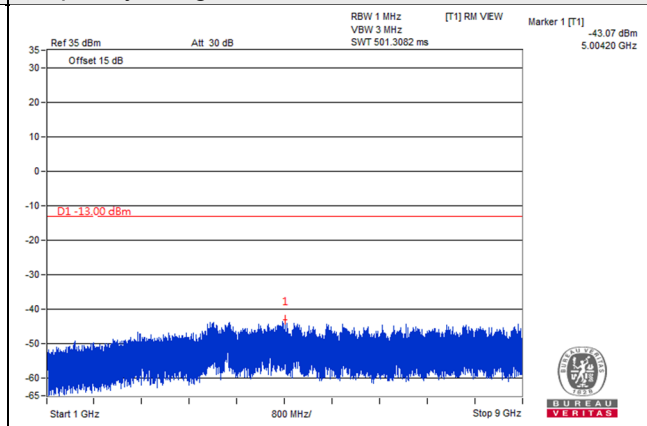


Channel 167300 (836.5MHz)

Frequency Range : 9kHz~1GHz

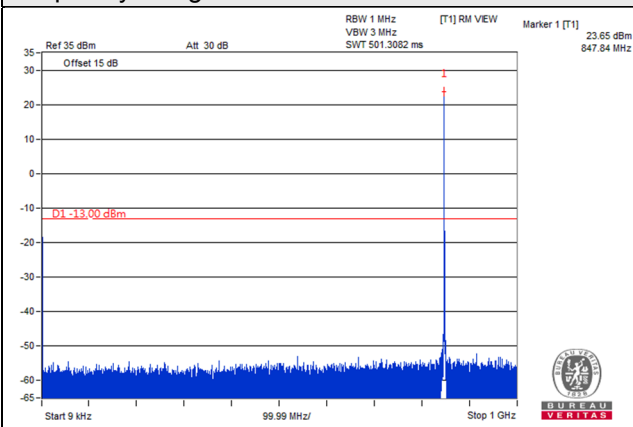


Frequency Range : 1GHz~9GHz

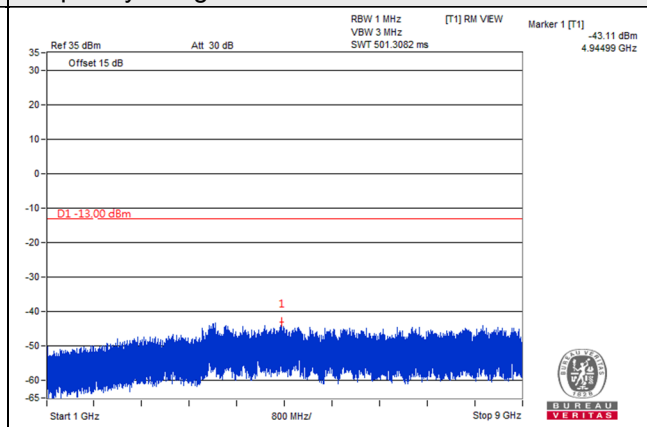


Channel 169300 (846.5MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~9GHz

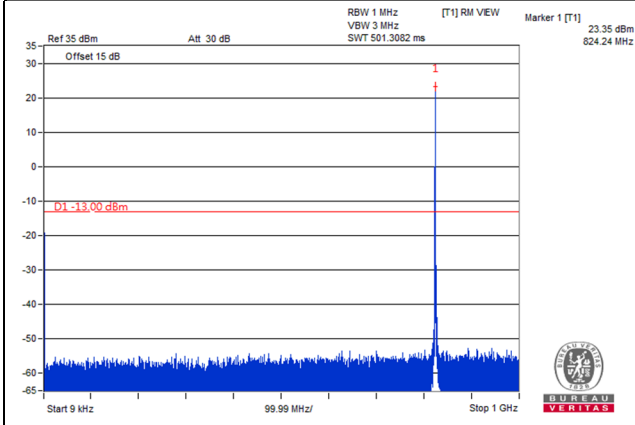


\*The 9kHz signal over the limit is from Spectrum.

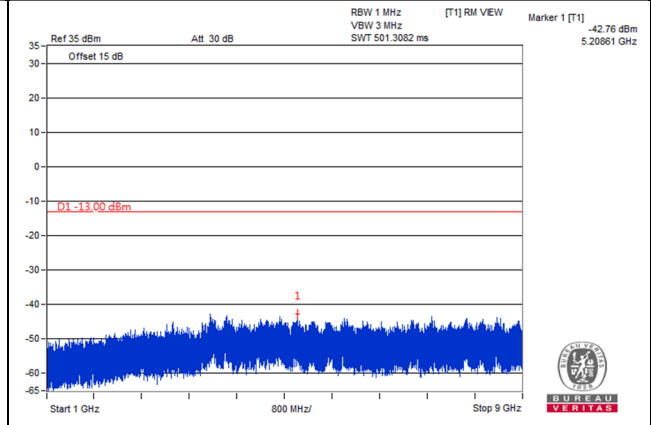
n5, Channel Bandwidth 10MHz

Channel 165800 (829.0MHz)

Frequency Range : 9kHz~1GHz

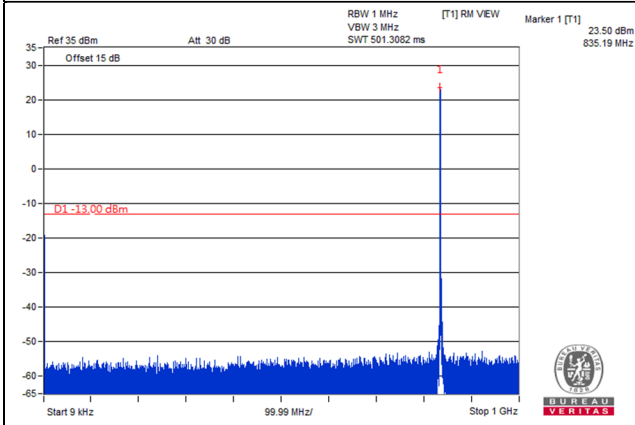


Frequency Range : 1GHz~9GHz

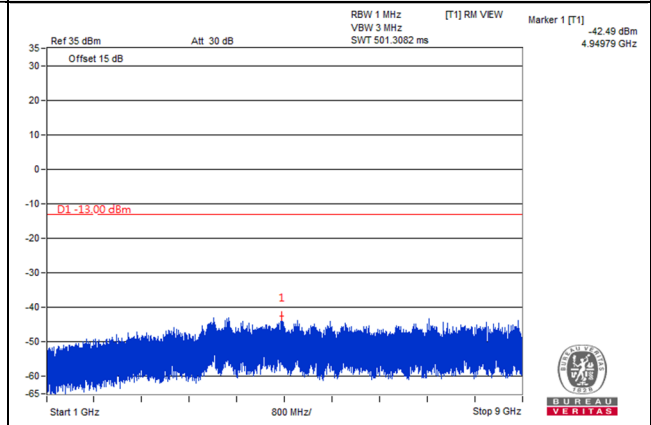


Channel 167300 (836.5MHz)

Frequency Range : 9kHz~1GHz

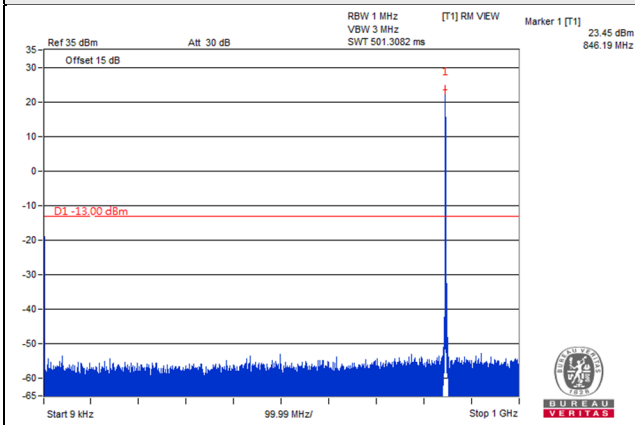


Frequency Range : 1GHz~9GHz

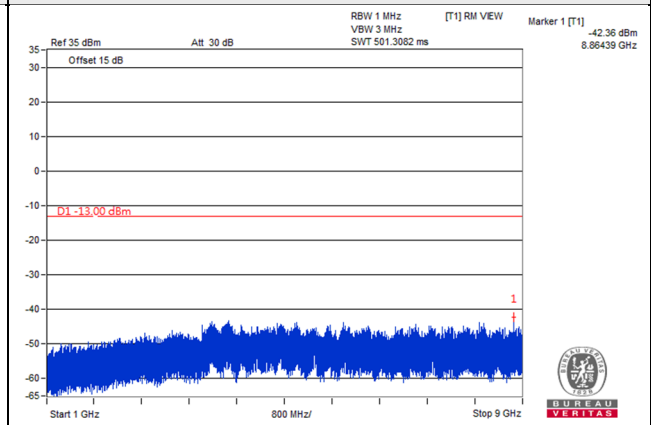


Channel 168800 (844.0MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~9GHz

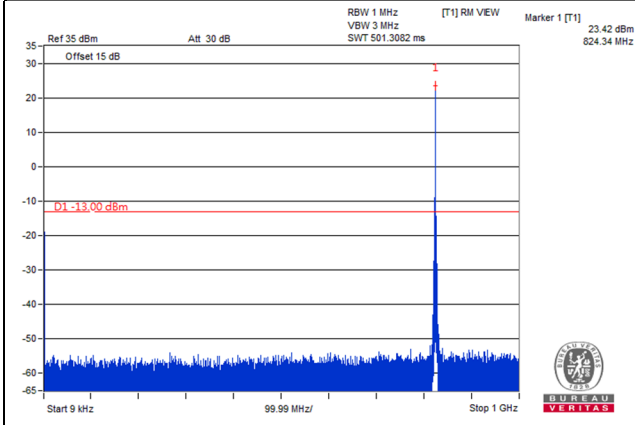


\*The 9kHz signal over the limit is from Spectrum.

