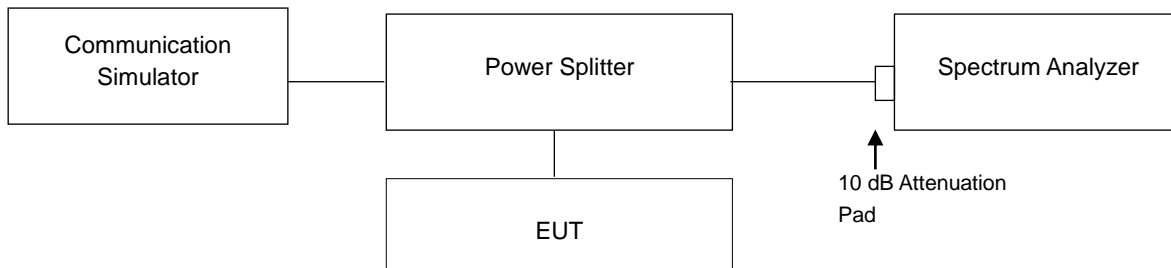


## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

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.

### 4.6.2 Test Setup

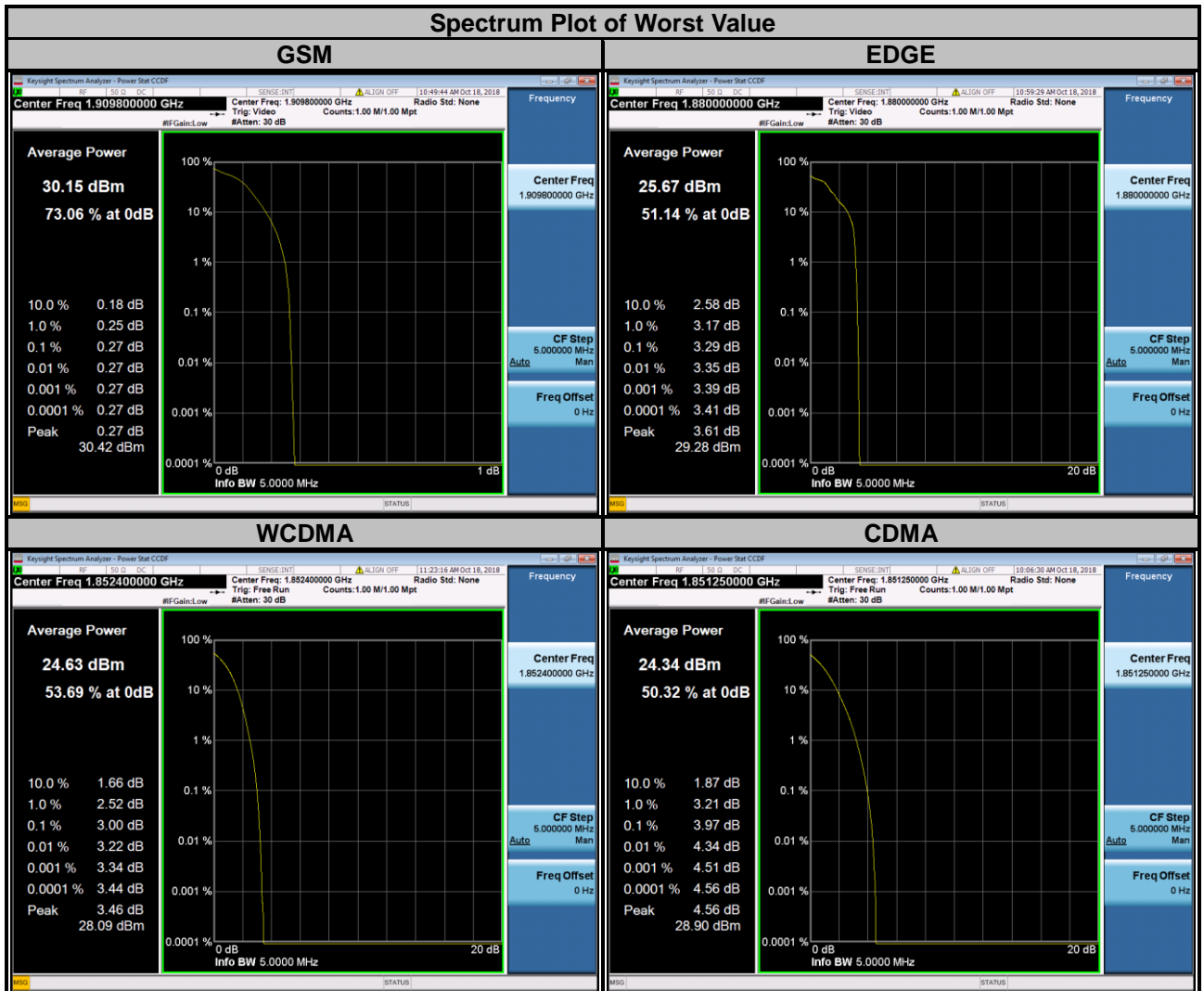


### 4.6.3 Test Procedures

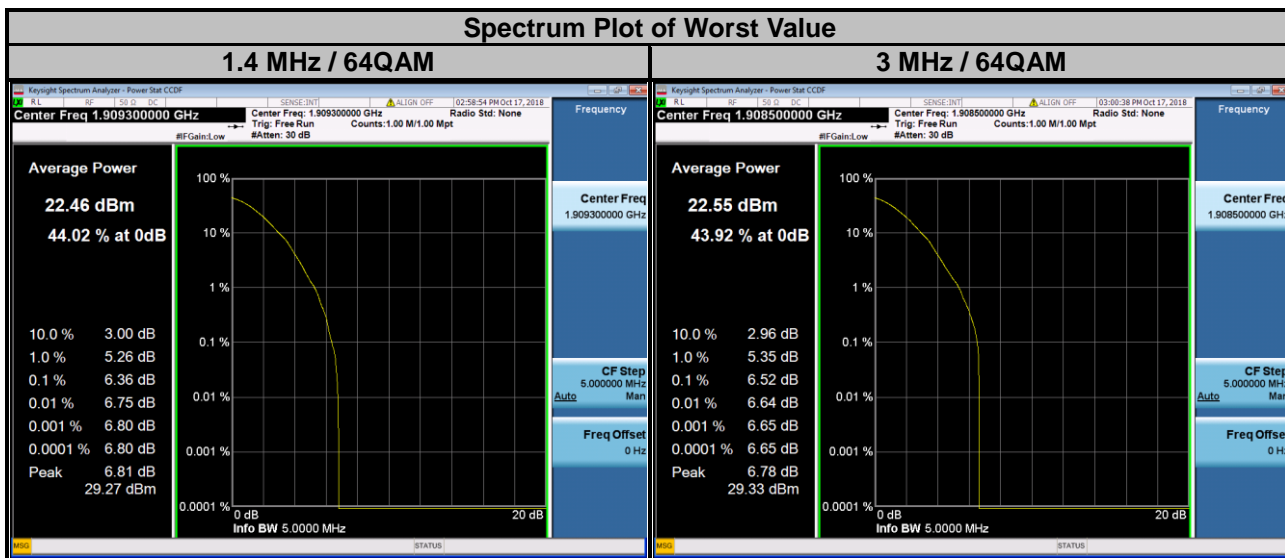
1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

#### 4.6.4 Test Results

Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		GSM	EDGE			
512	1850.2	0.21	3.21	9262	1852.4	3.00
661	1880.0	0.24	3.29	9400	1880.0	3.00
810	1909.8	0.27	3.27	9538	1907.6	2.89
Channel	Frequency (MHz)	Peak to Average Ratio (dB)				
		CDMA				
25	1851.25	3.97				
600	1880.00	3.94				
1175	1908.75	3.30				



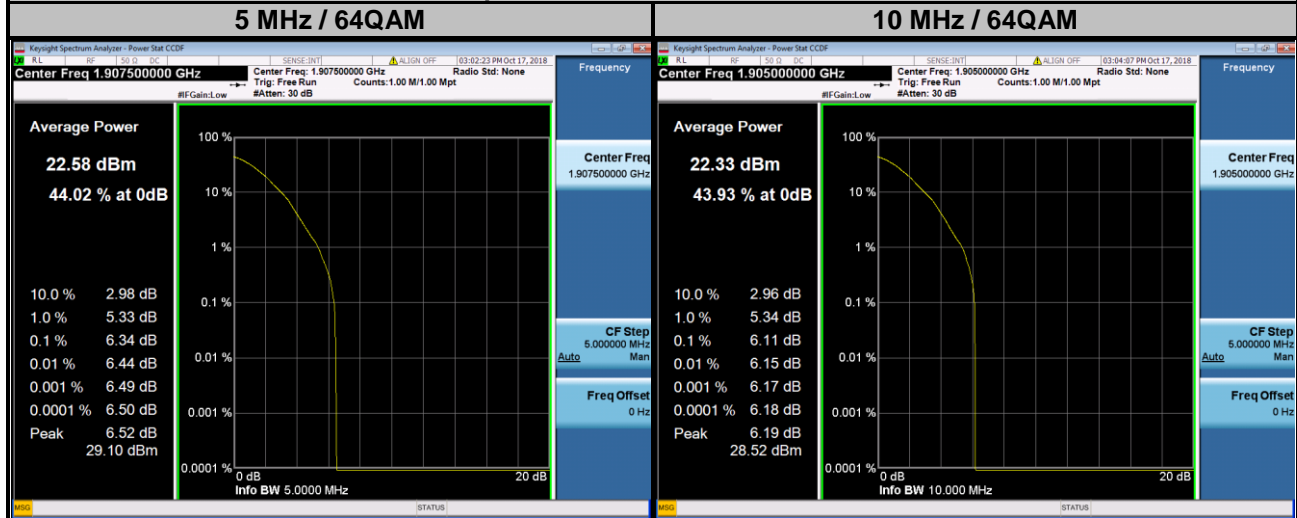
LTE Band 2									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18607	1850.7	3.79	5.21	6.22	18615	1851.5	3.56	5.17	6.19
18900	1880.0	3.79	4.89	5.91	18900	1880.0	3.56	4.65	5.73
19193	1909.3	3.76	5.46	6.36	19185	1908.5	3.57	5.23	6.52



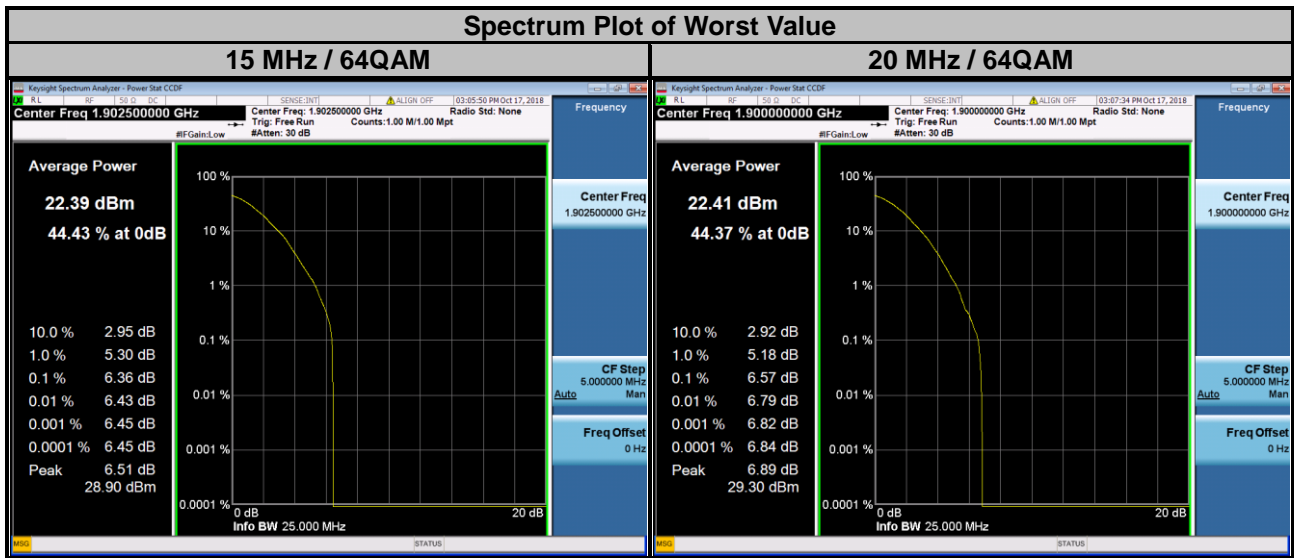
### LTE Band 2

Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18625	1852.5	3.57	5.18	6.19	18650	1855.0	3.52	5.11	6.09
18900	1880.0	3.58	4.64	5.66	18900	1880.0	3.48	4.22	5.26
19175	1907.5	3.57	5.21	6.34	19150	1905.0	3.50	5.02	6.11

### Spectrum Plot of Worst Value



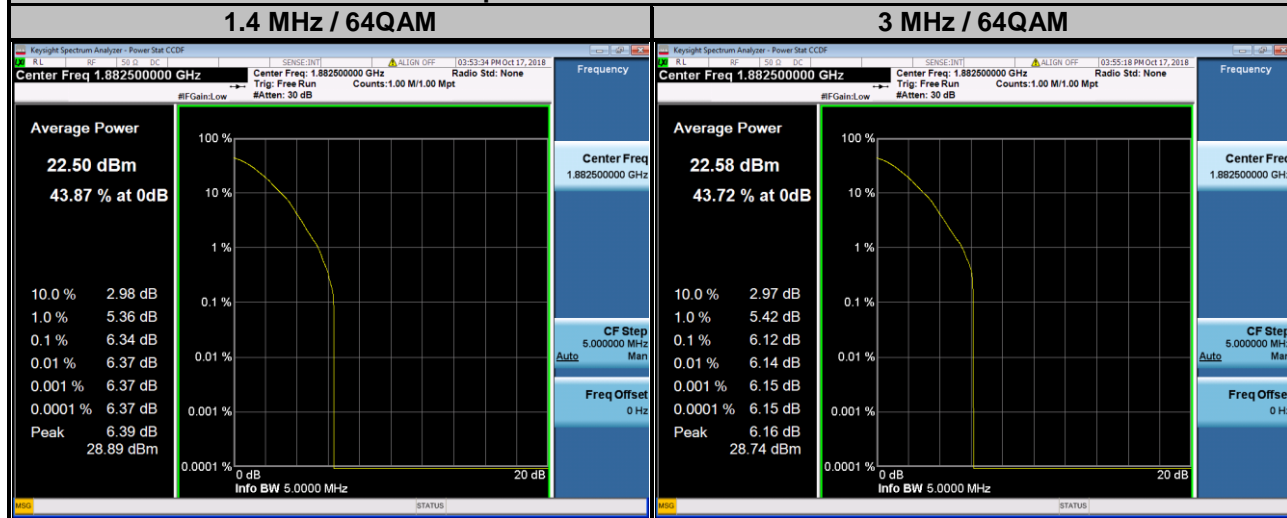
LTE Band 2									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18675	1857.5	3.50	5.11	6.24	18700	1860.0	3.45	5.05	6.18
18900	1880.0	3.45	4.28	5.29	18900	1880.0	3.42	4.31	5.36
19125	1902.5	3.48	5.10	6.36	19100	1900.0	3.42	5.17	6.57



### LTE Band 25

Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26047	1850.7	3.77	4.93	6.02	26055	1851.5	3.56	4.92	6.04
26365	1882.5	3.79	5.24	6.34	26365	1882.5	3.56	5.07	6.12
26683	1914.3	3.50	4.31	5.49	26675	1913.5	3.52	4.65	5.99

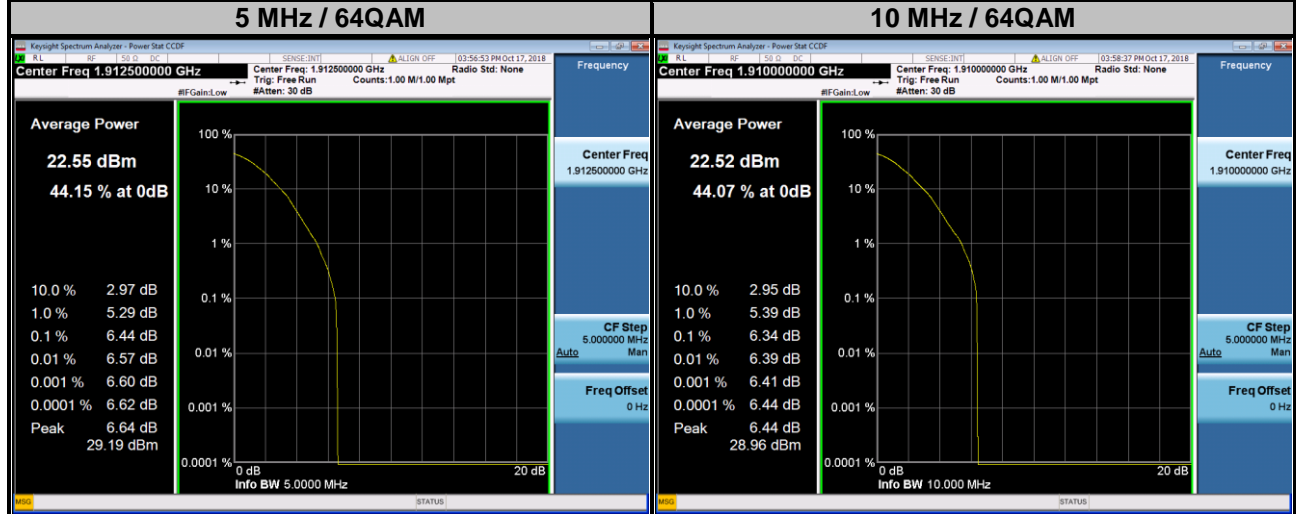
### Spectrum Plot of Worst Value



### LTE Band 25

Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26065	1852.5	3.57	4.83	6.03	26090	1855.0	3.51	4.87	5.98
26365	1882.5	3.58	4.89	5.94	26365	1882.5	3.51	4.39	5.48
26665	1912.5	3.53	5.17	6.44	26640	1910.0	3.48	5.18	6.34

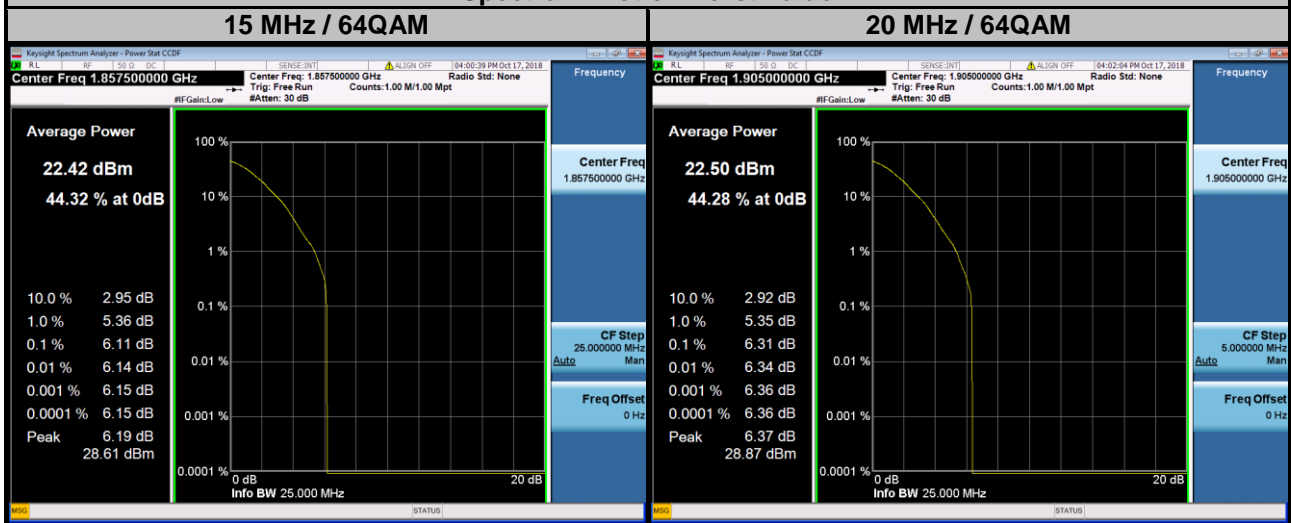
### Spectrum Plot of Worst Value



### LTE Band 25

Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26115	1857.5	3.49	4.93	6.11	26140	1860.0	3.46	5.01	6.11
26365	1882.5	3.42	4.24	5.27	26365	1882.5	3.27	4.05	5.05
26615	1907.5	3.48	4.71	5.86	26590	1905.0	3.45	5.07	6.31

### Spectrum Plot of Worst Value



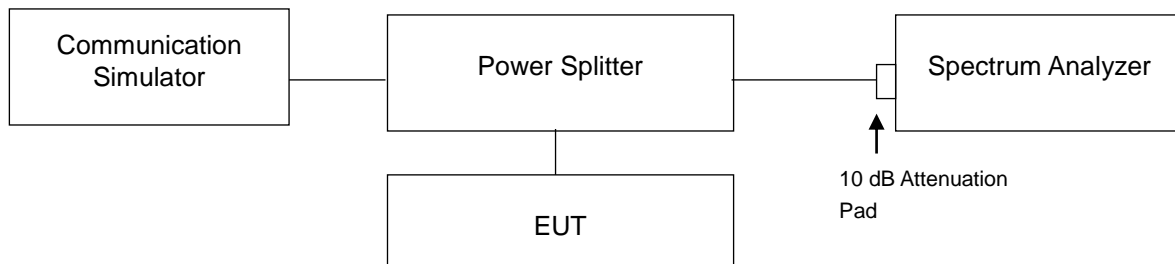


## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

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 dBm.

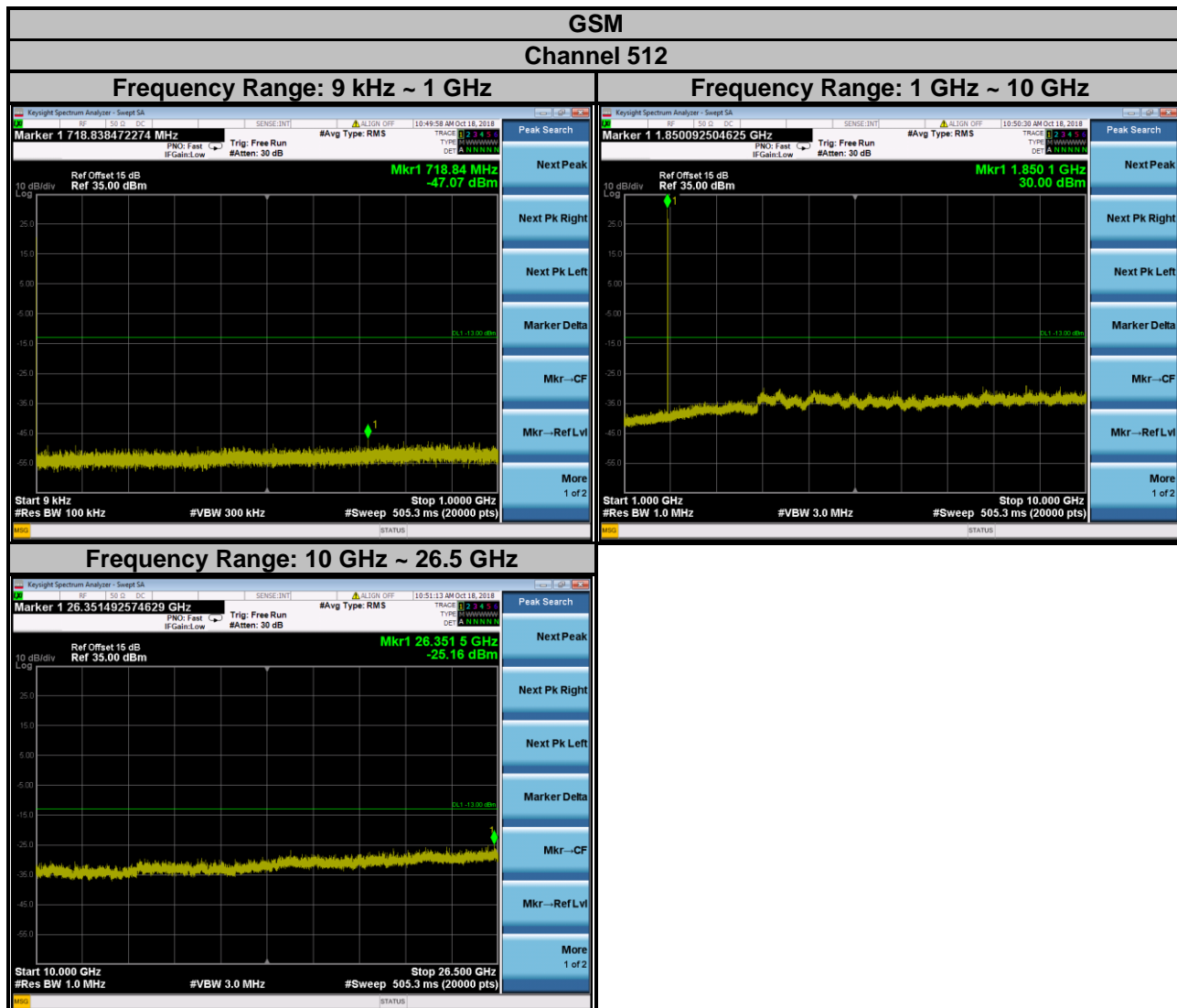
### 4.7.2 Test Setup



### 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 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz is used for conducted emission measurement.
- Measuring frequency range is from 1 GHz to 26.5 GHz / 27 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