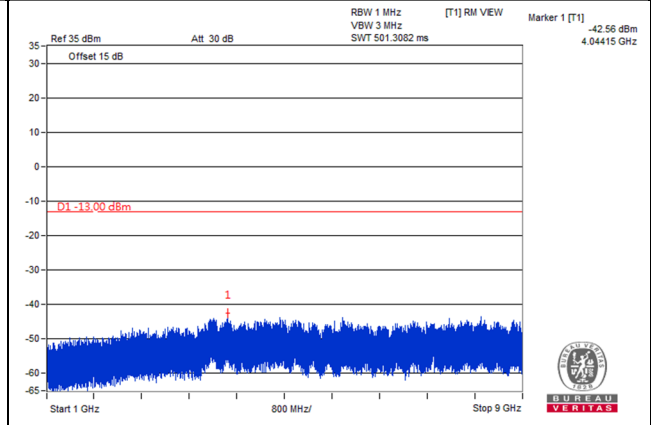
n5, Channel Bandwidth 15MHz

Channel 166300 (831.5MHz)

Frequency Range : 9kHz~1GHz

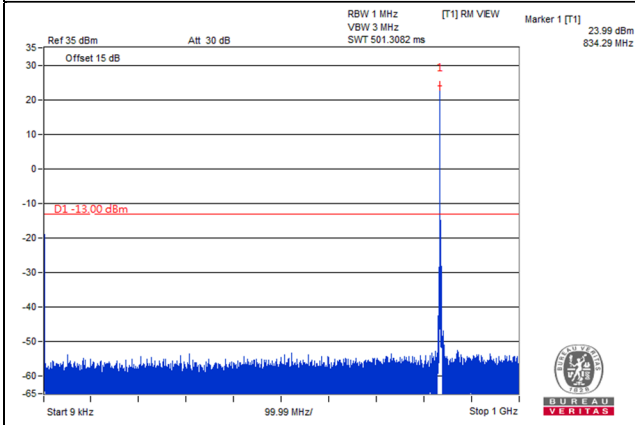


Frequency Range : 1GHz~9GHz

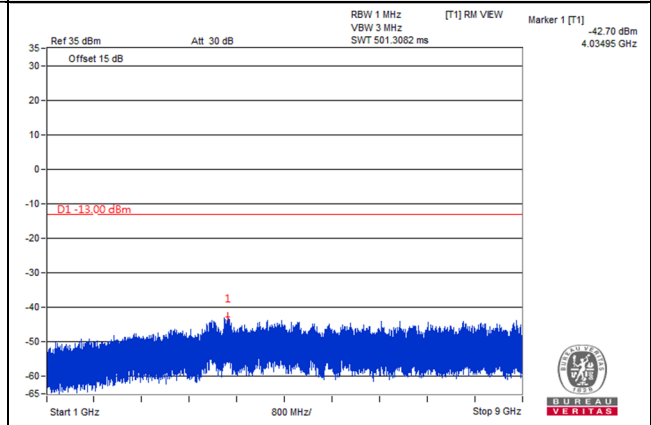


Channel 167300 (836.5MHz)

Frequency Range : 9kHz~1GHz

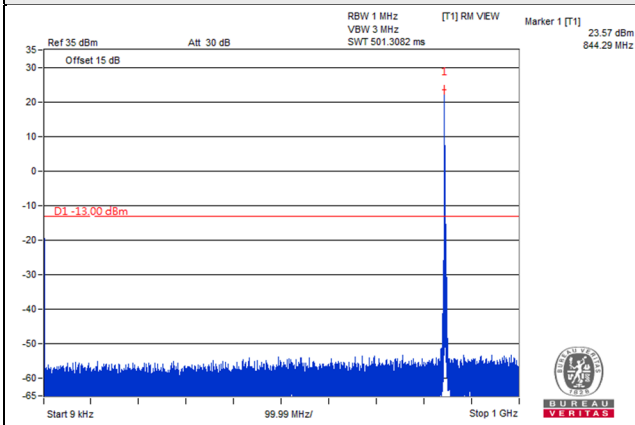


Frequency Range : 1GHz~9GHz

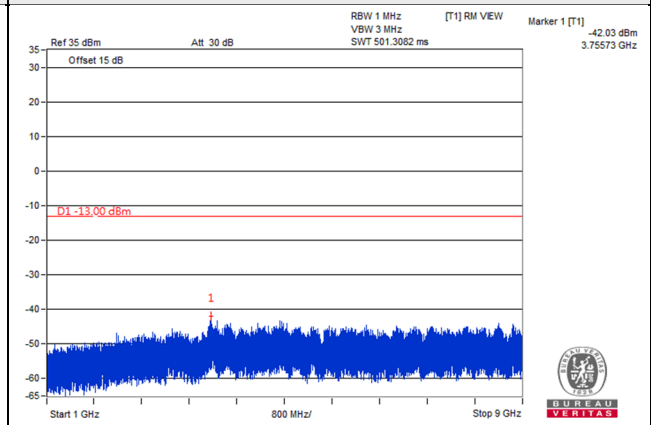


Channel 168300 (841.5MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~9GHz

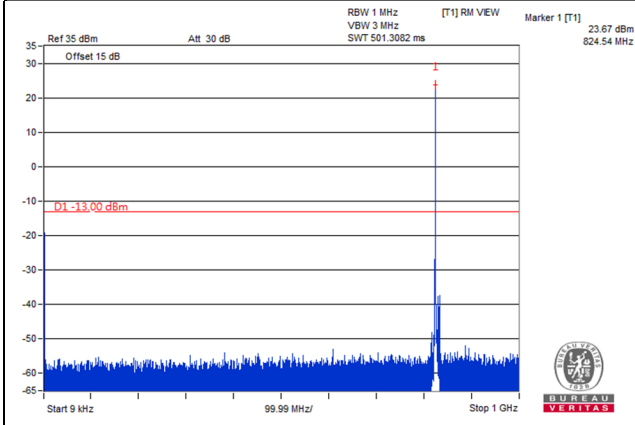


\*The 9kHz signal over the limit is from Spectrum.

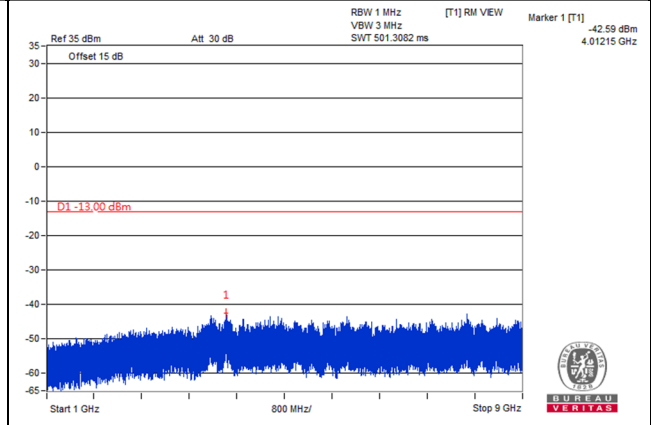
n5, Channel Bandwidth 20MHz

Channel 166800 (834.0MHz)

Frequency Range : 9kHz~1GHz

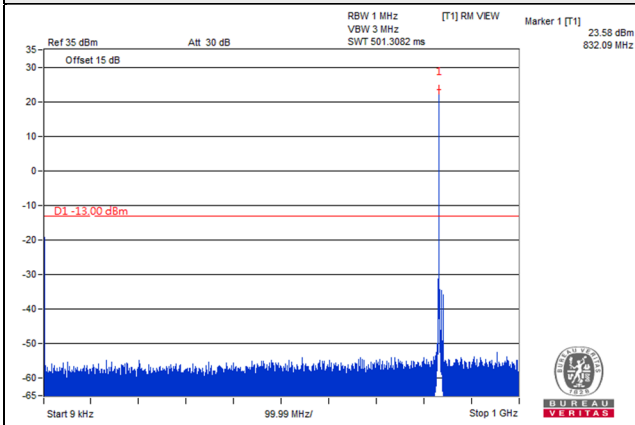


Frequency Range : 1GHz~9GHz

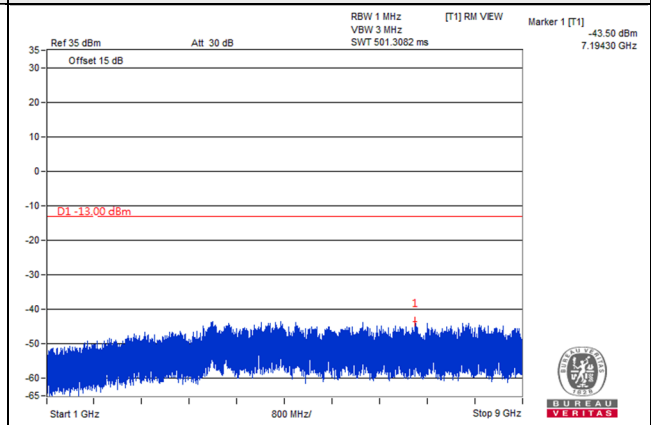


Channel 167300 (836.5MHz)

Frequency Range : 9kHz~1GHz

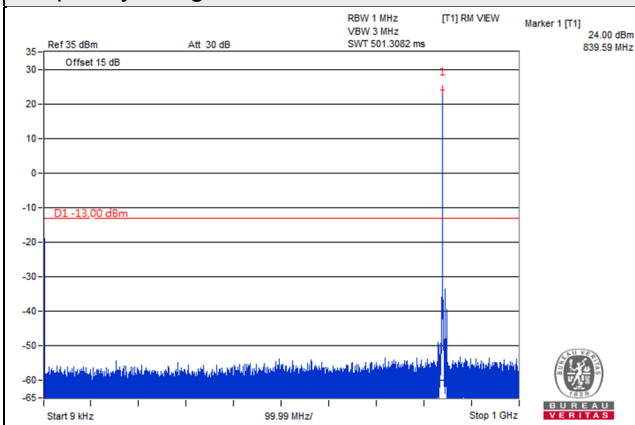


Frequency Range : 1GHz~9GHz

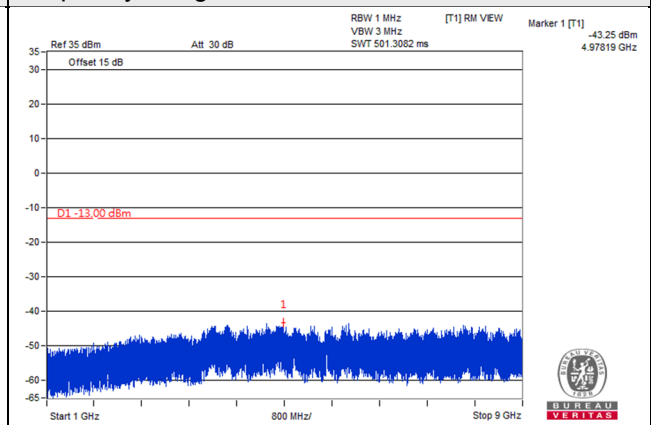


Channel 167800 (839.0MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~9GHz

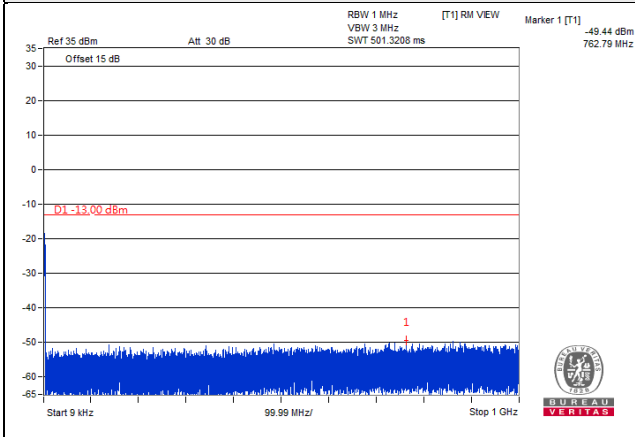


\*The 9kHz signal over the limit is from Spectrum.