### 4.7.4 Test Results

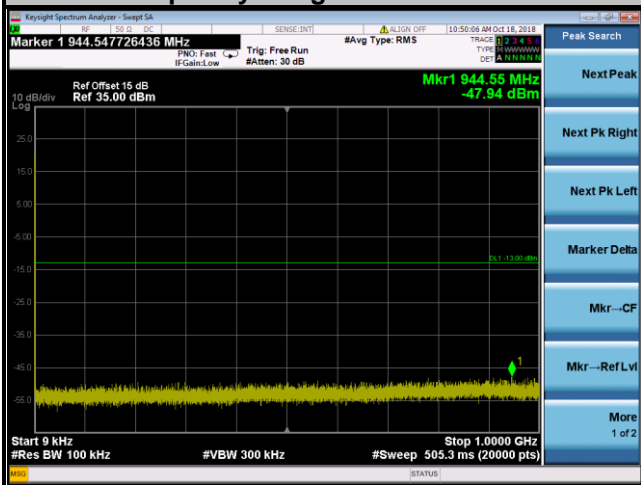


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

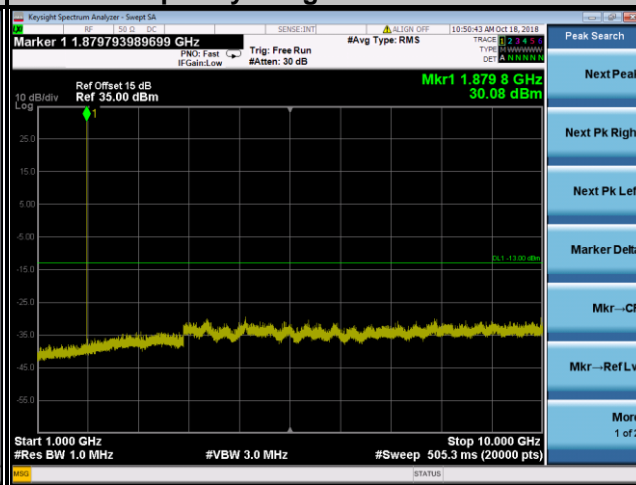
### GSM

#### Channel 661

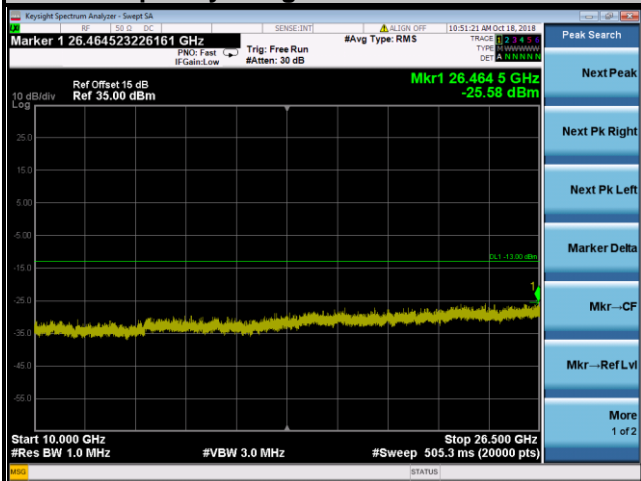
#### Frequency Range: 9 kHz ~ 1 GHz



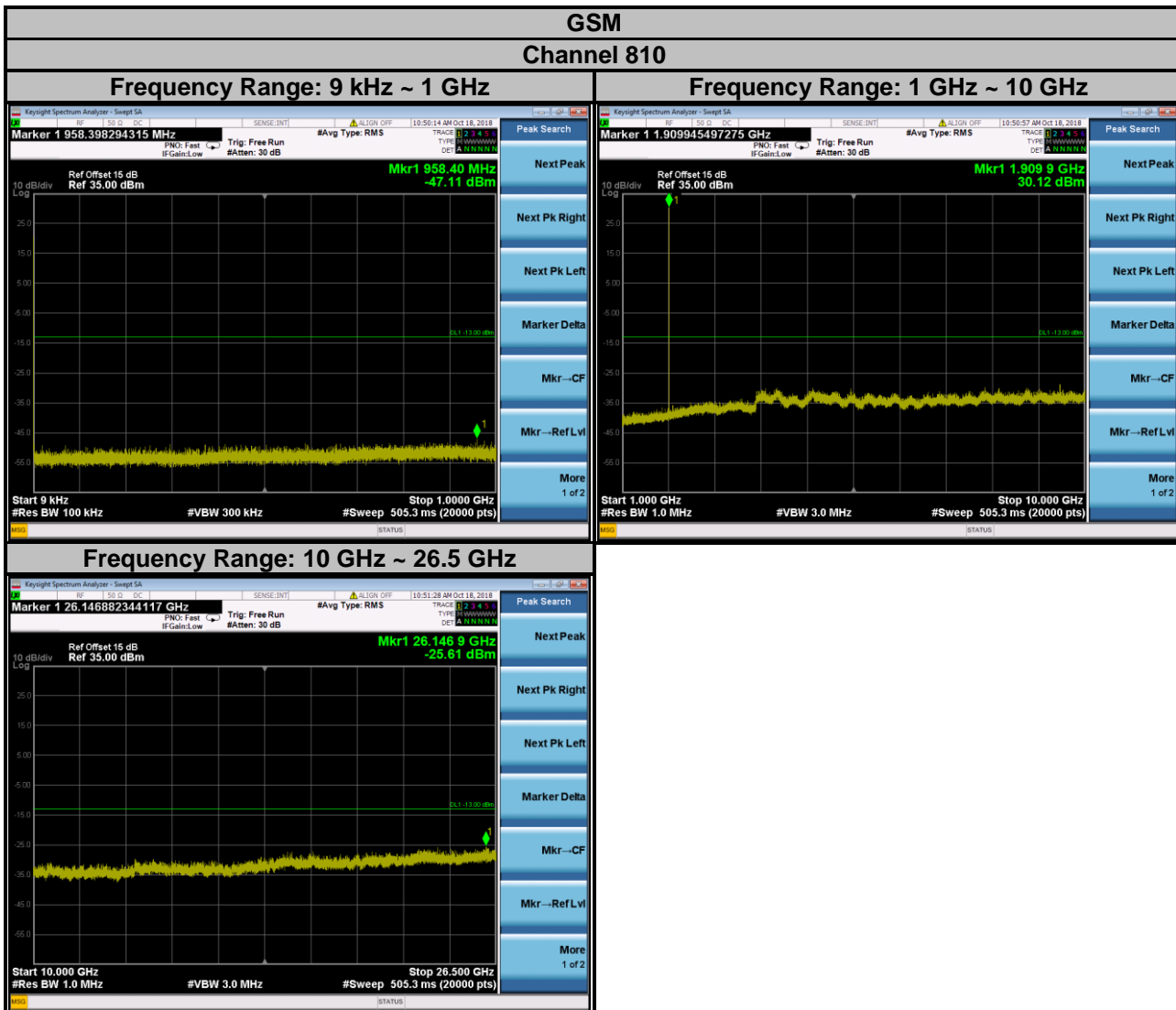
#### Frequency Range: 1 GHz ~ 10 GHz



#### Frequency Range: 10 GHz ~ 26.5 GHz



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

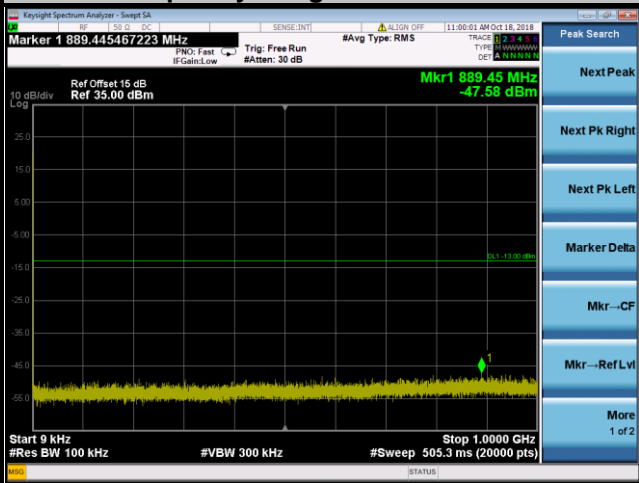


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

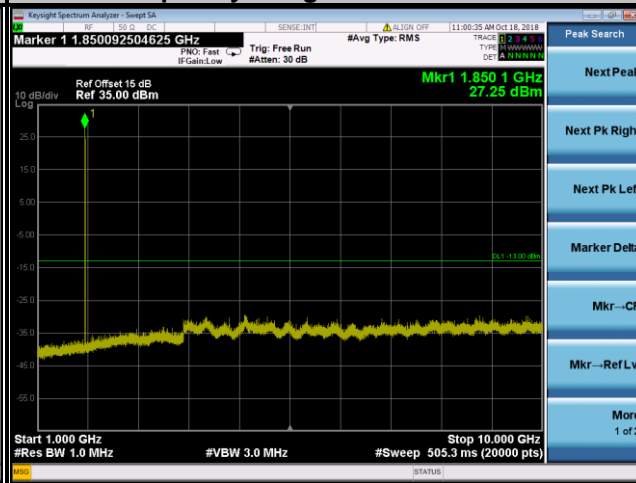
### EDGE

### Channel 512

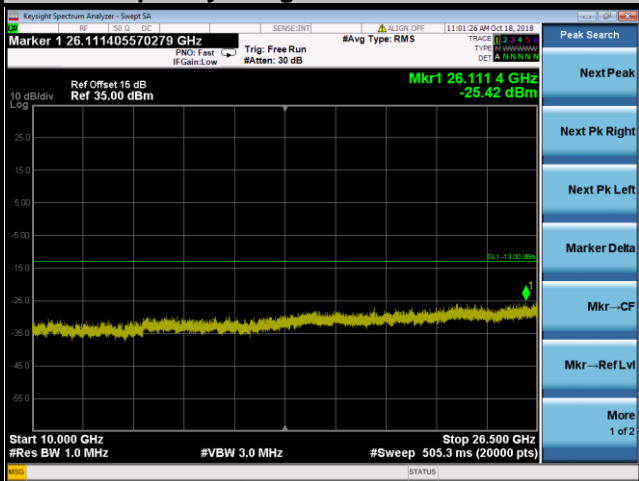
#### Frequency Range: 9 kHz ~ 1 GHz



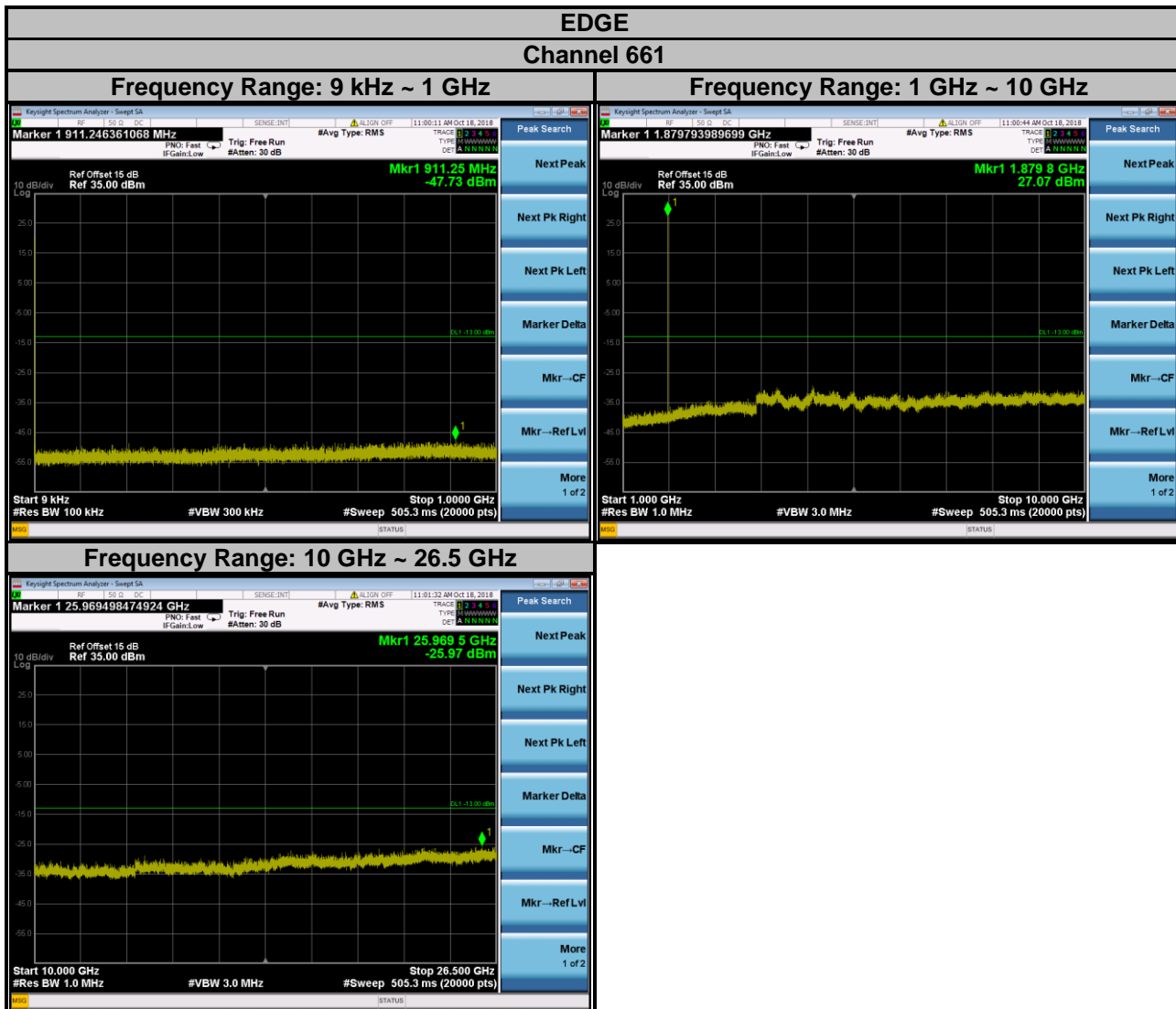
#### Frequency Range: 1 GHz ~ 10 GHz



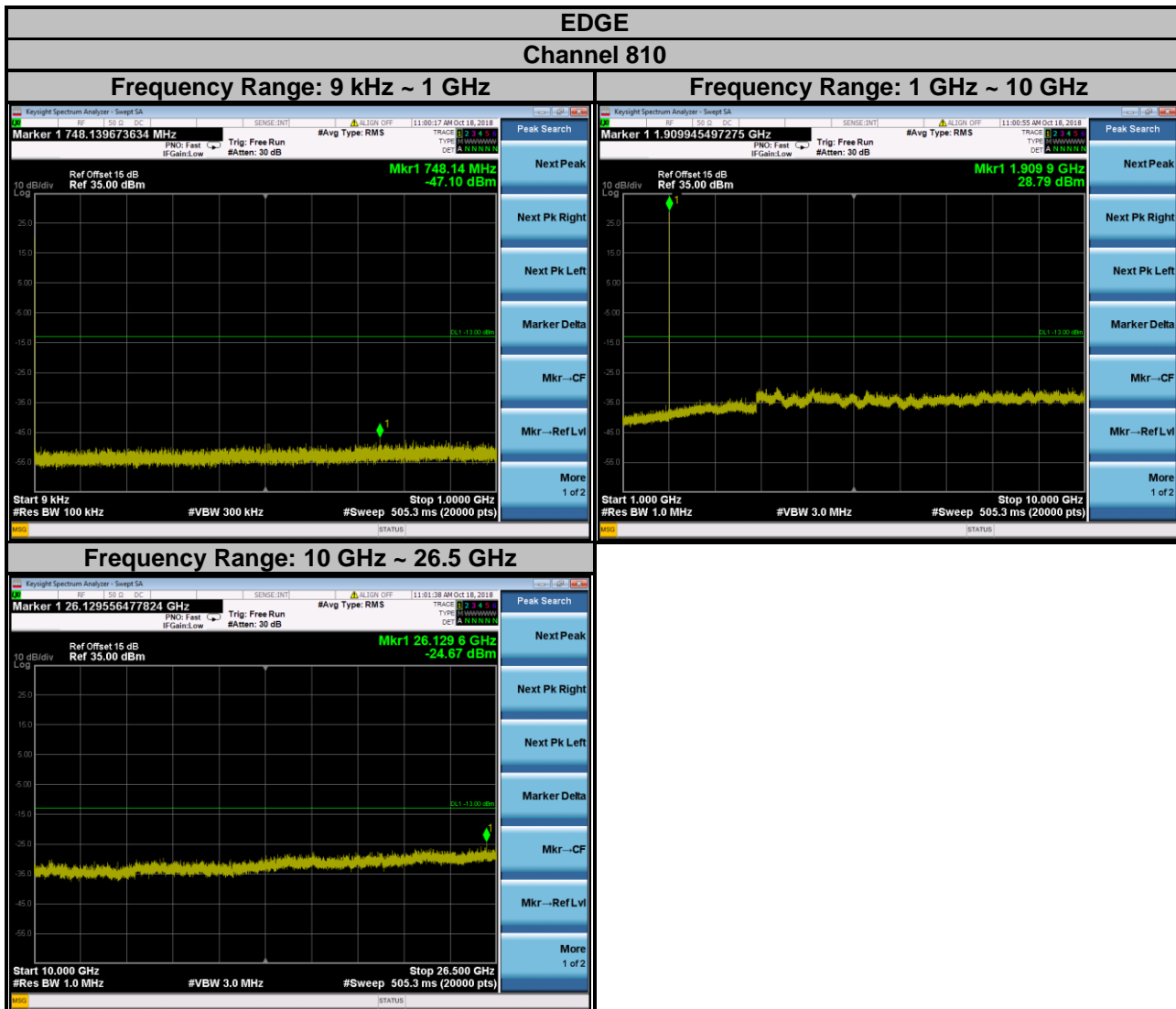
#### Frequency Range: 10 GHz ~ 26.5 GHz



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



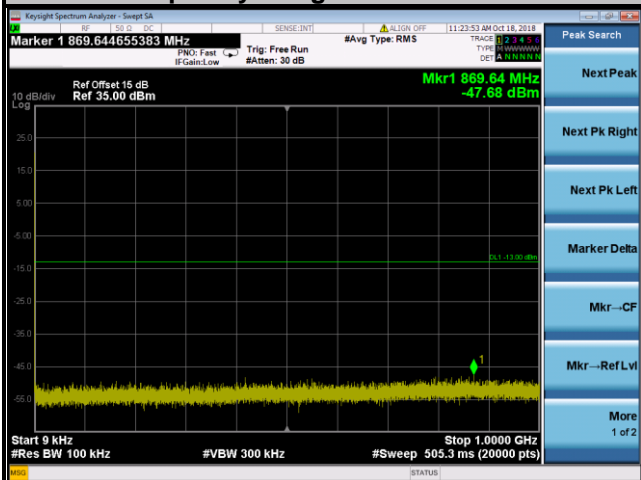
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



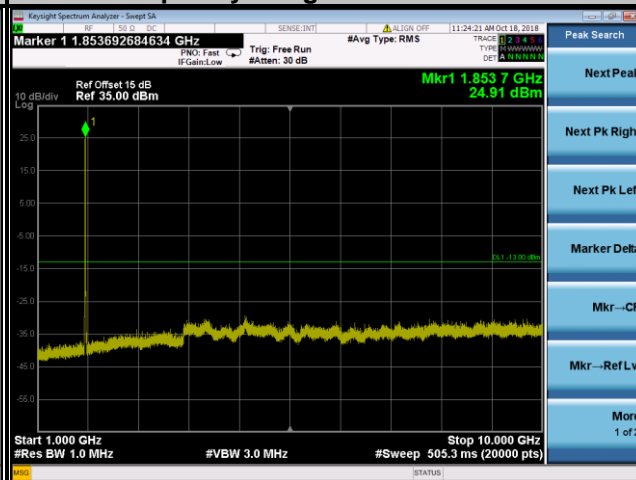
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## WCDMA Channel 9262

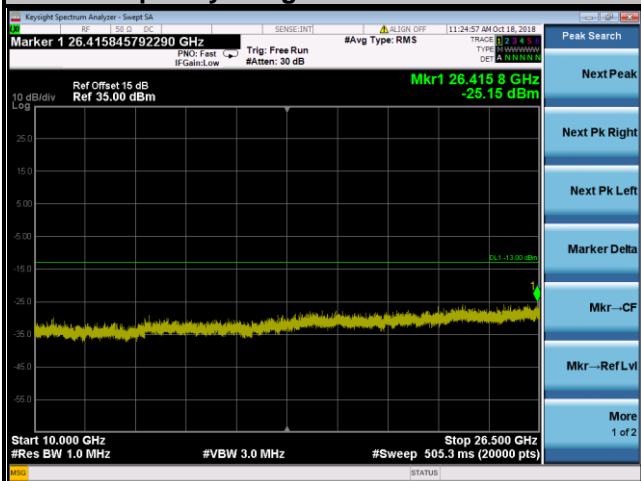
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



Frequency Range: 10 GHz ~ 26.5 GHz

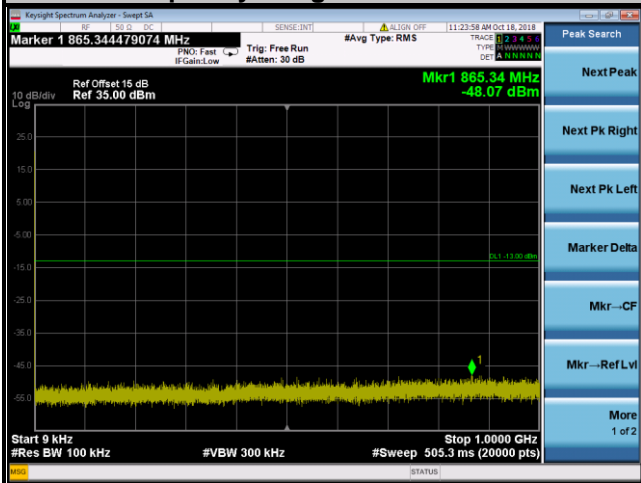


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

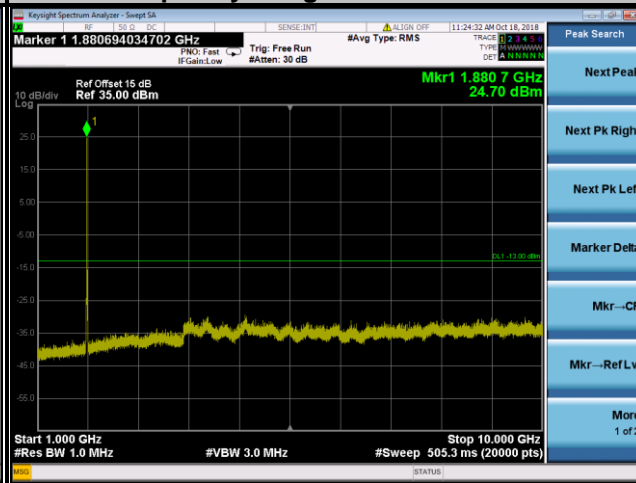


### WCDMA Channel 9400

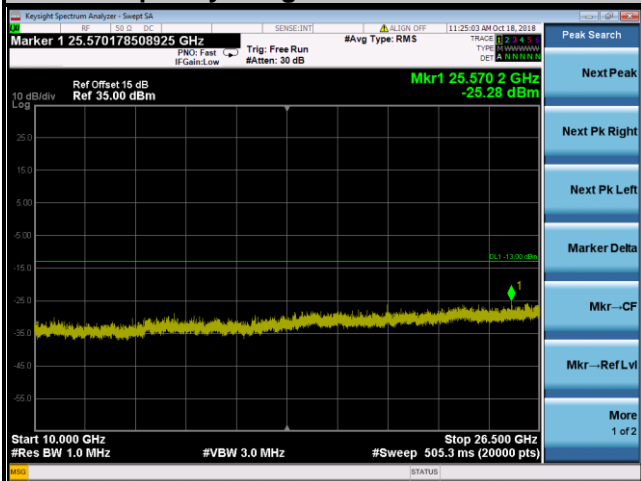
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



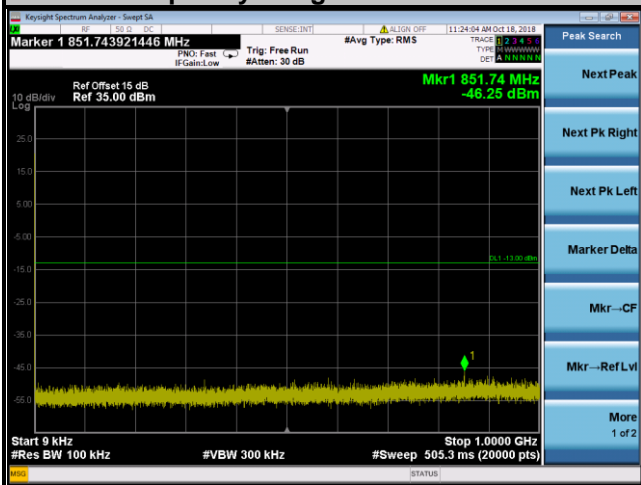
**Frequency Range: 10 GHz ~ 26.5 GHz**



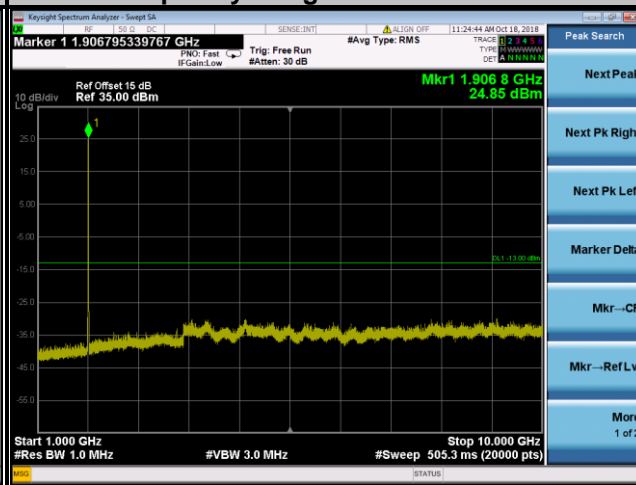
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## WCDMA Channel 9538

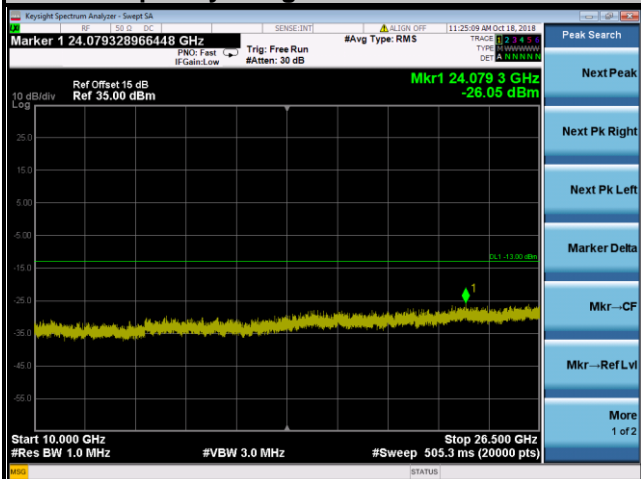
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



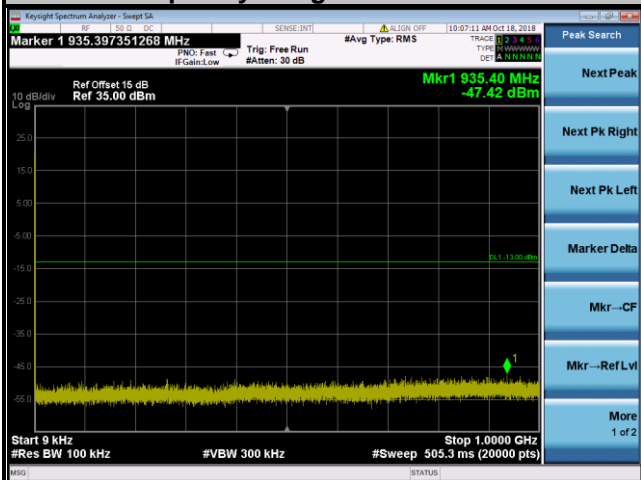
**Frequency Range: 10 GHz ~ 26.5 GHz**



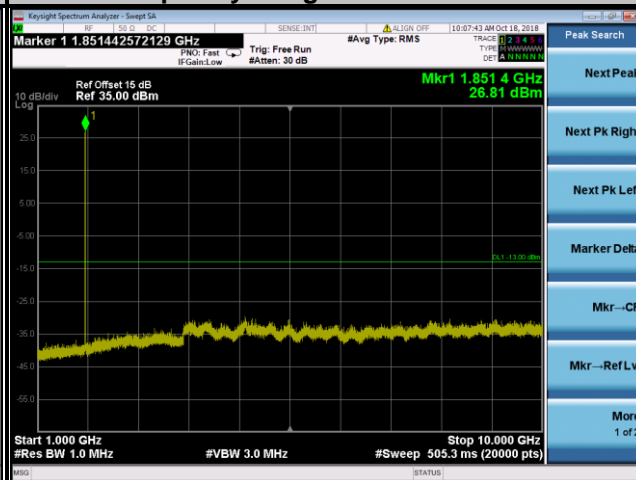
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## CDMA Channel 25

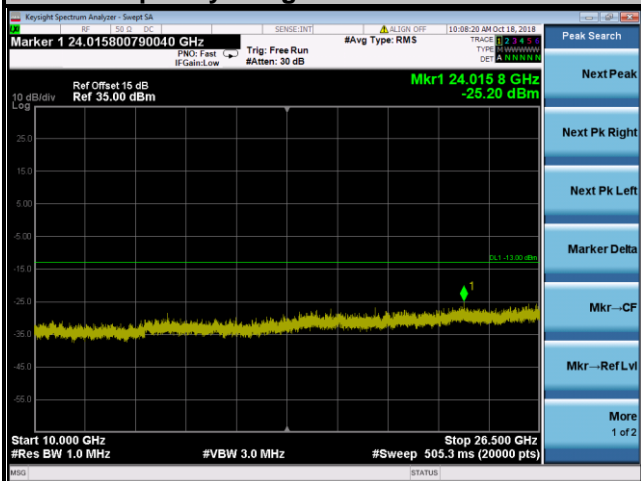
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



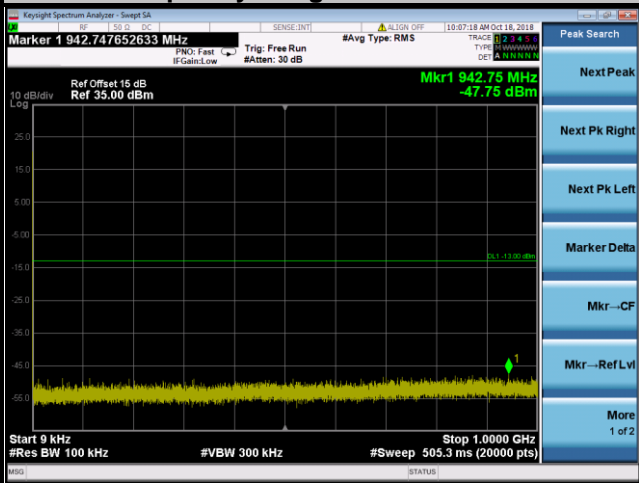
Frequency Range: 10 GHz ~ 26.5 GHz



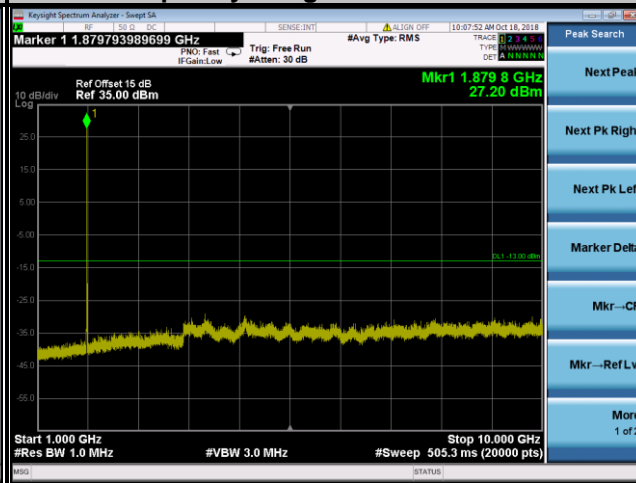
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**CDMA  
Channel 600**

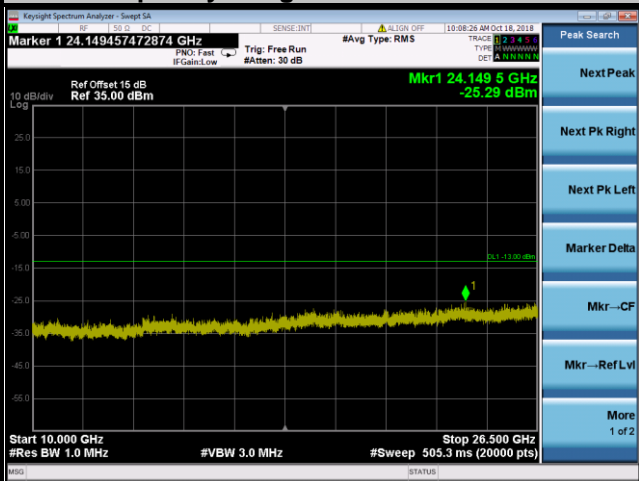
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



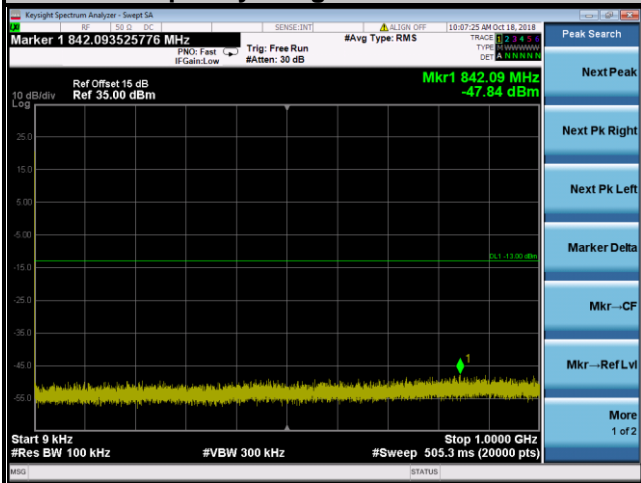
**Frequency Range: 10 GHz ~ 26.5 GHz**



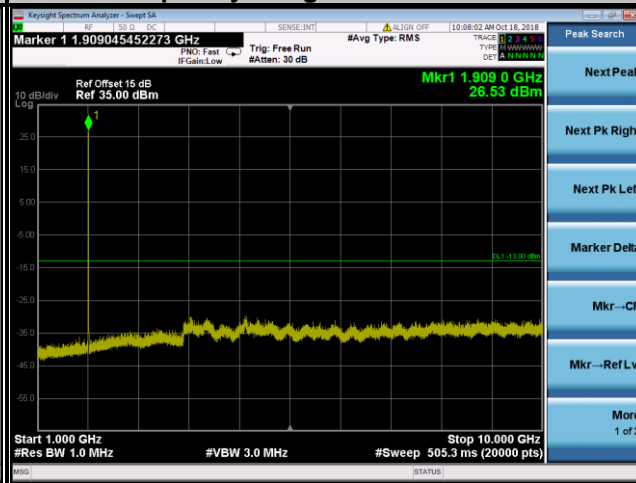
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