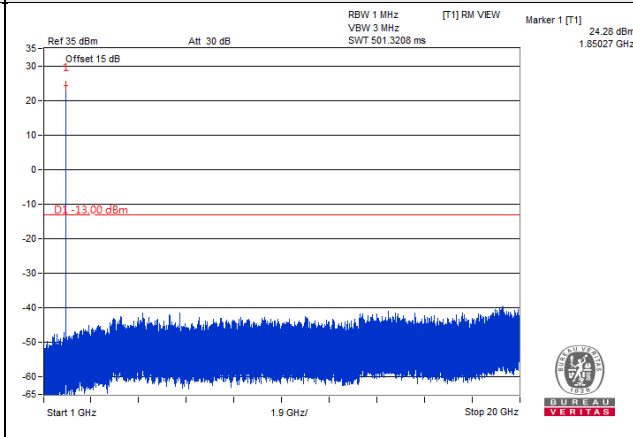
LTE Band 2, Channel Bandwidth 1.4MHz

Channel 18607 (1850.70MHz)

Frequency Range : 9kHz~1GHz

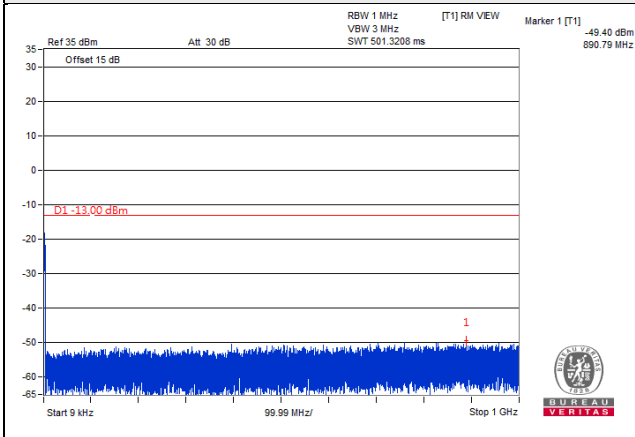


Frequency Range : 1GHz~20GHz

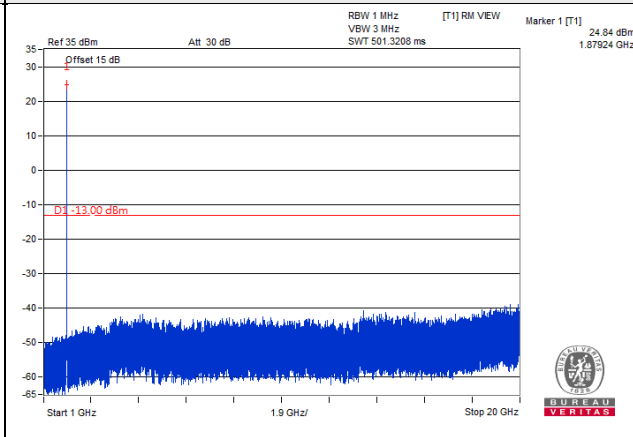


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

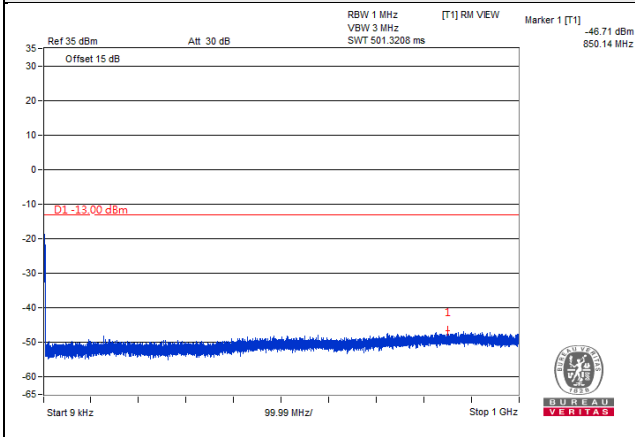


Frequency Range : 1GHz~20GHz

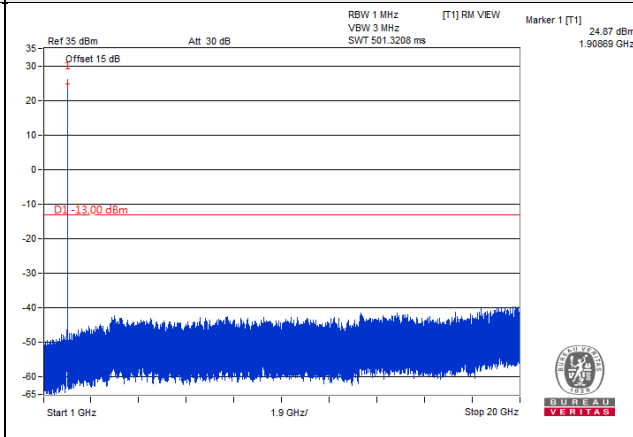


Channel 19193 (1909.30MHz)

Frequency Range : 9kHz~1GHz



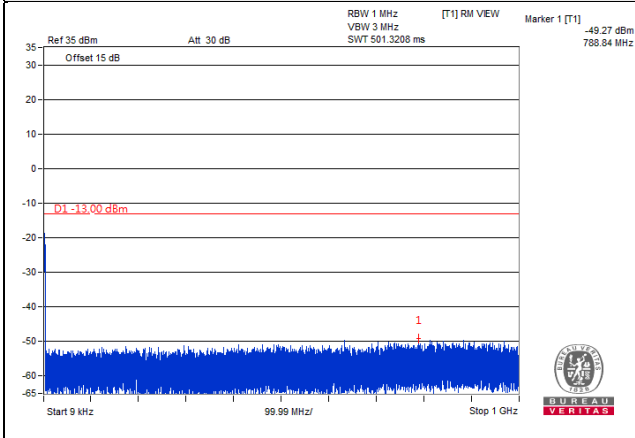
Frequency Range : 1GHz~20GHz



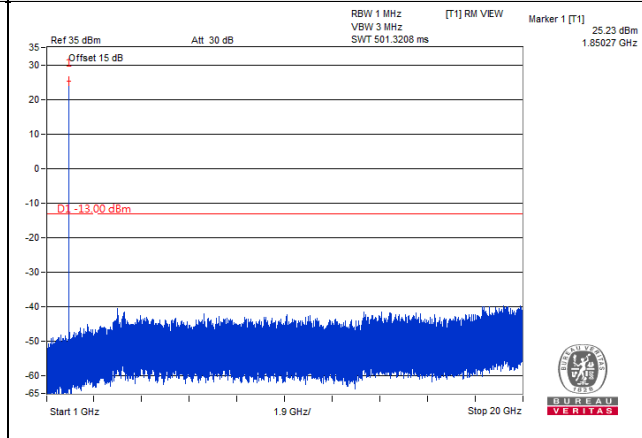
LTE Band 2, Channel Bandwidth 3MHz

Channel 18615 (1851.50MHz)

Frequency Range : 9kHz~1GHz

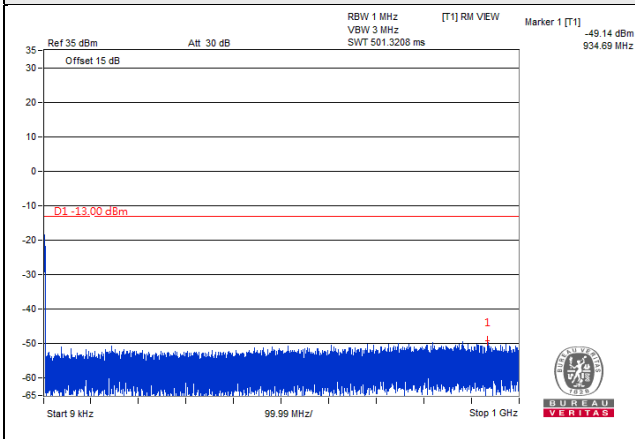


Frequency Range : 1GHz~20GHz

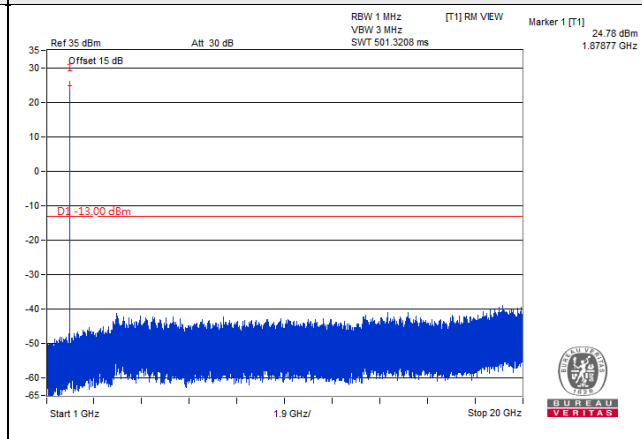


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

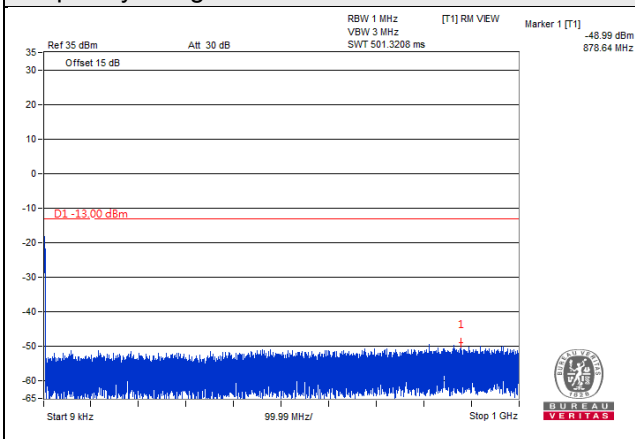


Frequency Range : 1GHz~20GHz

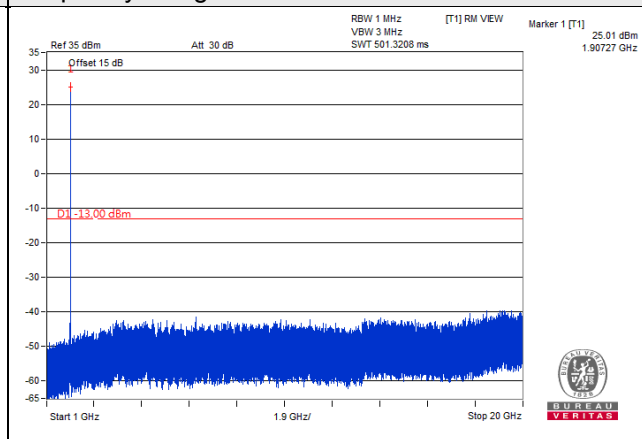


Channel 19185 (1908.50MHz)