### CDMA Channel 1175

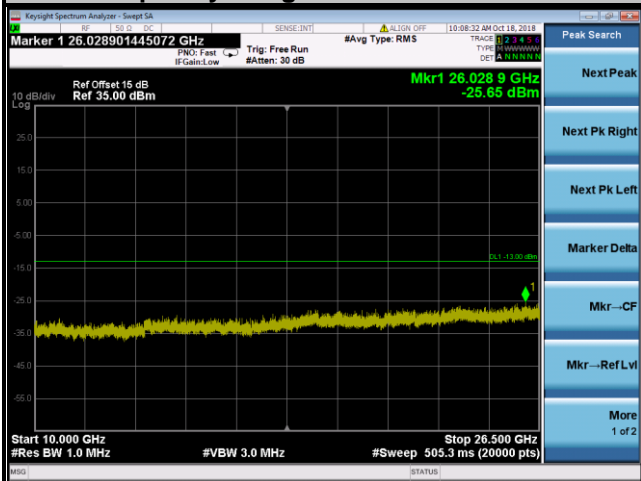
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



**Frequency Range: 10 GHz ~ 26.5 GHz**



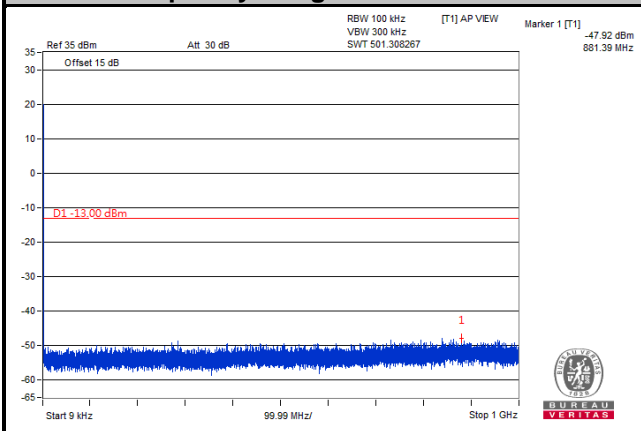
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 2**

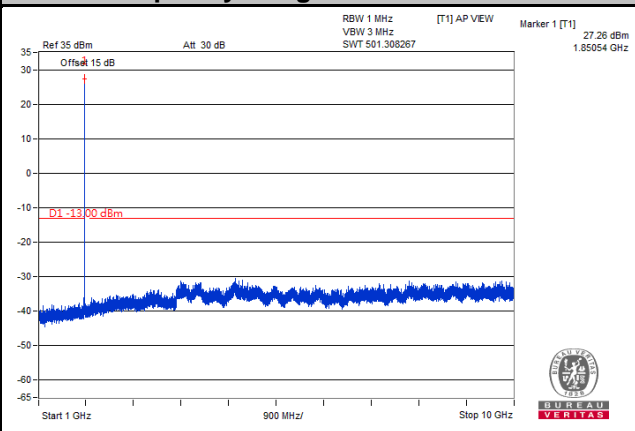
**Channel Bandwidth: 1.4 MHz**

**Channel 18607**

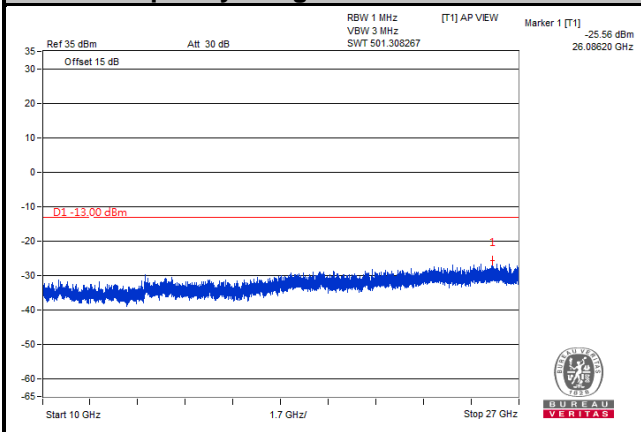
**Frequency Range: 9 kHz ~ 1 GHz**



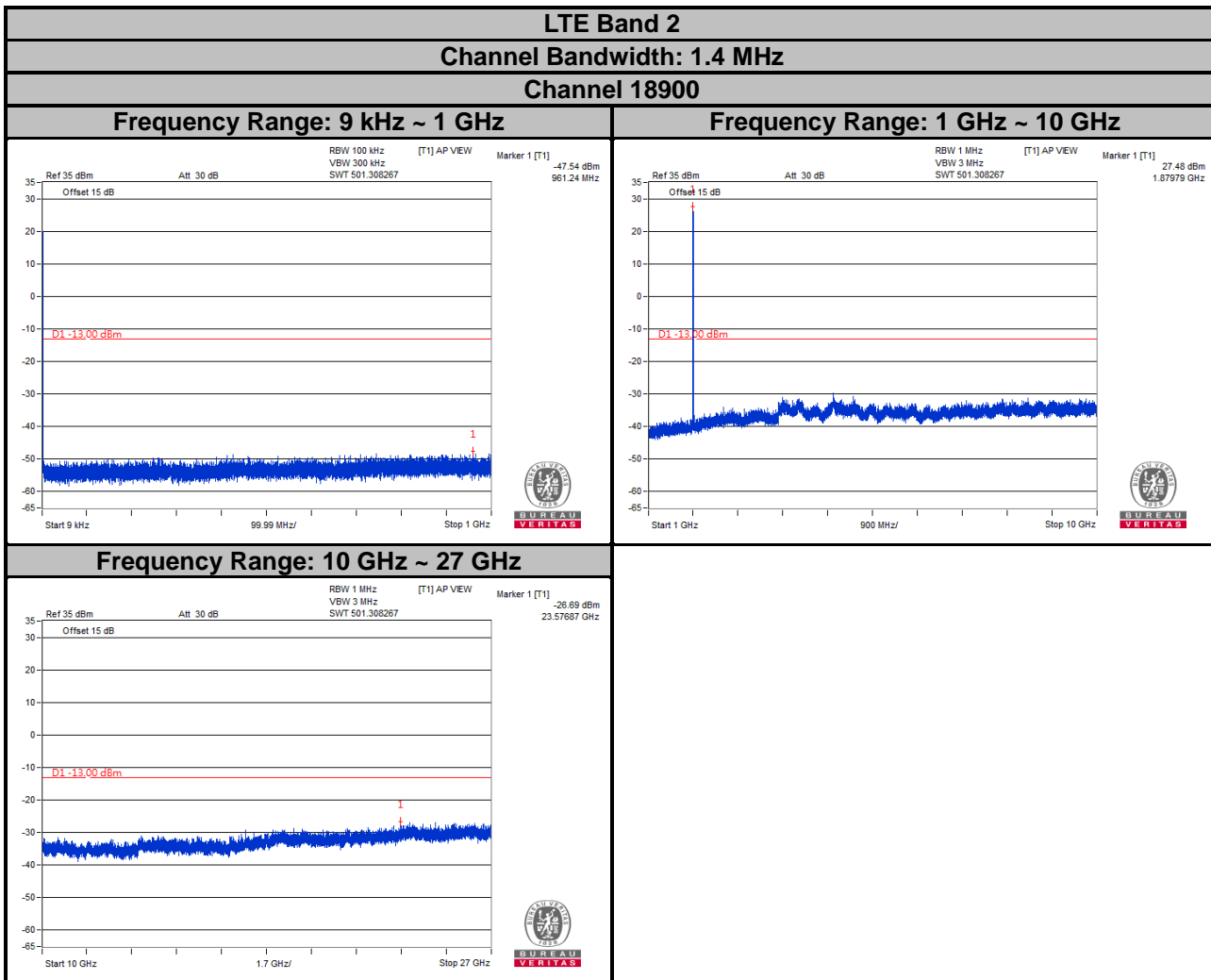
**Frequency Range: 1 GHz ~ 10 GHz**



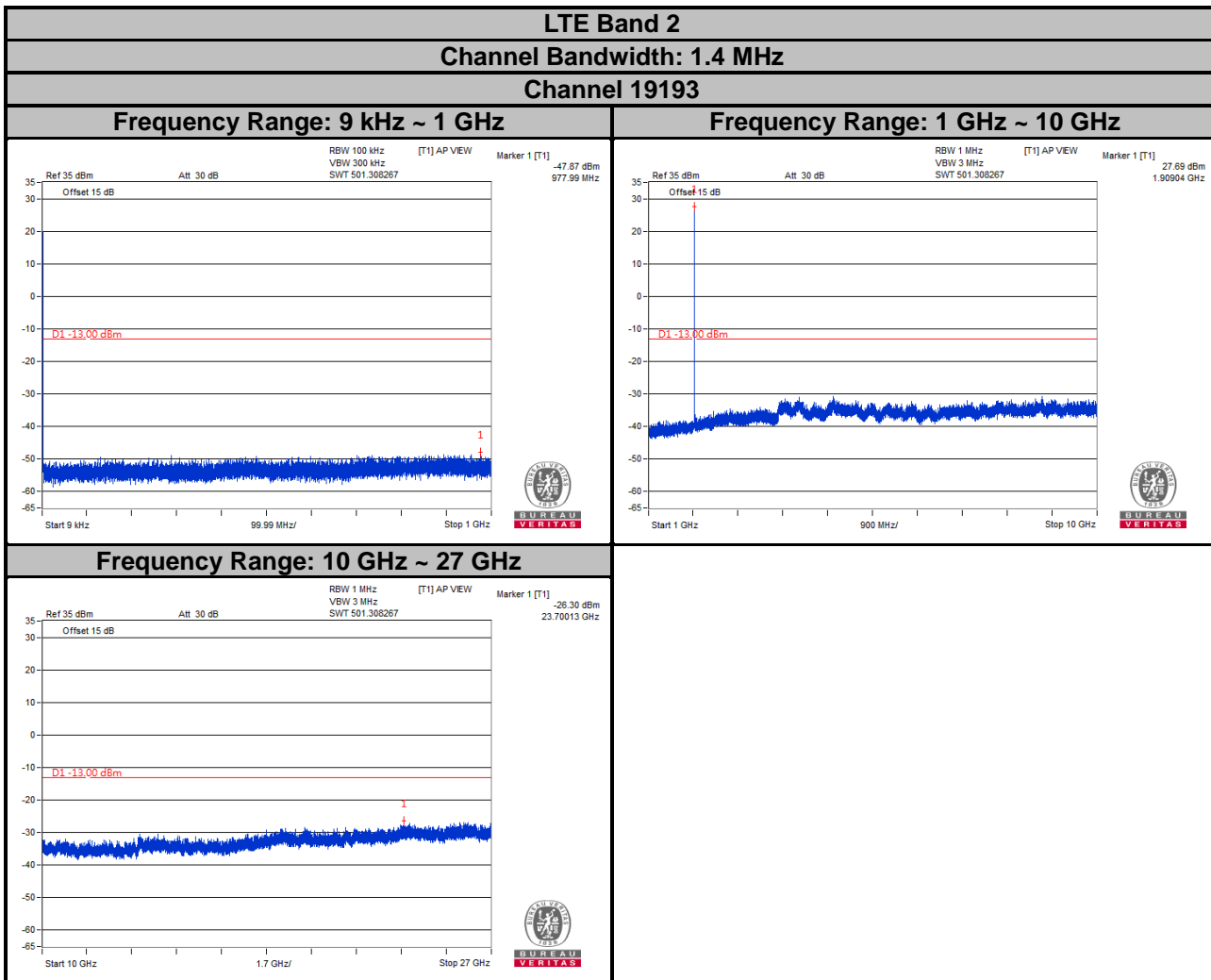
**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



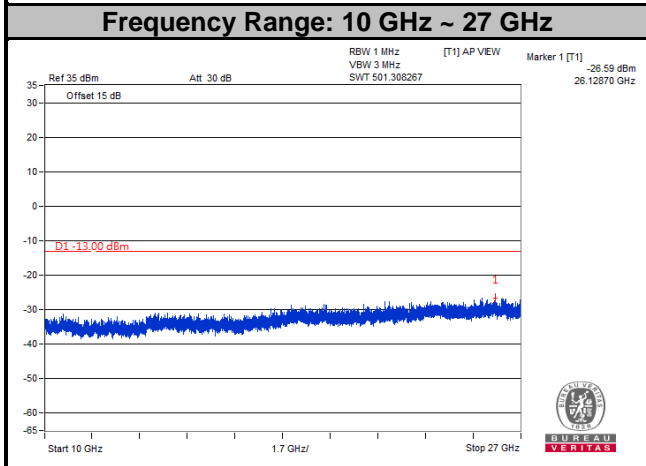
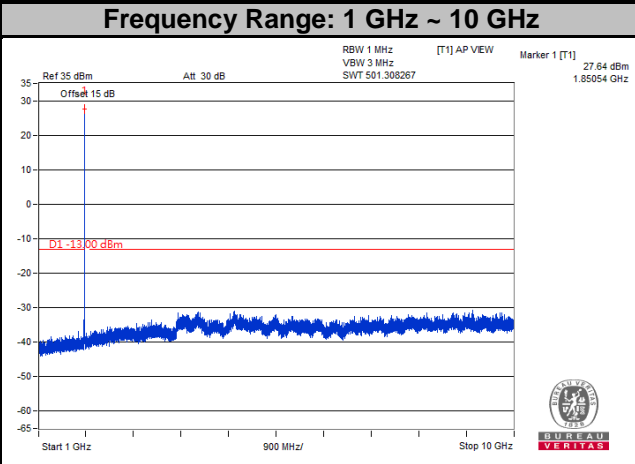
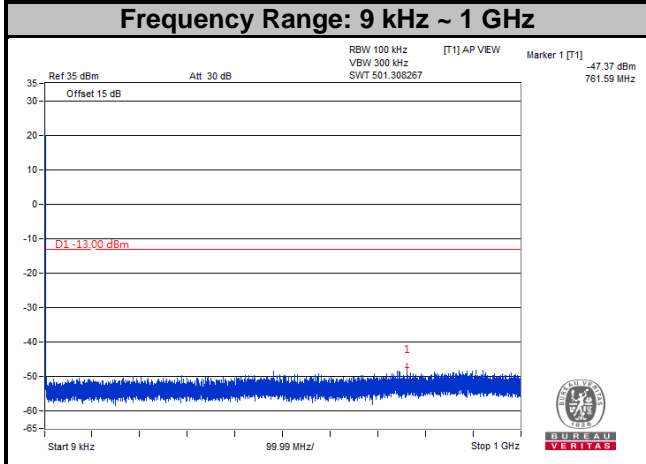
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