Frequency Range : 9kHz~1GHz



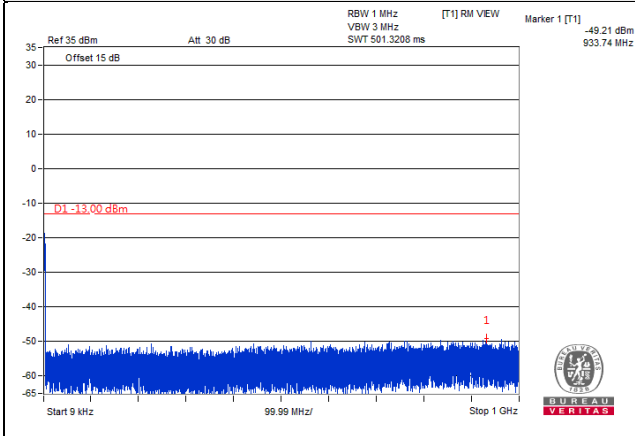
Frequency Range : 1GHz~20GHz



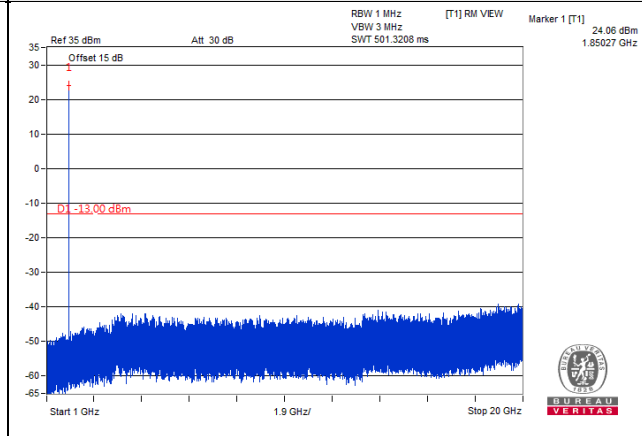
LTE Band 2, Channel Bandwidth 5MHz

Channel 18625 (1852.50MHz)

Frequency Range : 9kHz~1GHz

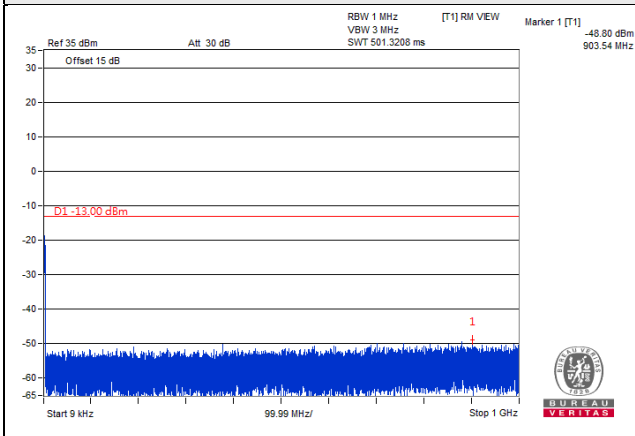


Frequency Range : 1GHz~20GHz

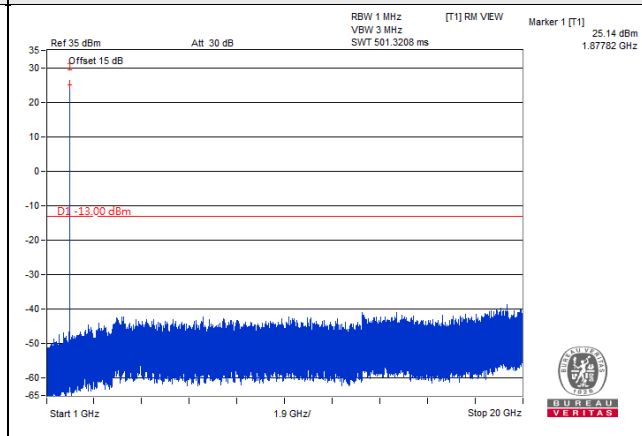


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

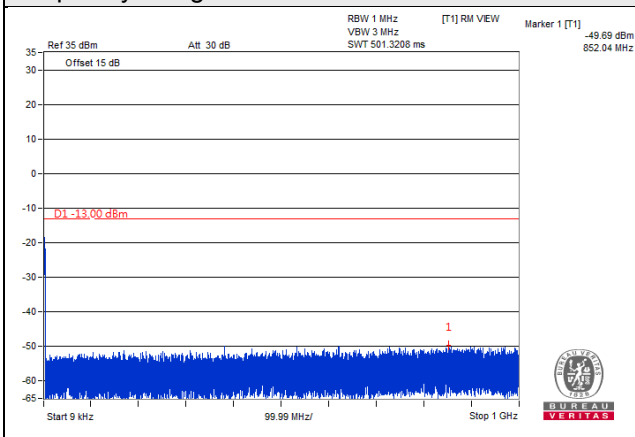


Frequency Range : 1GHz~20GHz

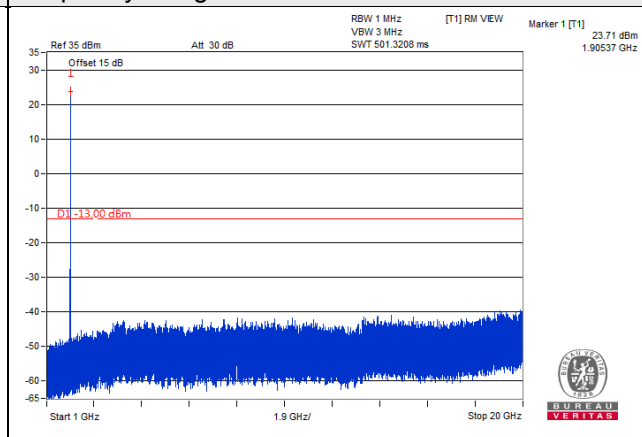


Channel 19175 (1907.50MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~20GHz

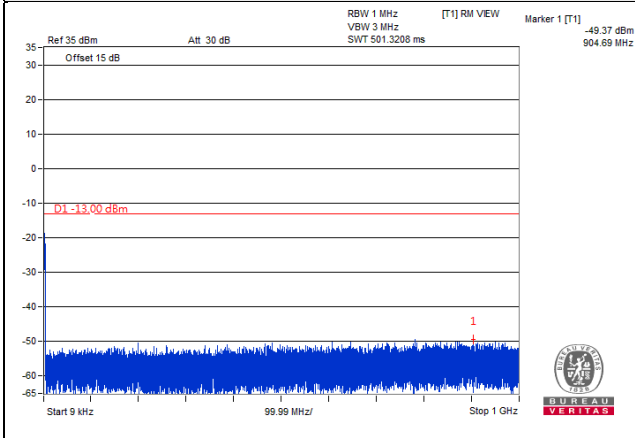




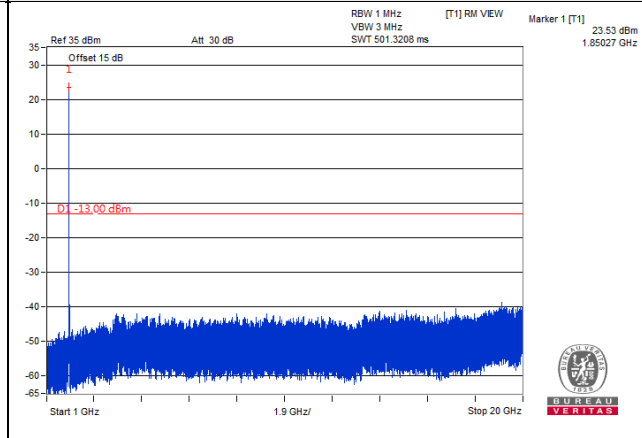
LTE Band 2, Channel Bandwidth 10MHz

Channel 18650 (1855.00MHz)

Frequency Range : 9kHz~1GHz

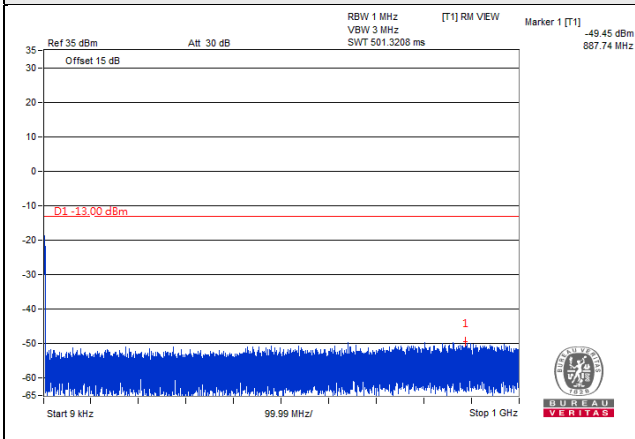


Frequency Range : 1GHz~20GHz

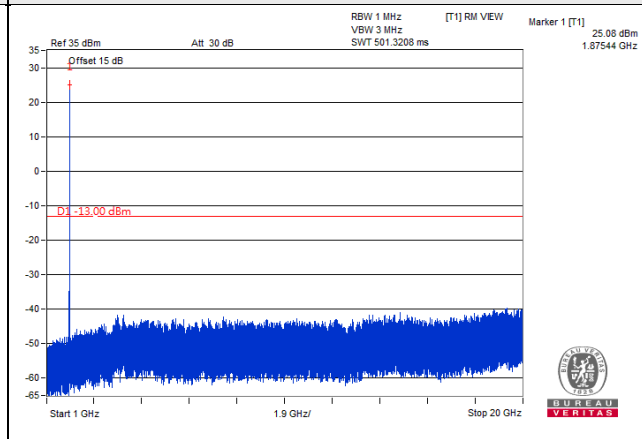


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

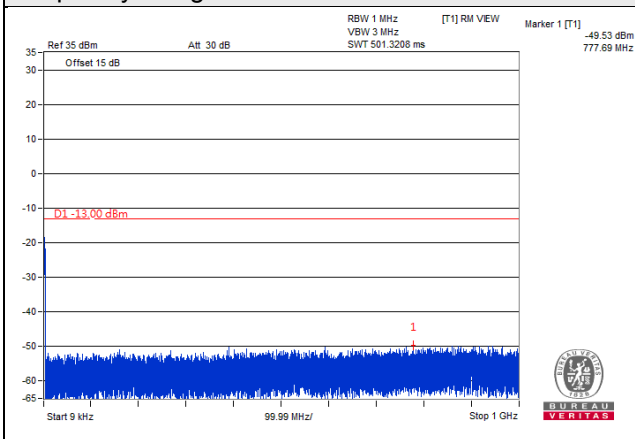


Frequency Range : 1GHz~20GHz

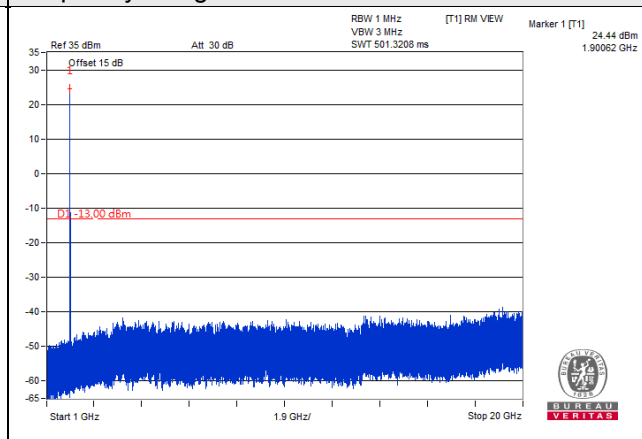


Channel 19150 (1905.00MHz)