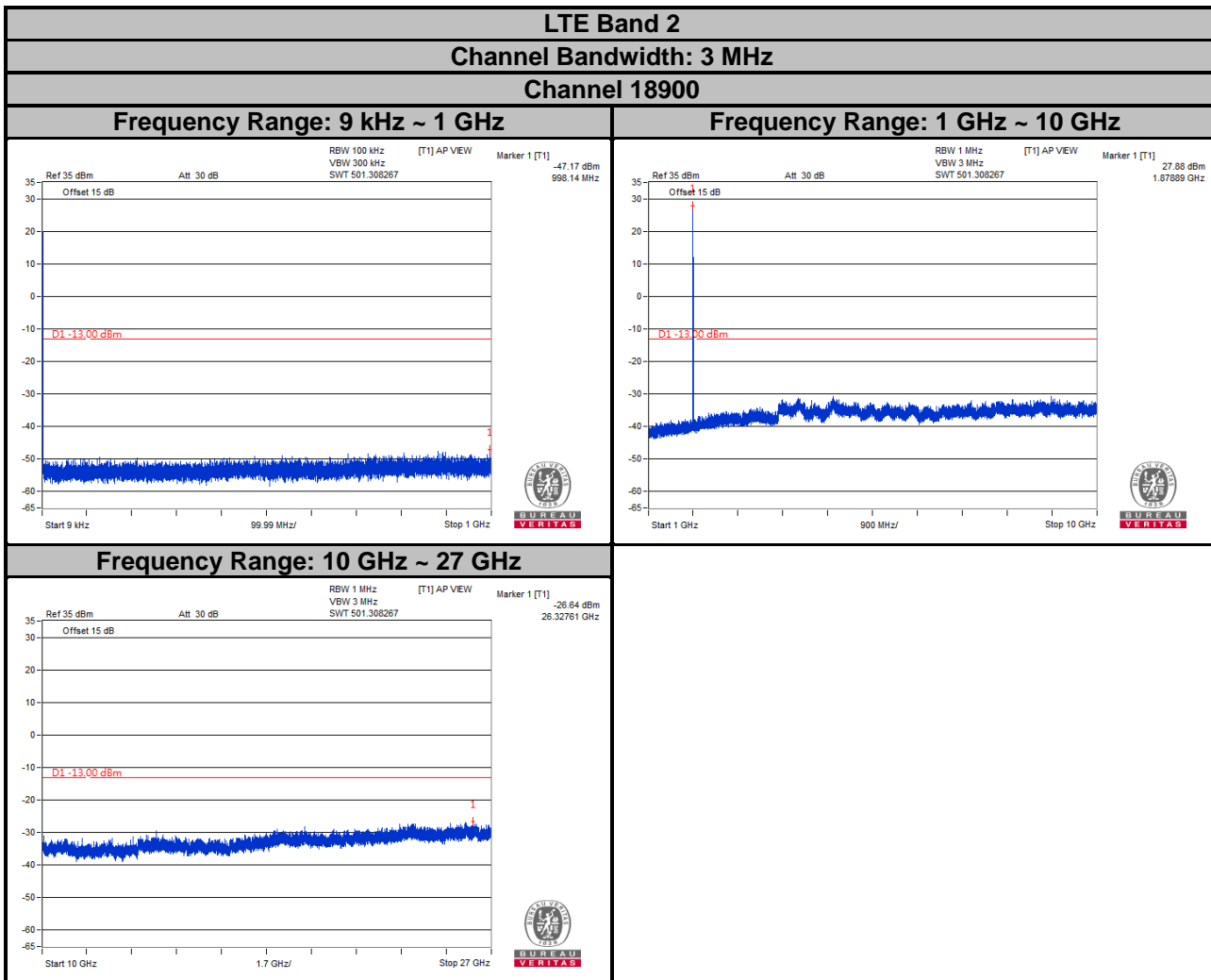
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



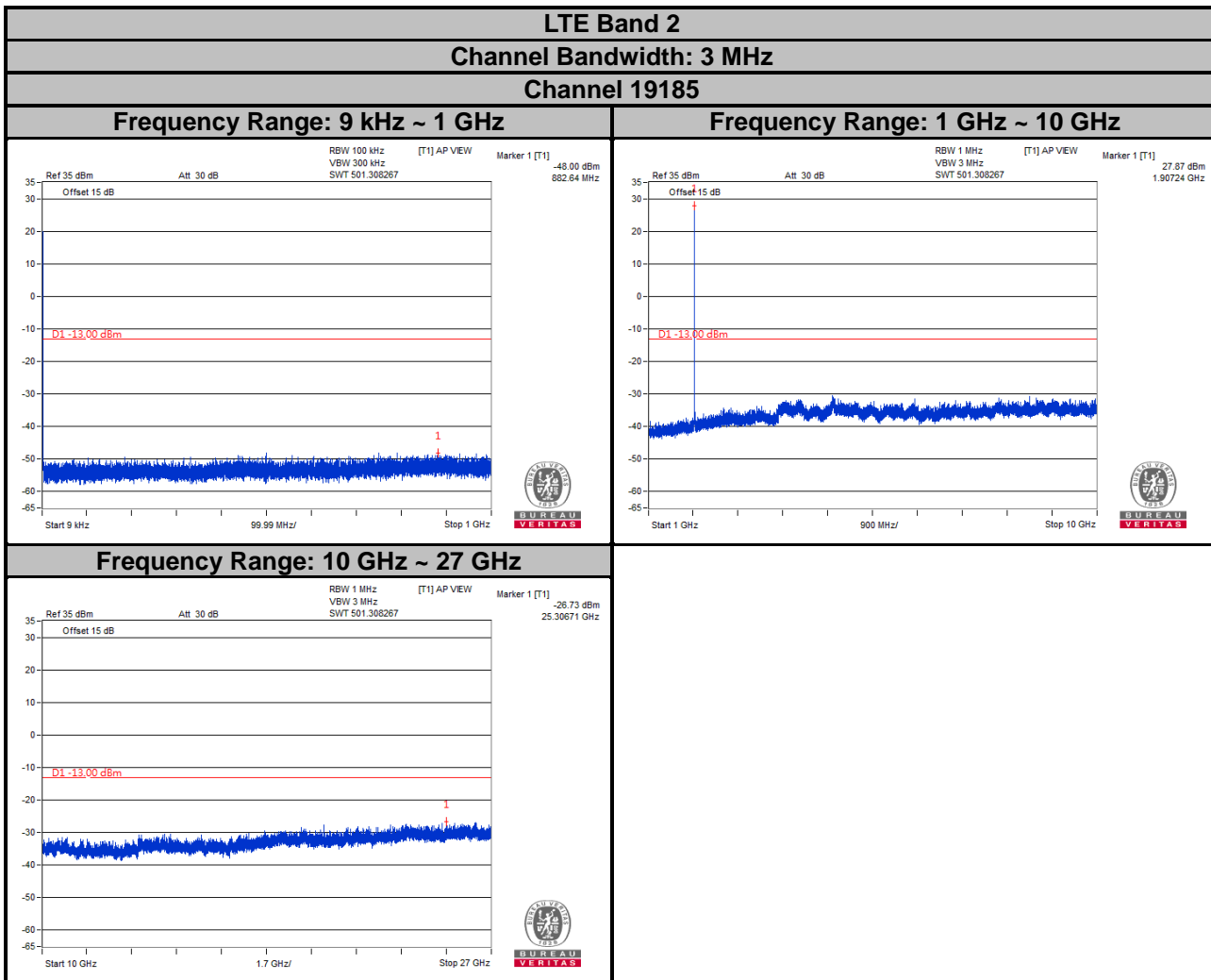
**LTE Band 2**  
**Channel Bandwidth: 3 MHz**  
**Channel 18615**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

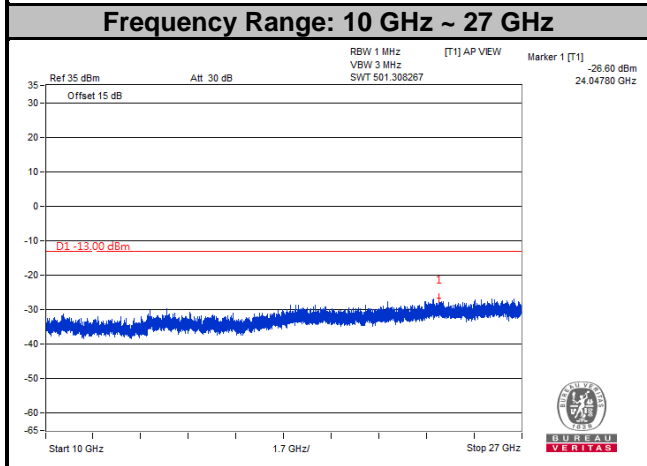
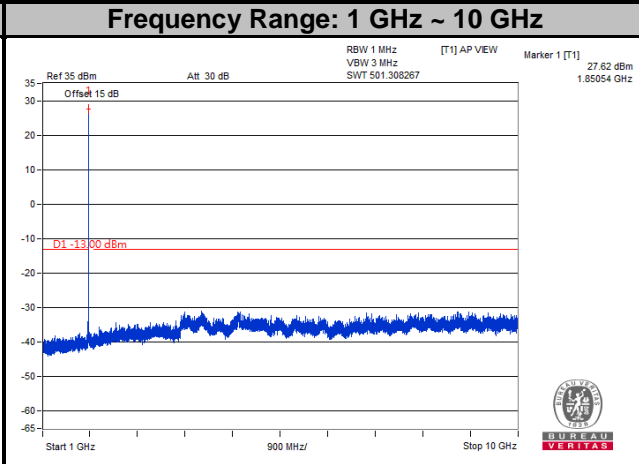
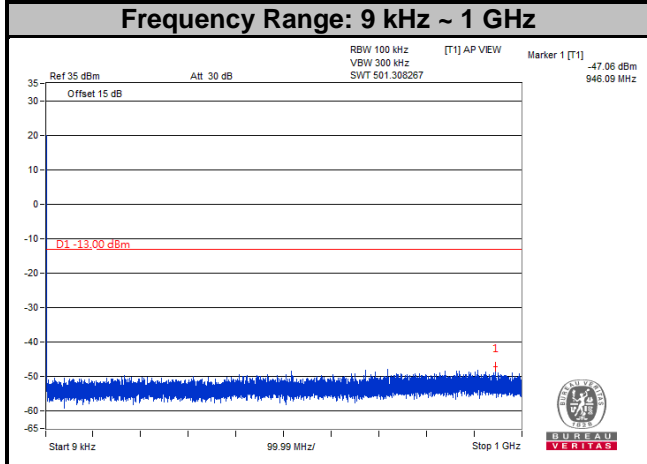