Frequency Range : 9kHz~1GHz



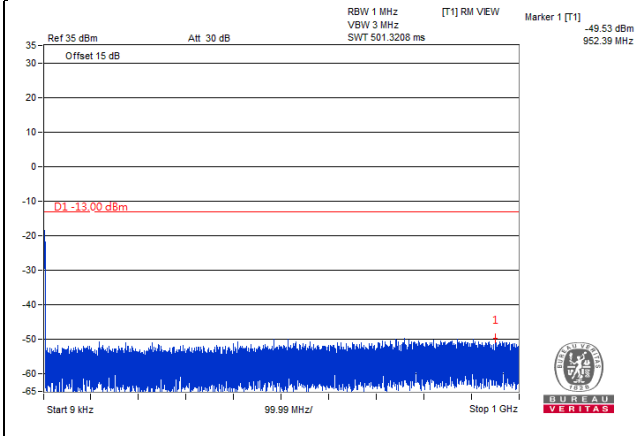
Frequency Range : 1GHz~20GHz



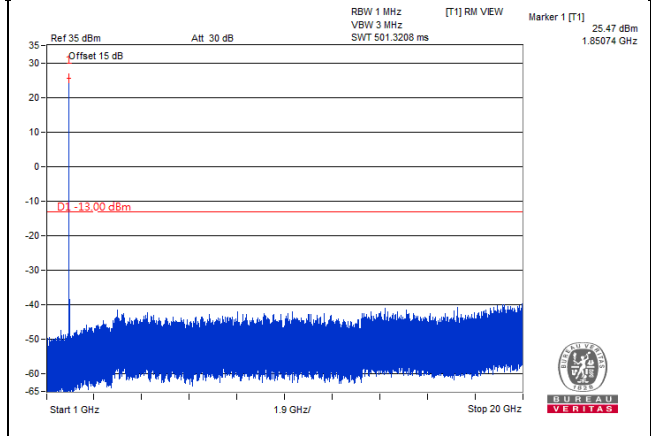
LTE Band 2, Channel Bandwidth 15MHz

Channel 18675 (1857.50MHz)

Frequency Range : 9kHz~1GHz

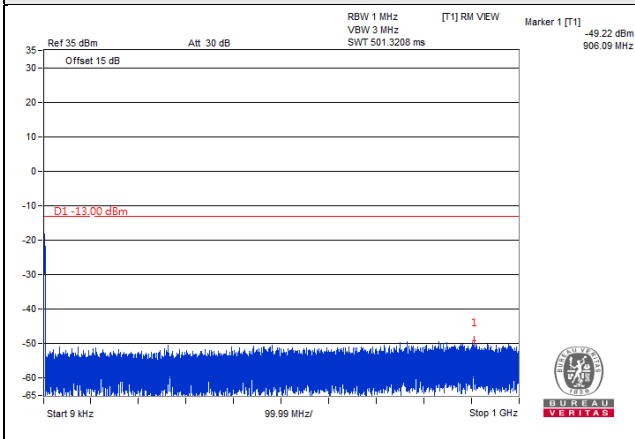


Frequency Range : 1GHz~20GHz

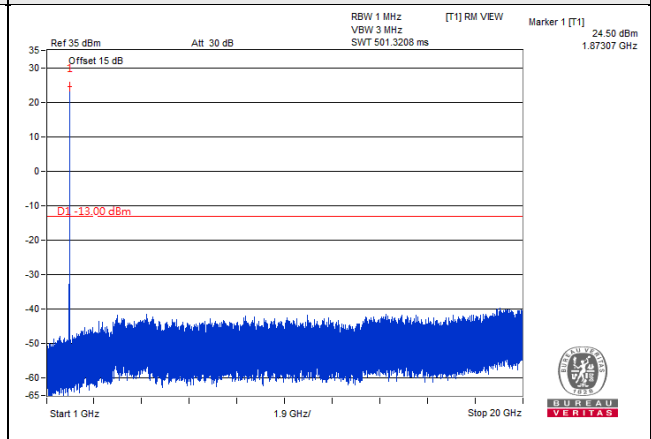


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

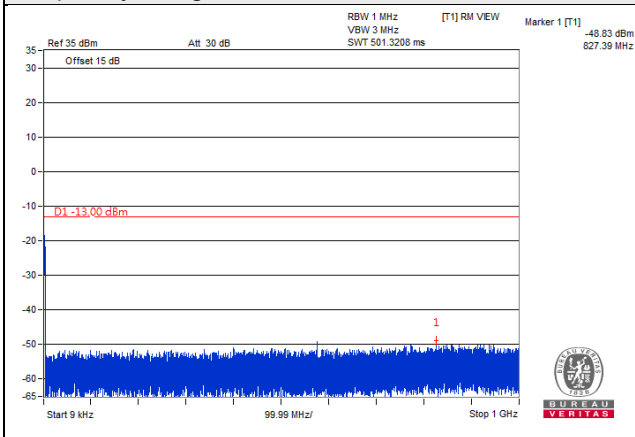


Frequency Range : 1GHz~20GHz

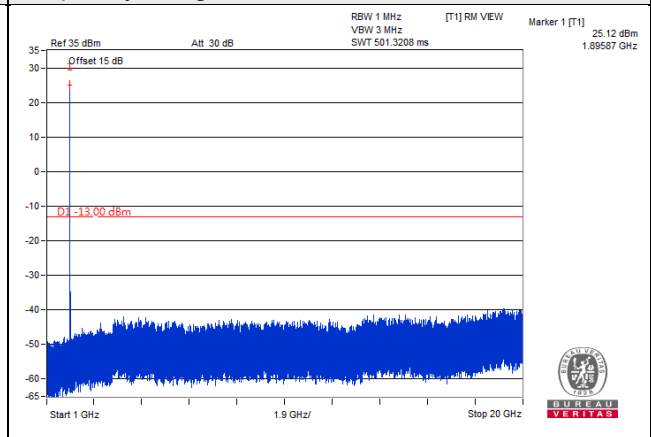


Channel 19125 (1902.50MHz)

Frequency Range : 9kHz~1GHz



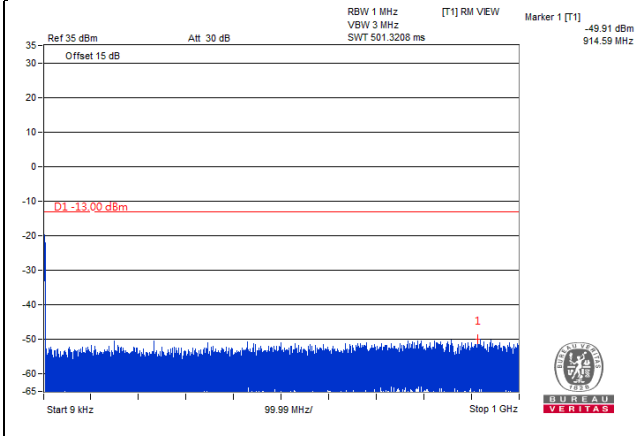
Frequency Range : 1GHz~20GHz



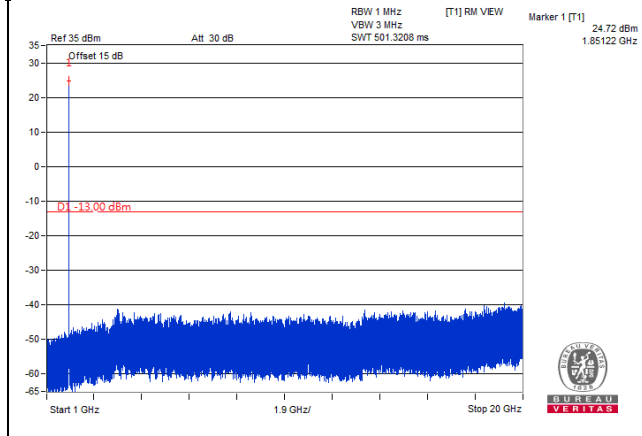
LTE Band 2, Channel Bandwidth 20MHz

Channel 18700 (1860.00MHz)

Frequency Range : 9kHz~1GHz

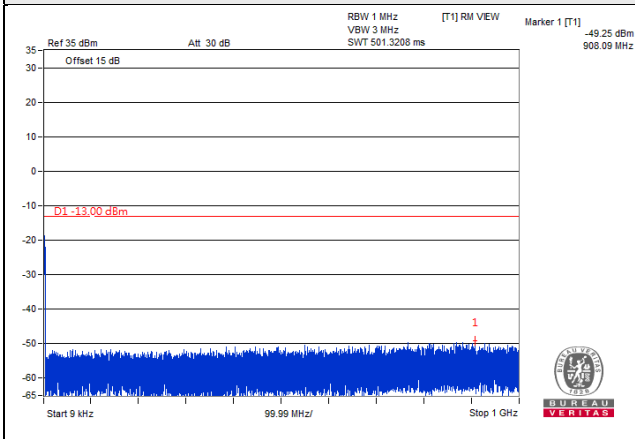


Frequency Range : 1GHz~20GHz

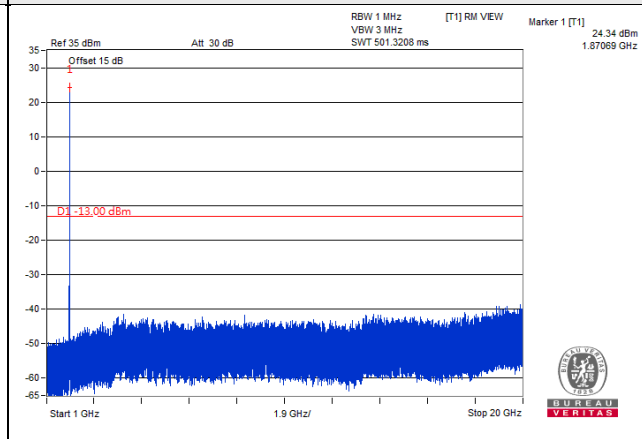


Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

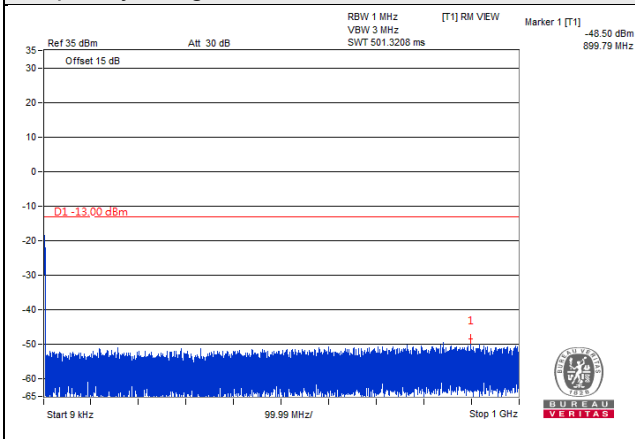


Frequency Range : 1GHz~20GHz

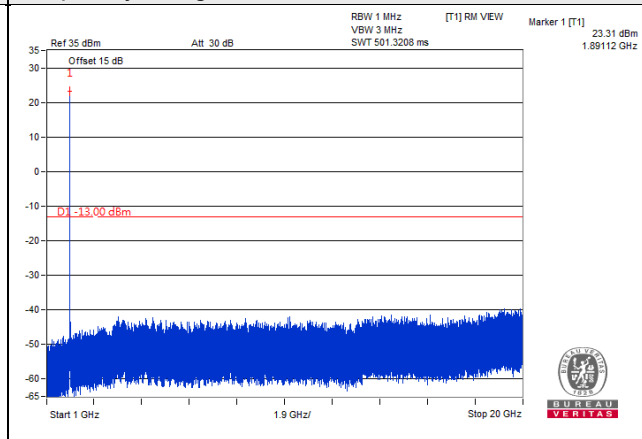


Channel 19100 (1900.00MHz)

Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~20GHz

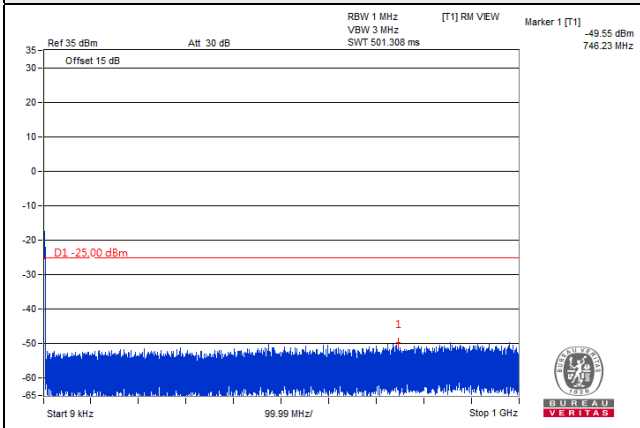


LTE Band 7

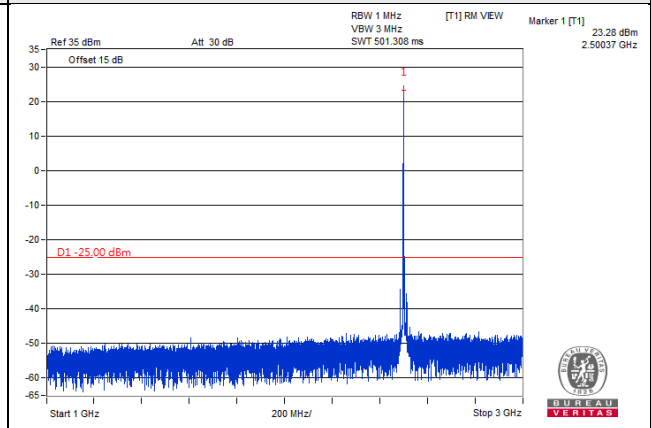
Channel Band width: 5MHz

Channel 20775(2502.5MHz)

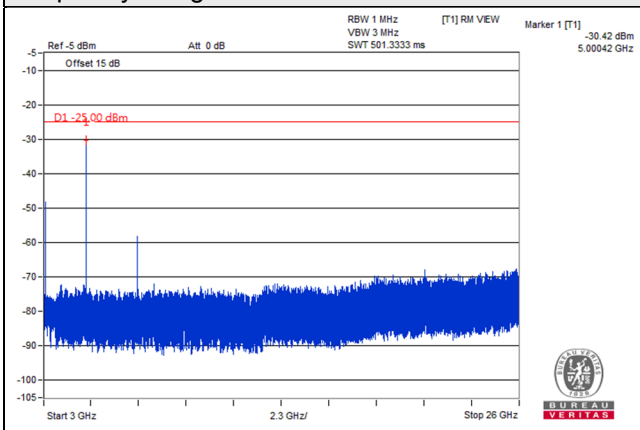
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

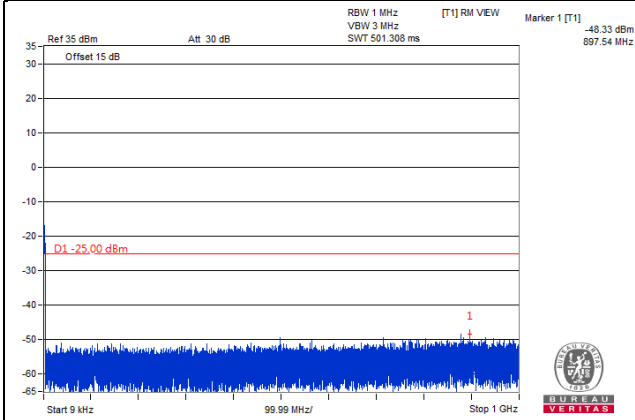


\*The 9kHz signal over the limit is from Spectrum.

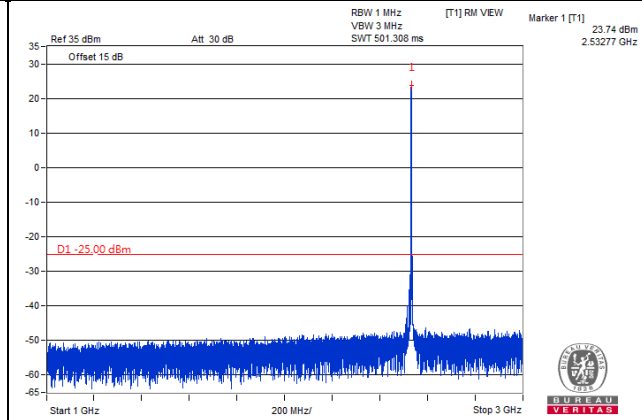
Channel Band width: 5MHz

Channel 21100(2535MHz)

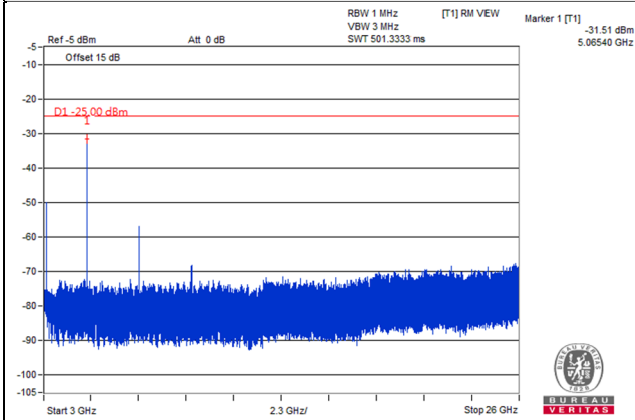
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

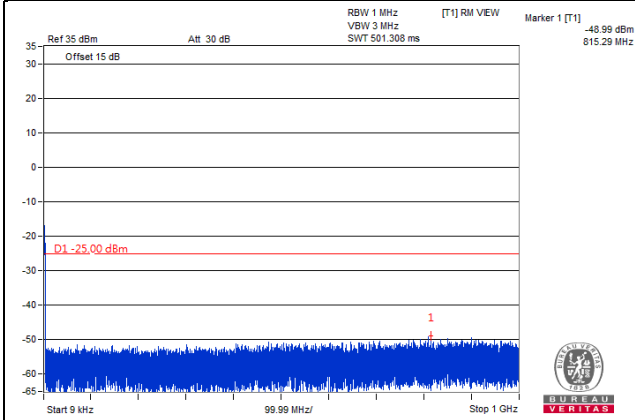


\*The 9kHz signal over the limit is from Spectrum.

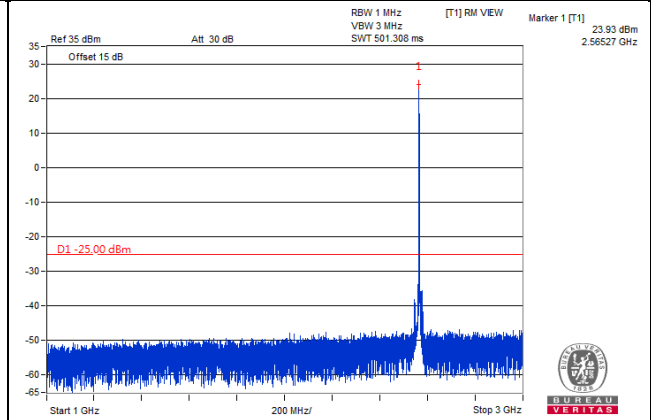
Channel Band width: 5MHz

Channel 21425(2567.5MHz)

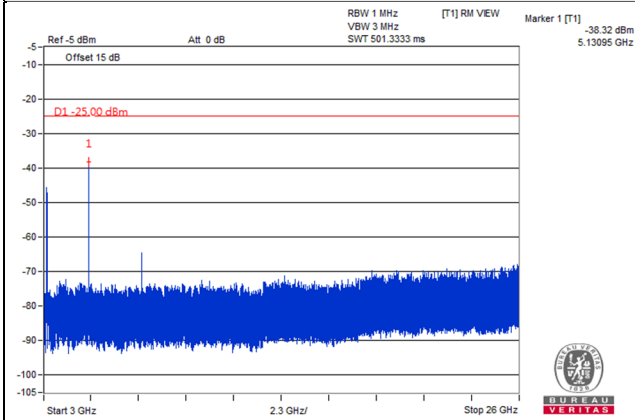
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

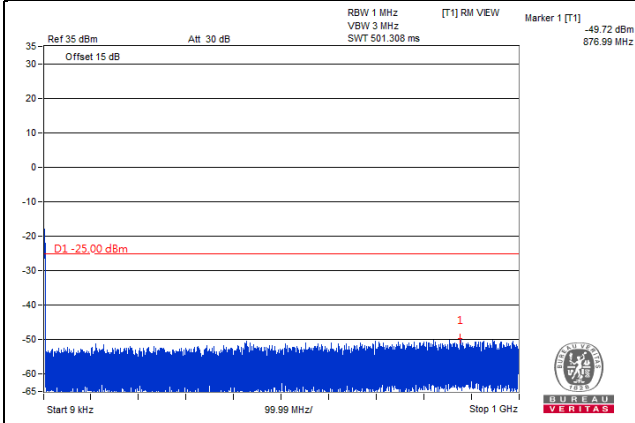


\*The 9kHz signal over the limit is from Spectrum.

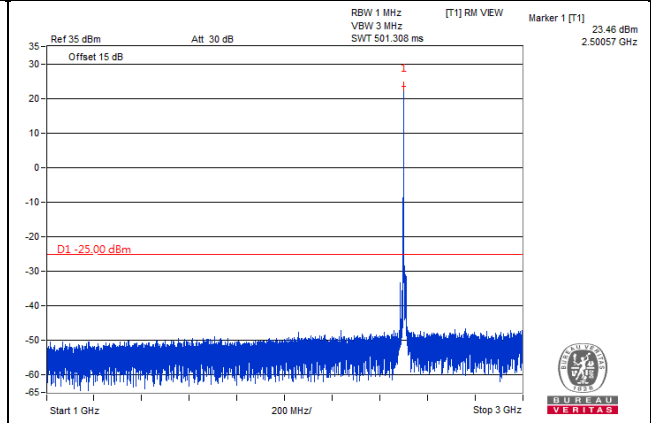
Channel Band width: 10MHz

Channel 20800(2505MHz)

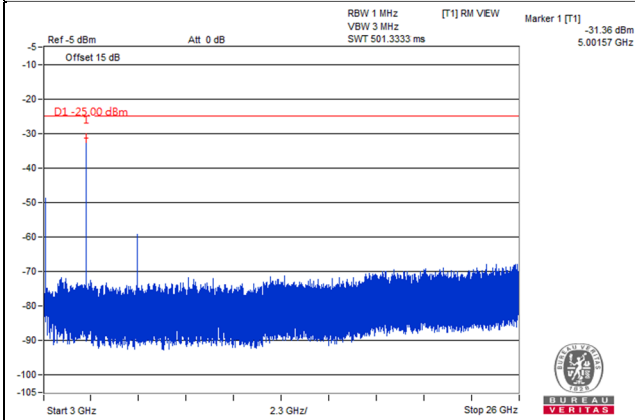
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

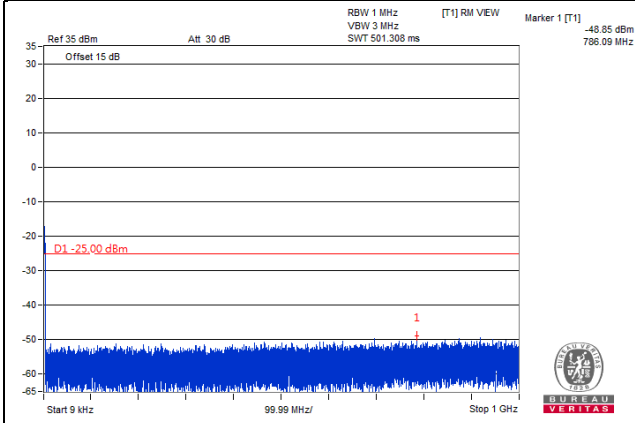


\*The 9kHz signal over the limit is from Spectrum.

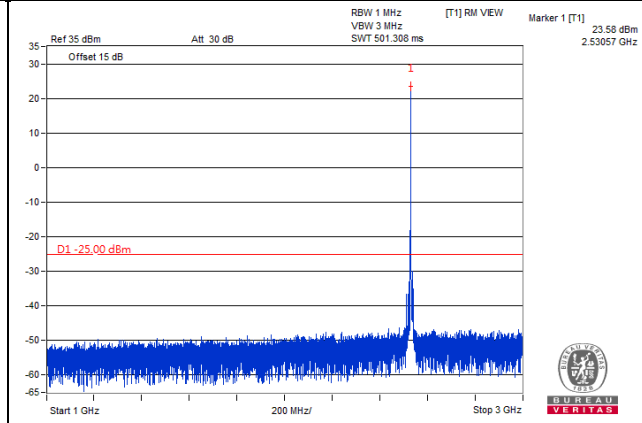
Channel Band width: 10MHz

Channel 21100(2535MHz)

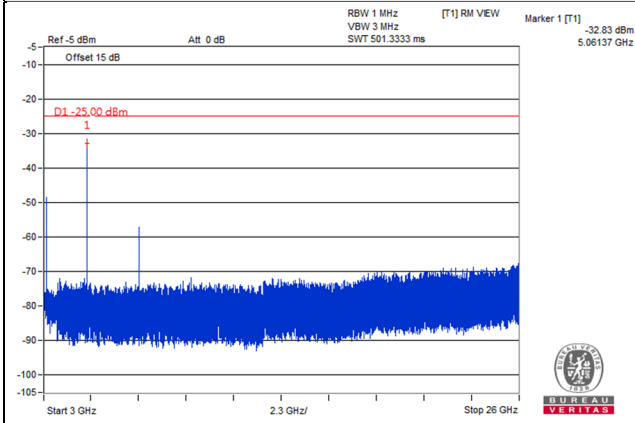
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz



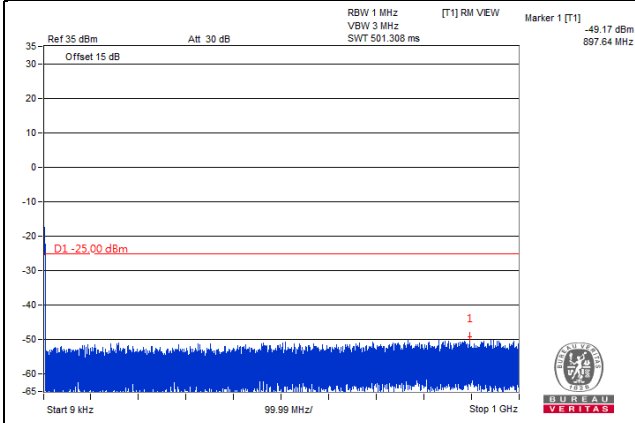
\*The 9kHz signal over the limit is from Spectrum.



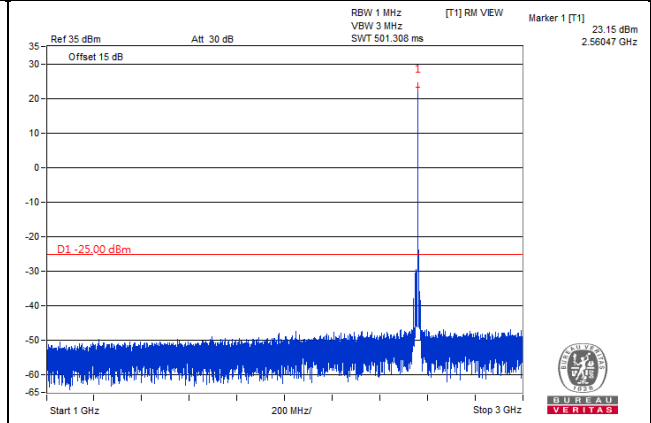
Channel Band width: 10MHz

Channel 21400(2565MHz)

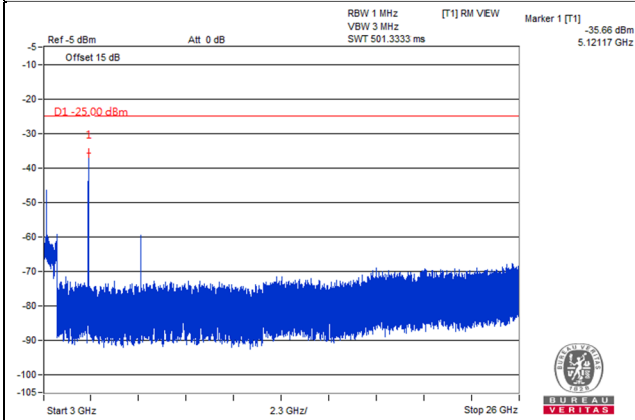
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

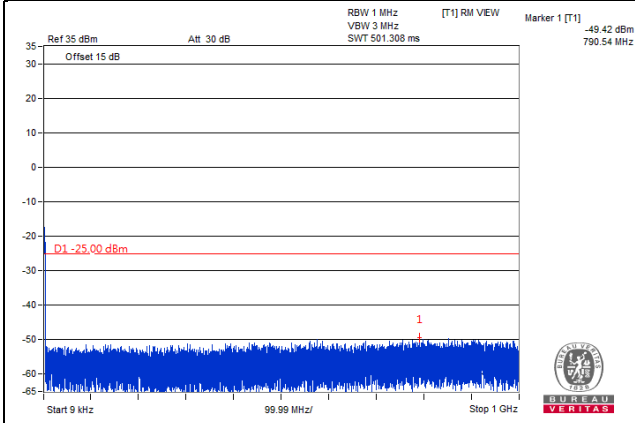


\*The 9kHz signal over the limit is from Spectrum.

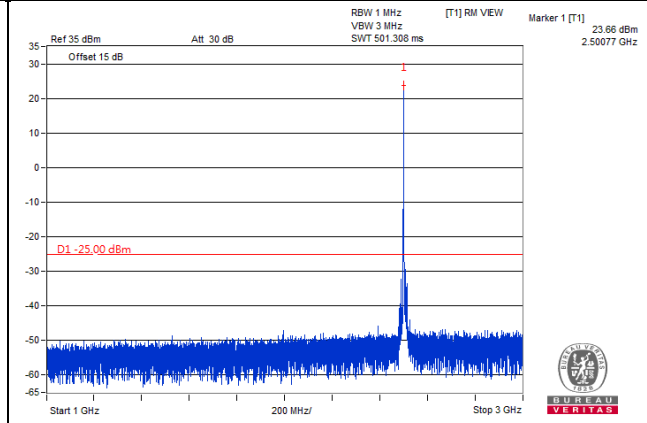
Channel Band width: 15MHz

Channel 20825(2507.5MHz)

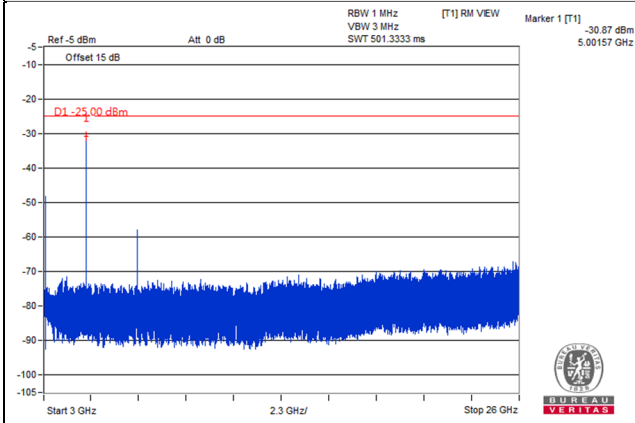
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

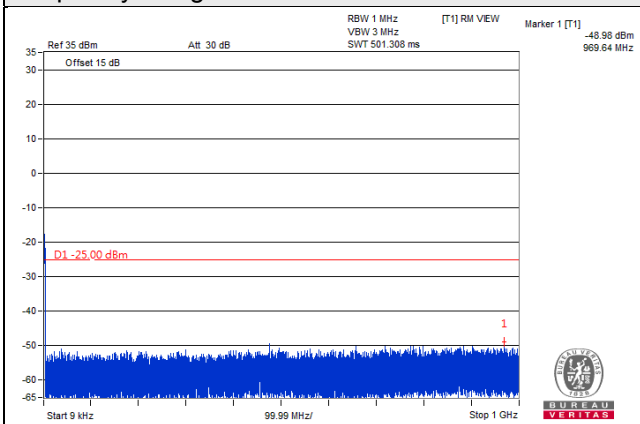


\*The 9kHz signal over the limit is from Spectrum.

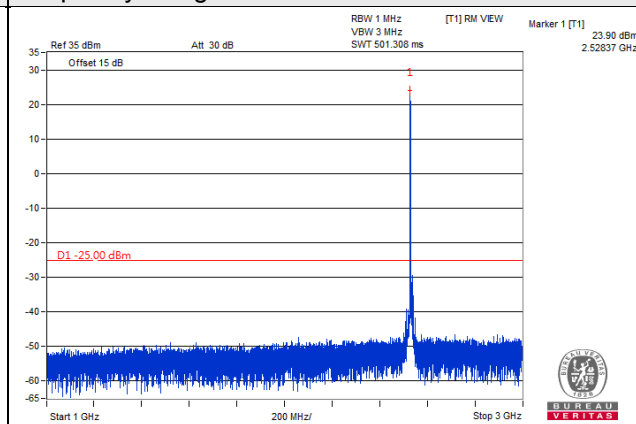
Channel Band width: 15MHz

Channel 21100(2535MHz)

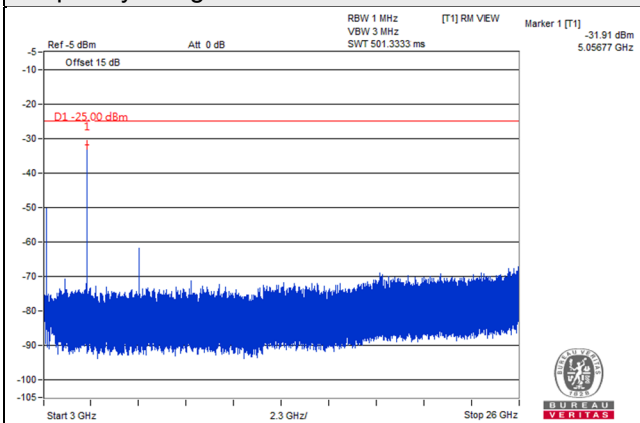
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

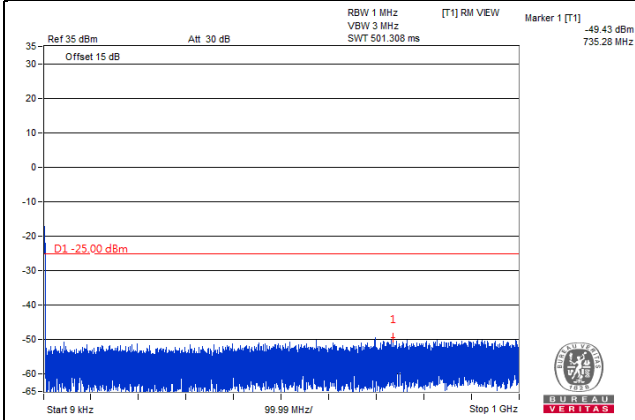


\*The 9kHz signal over the limit is from Spectrum.