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

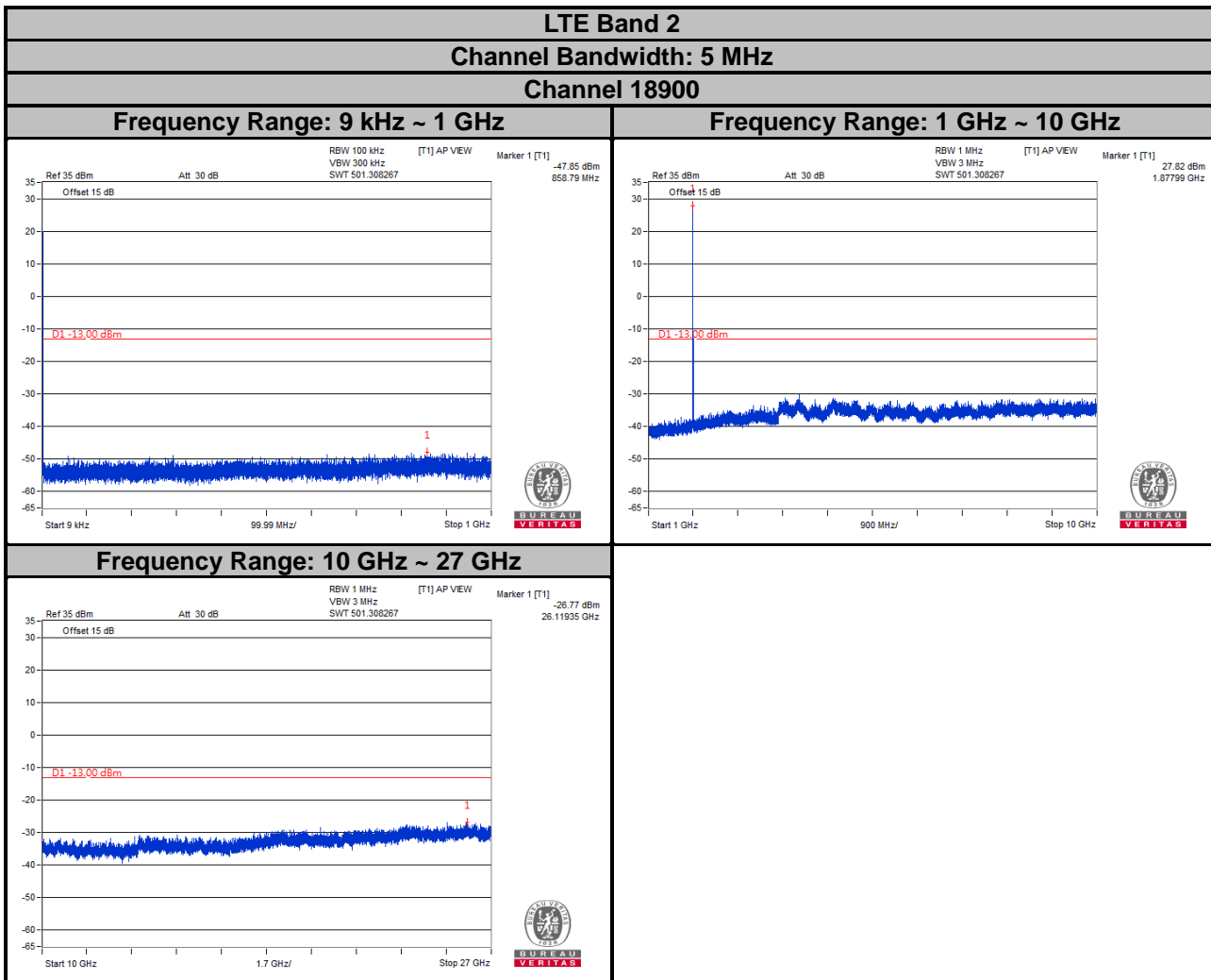


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

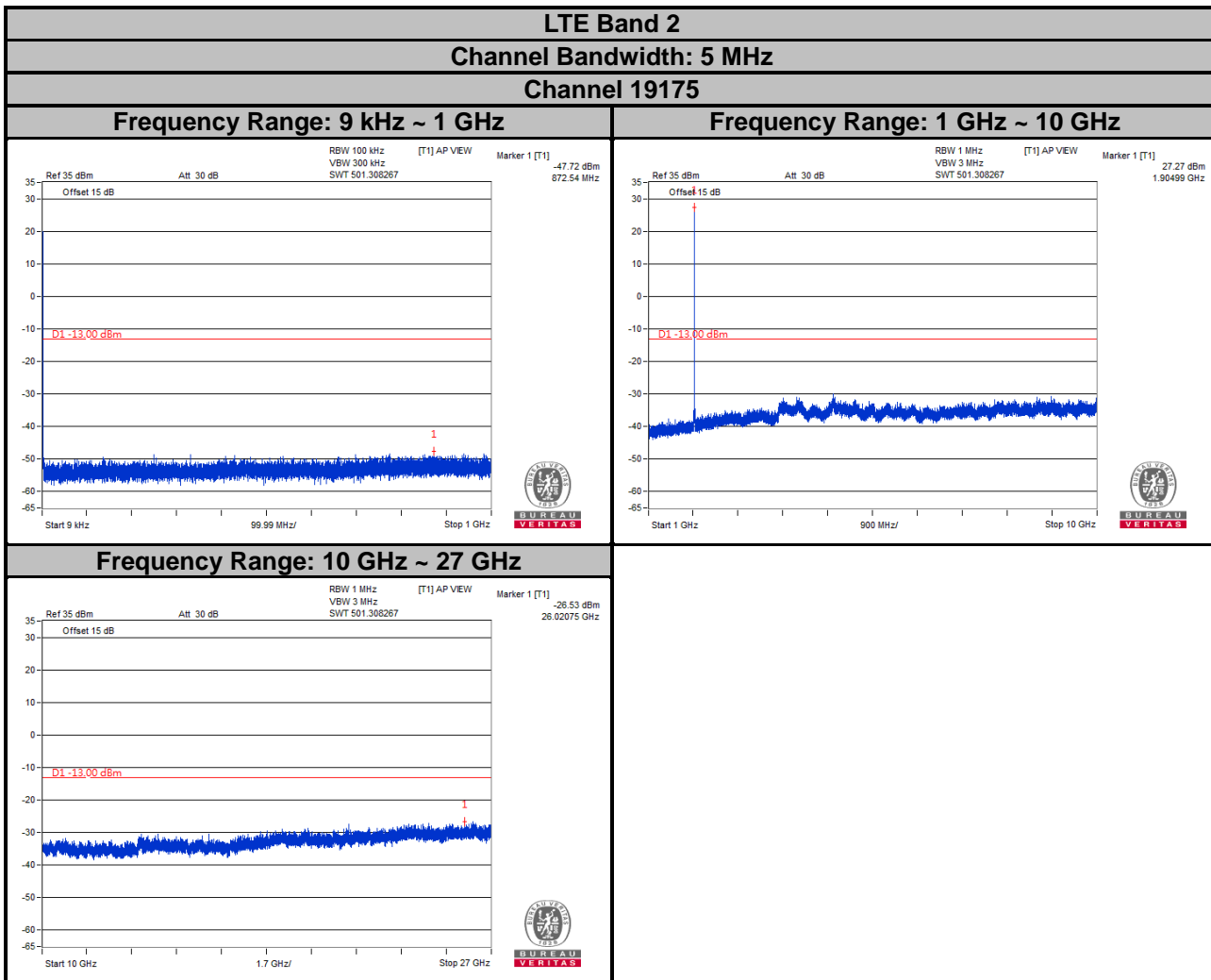
**LTE Band 2**  
**Channel Bandwidth: 5 MHz**  
**Channel 18625**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



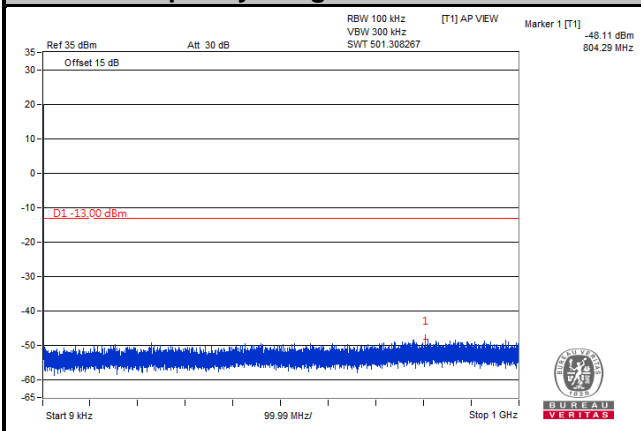
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 2**

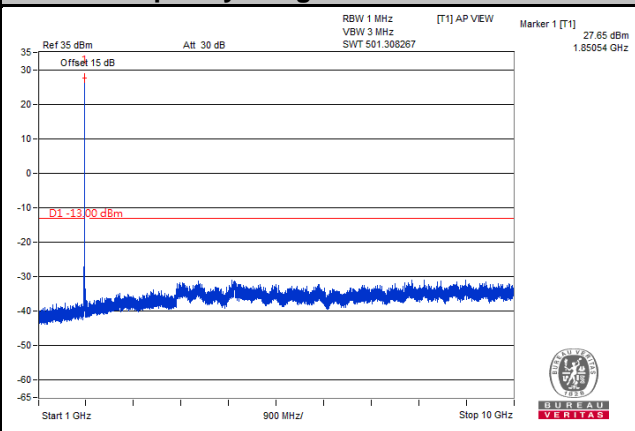
**Channel Bandwidth: 10 MHz**

**Channel 18650**

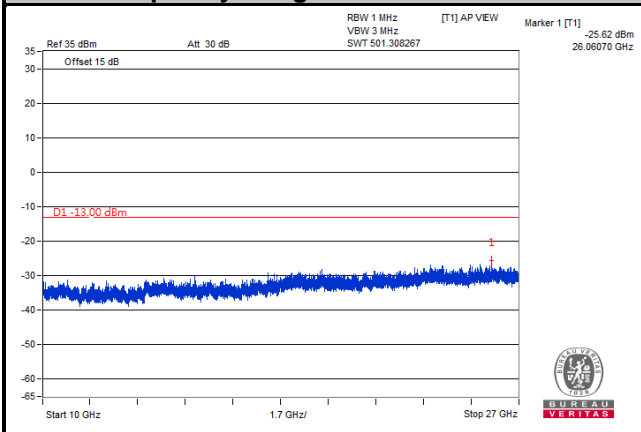
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



**Frequency Range: 10 GHz ~ 27 GHz**



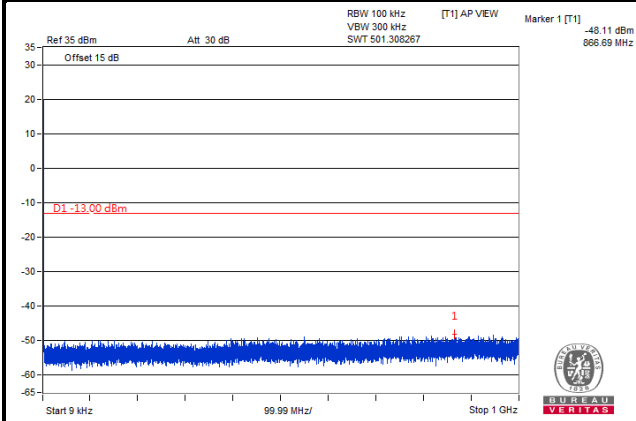
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2

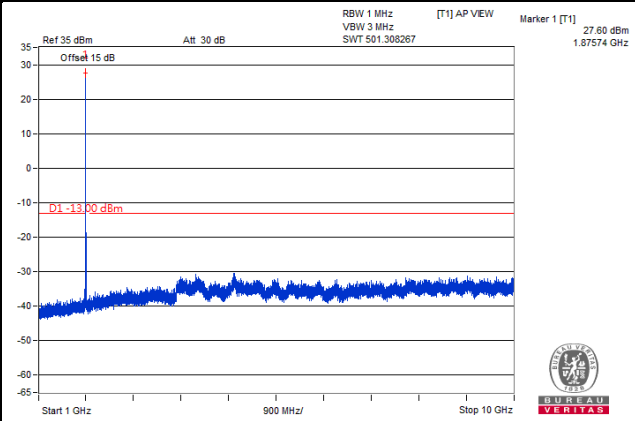
Channel Bandwidth: 10 MHz

Channel 18900

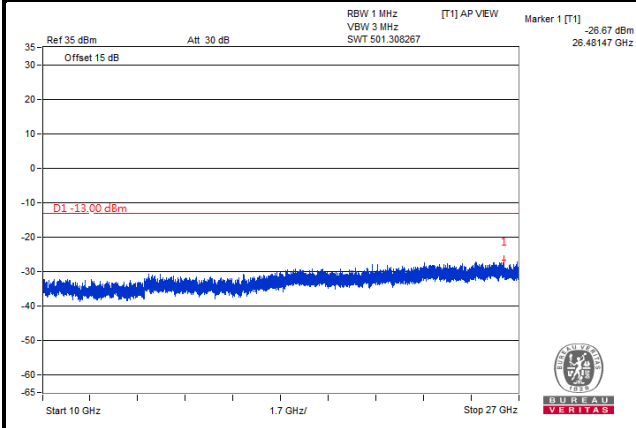
Frequency Range: 9 kHz ~ 1 GHz



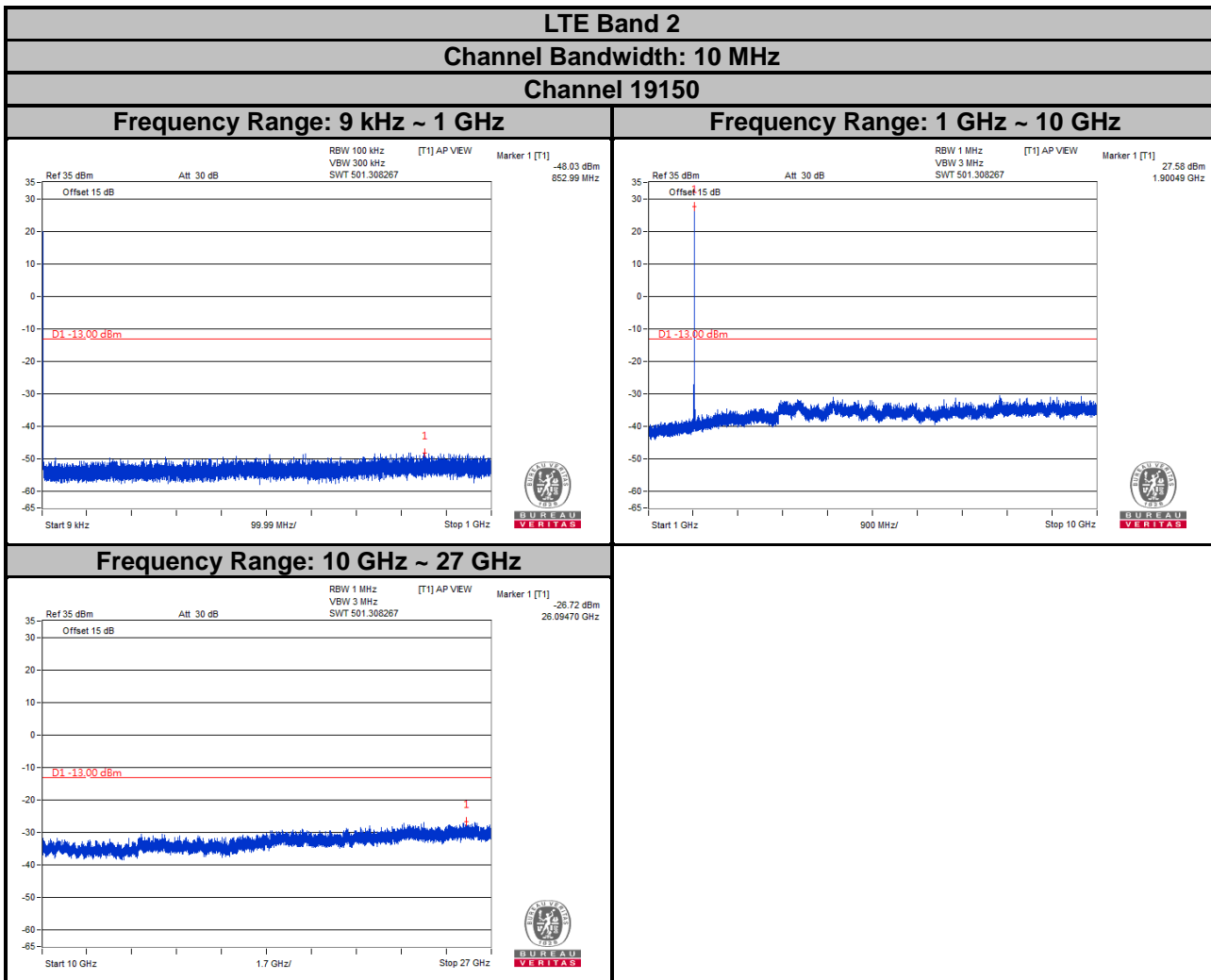
Frequency Range: 1 GHz ~ 10 GHz



Frequency Range: 10 GHz ~ 27 GHz



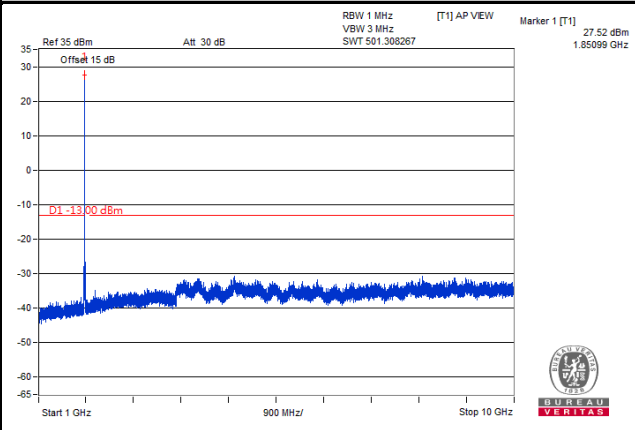
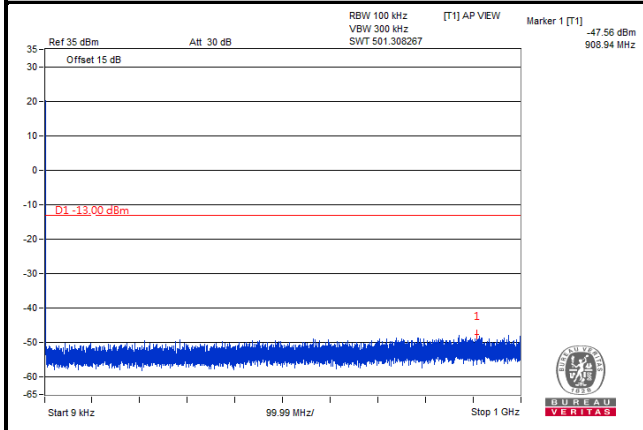




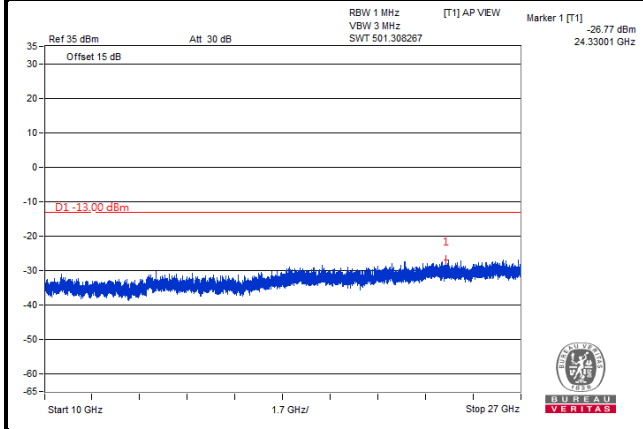
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 2**  
**Channel Bandwidth: 15 MHz**  
**Channel 18675**