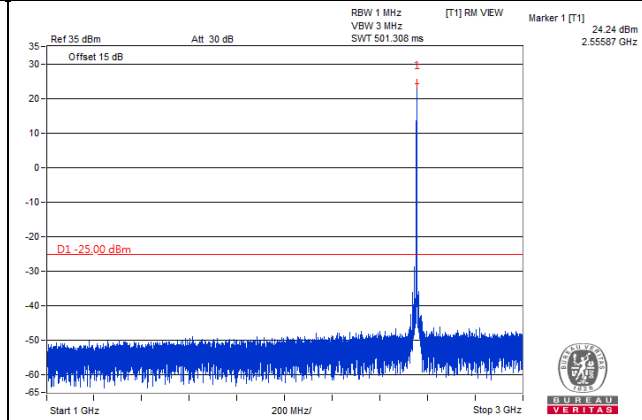
Channel Band width: 15MHz

Channel 21375(2562.5MHz)

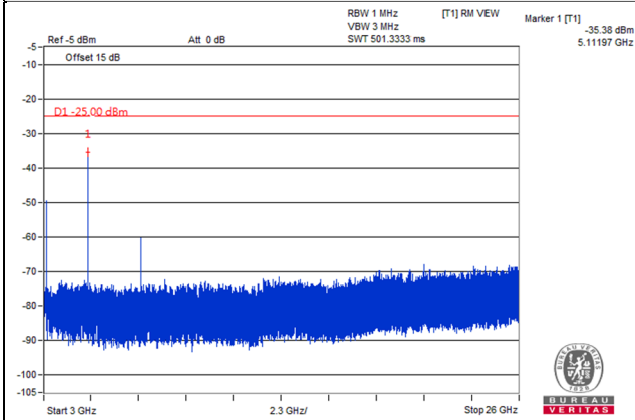
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

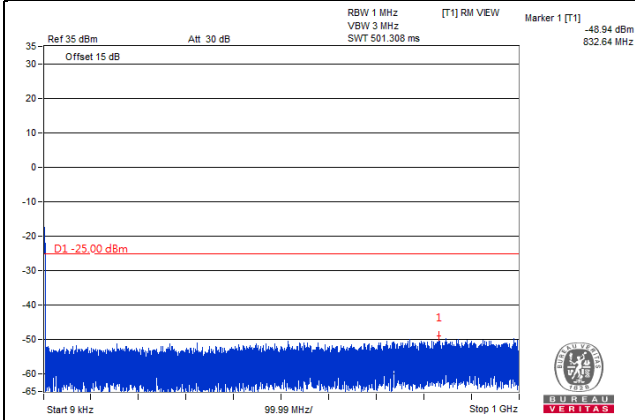


\*The 9kHz signal over the limit is from Spectrum.

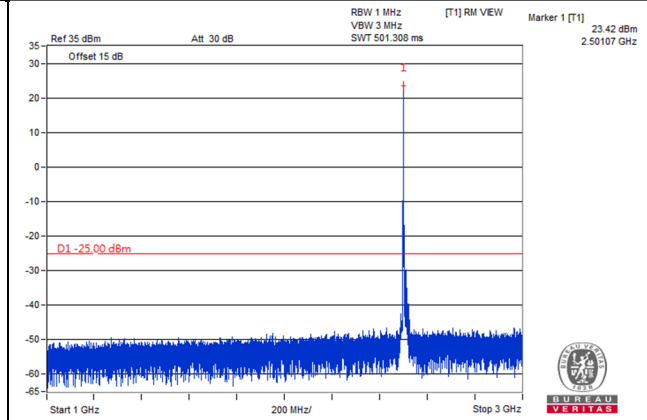
Channel Band width: 20MHz

Channel 20850(2510MHz)

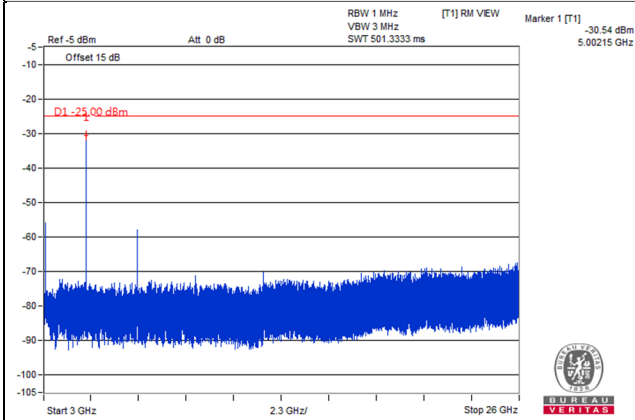
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

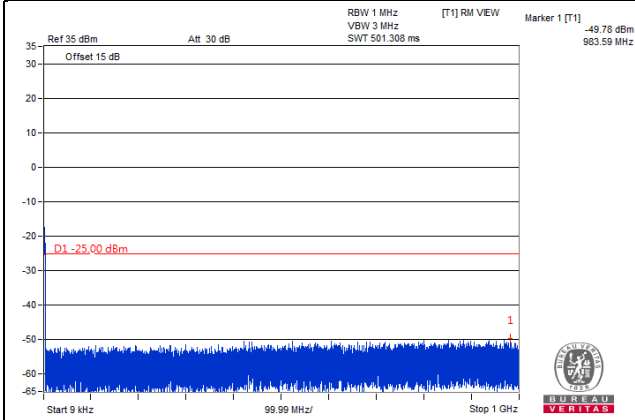


\*The 9kHz signal over the limit is from Spectrum.

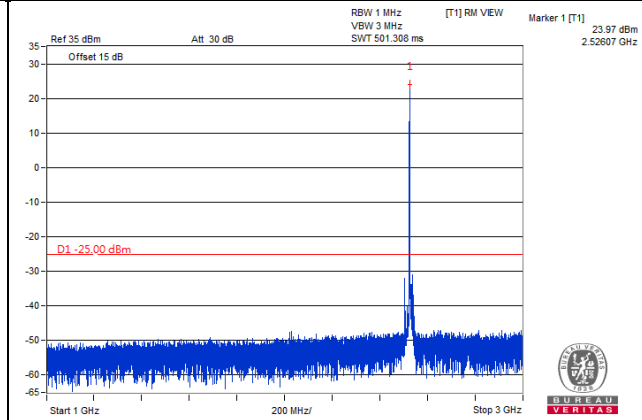
Channel Band width: 20MHz

Channel 21100(2535MHz)

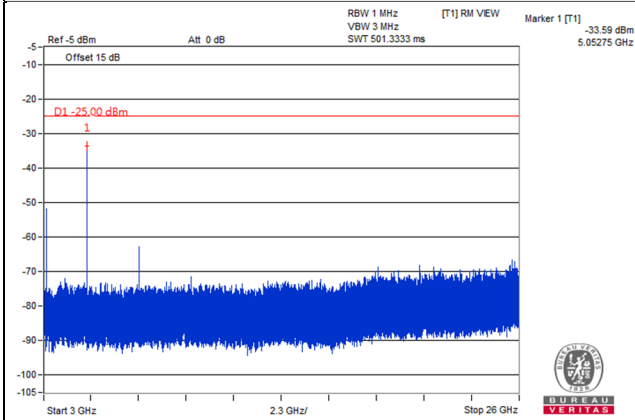
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz

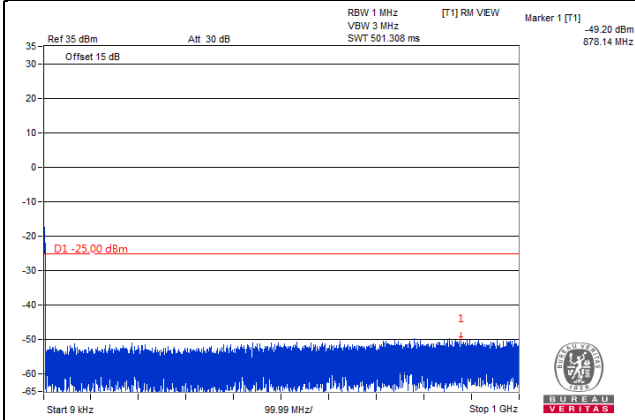


\*The 9kHz signal over the limit is from Spectrum.

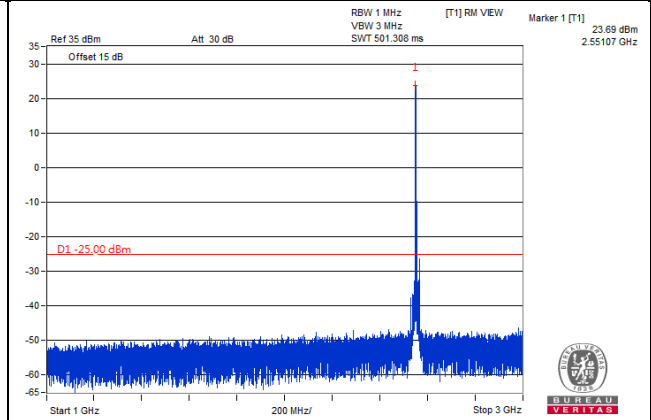
Channel Band width: 20MHz

Channel 21350(2560MHz)

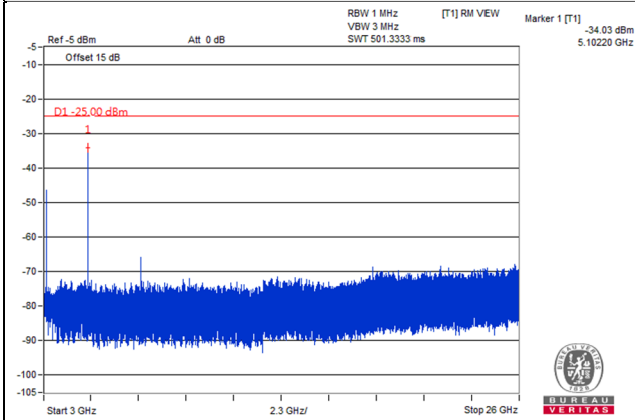
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~3GHz



Frequency Range : 3GHz~26GHz



\*The 9kHz signal over the limit is from Spectrum.