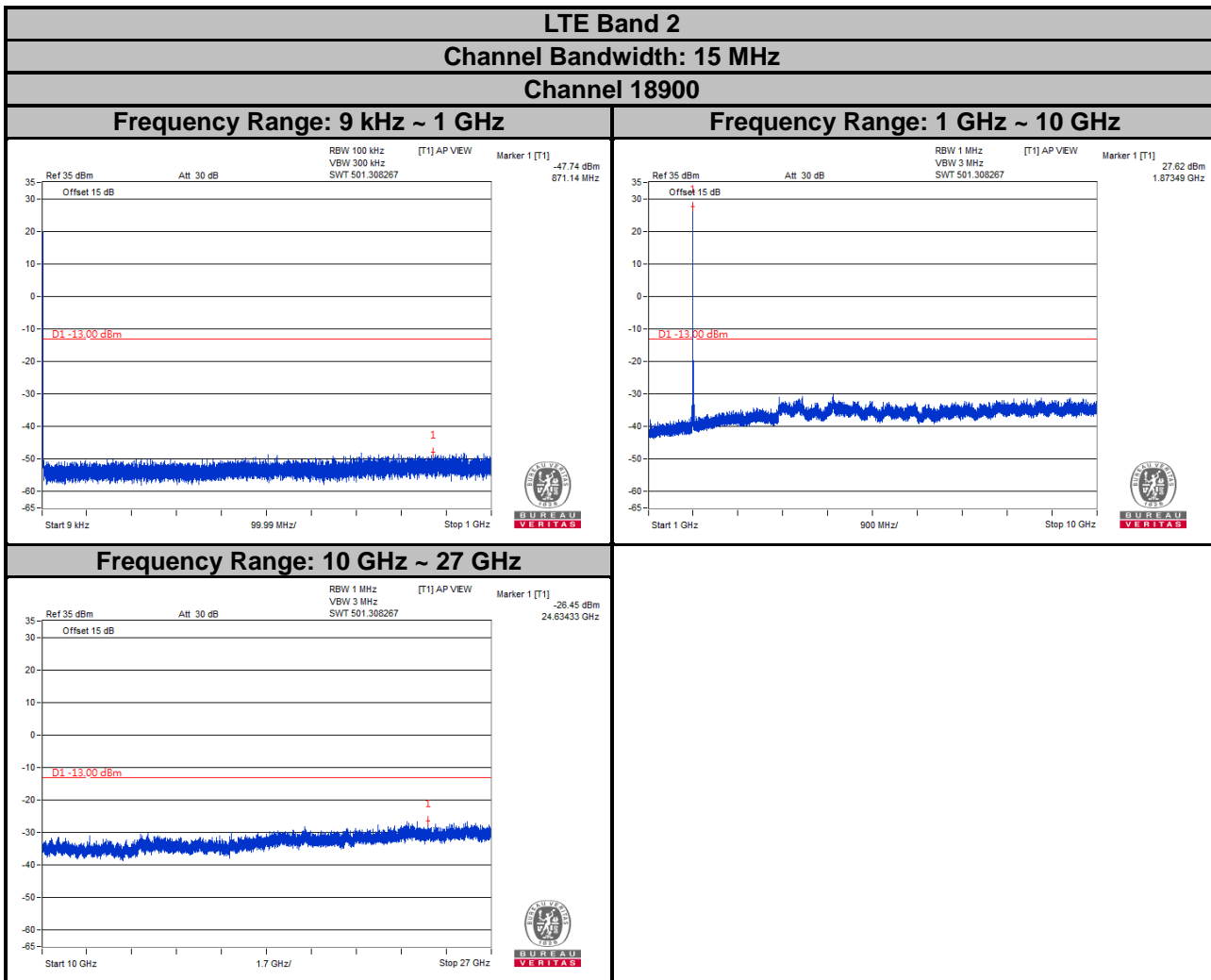
**Frequency Range: 9 kHz ~ 1 GHz**      **Frequency Range: 1 GHz ~ 10 GHz**



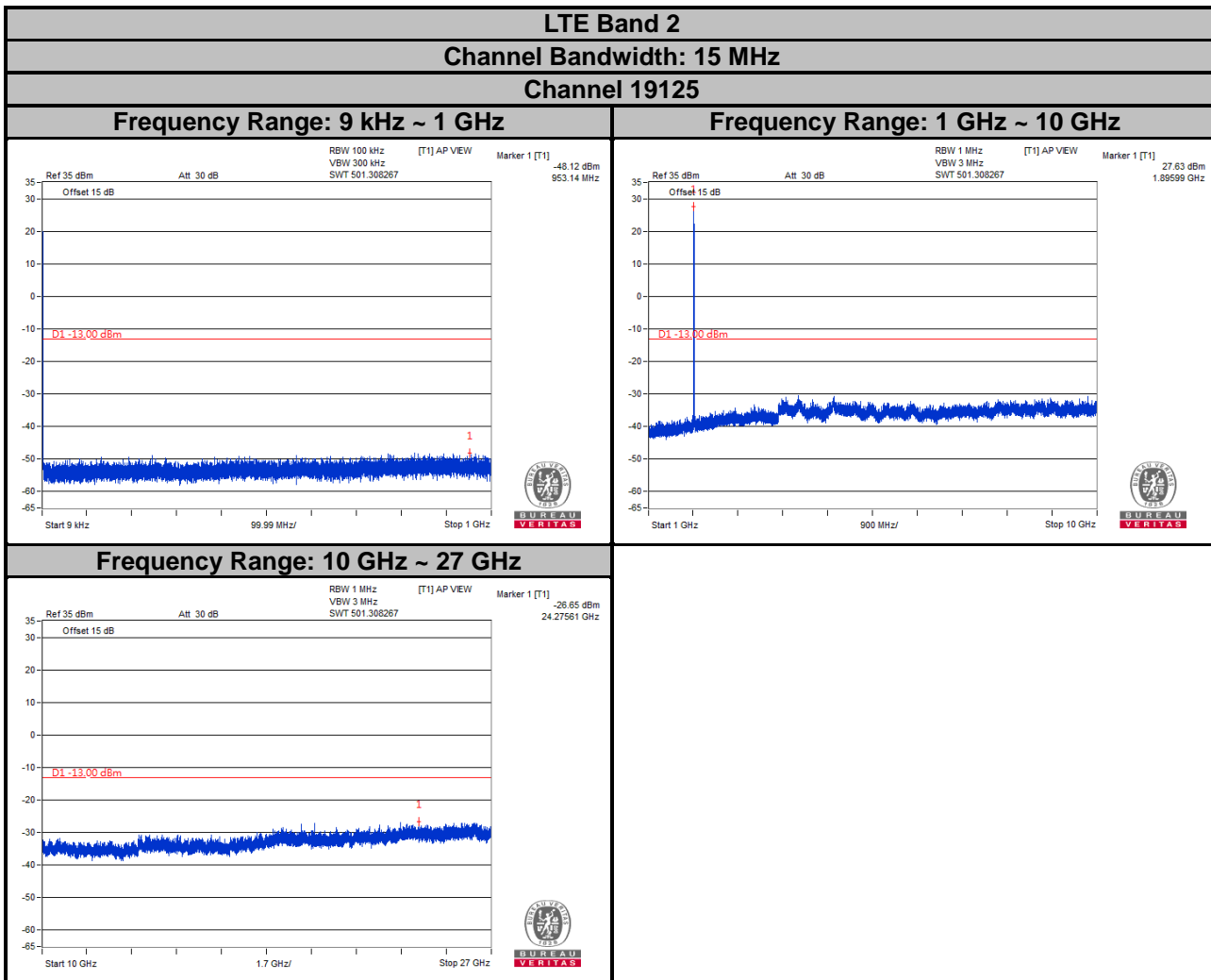
**Frequency Range: 10 GHz ~ 27 GHz**



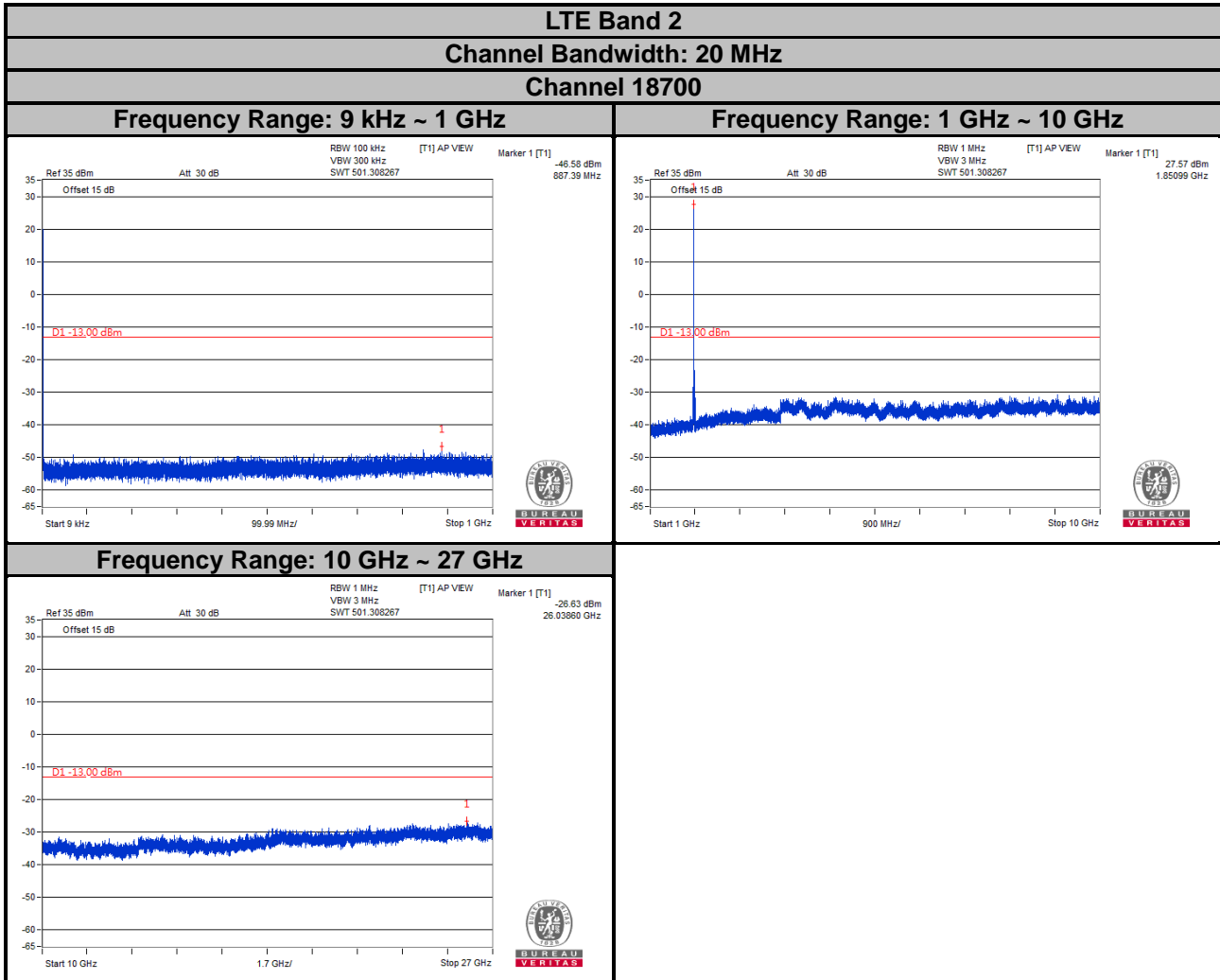
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



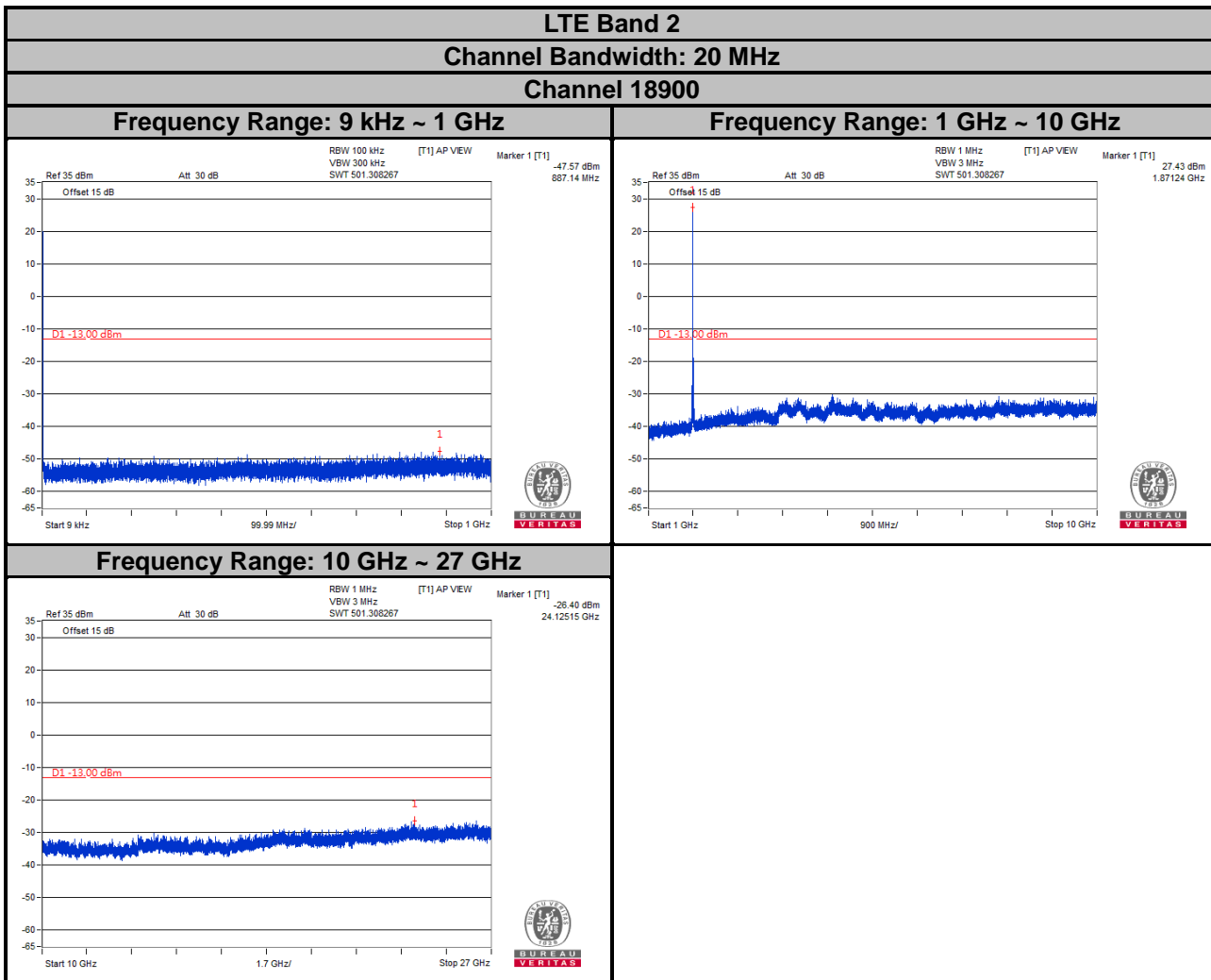
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



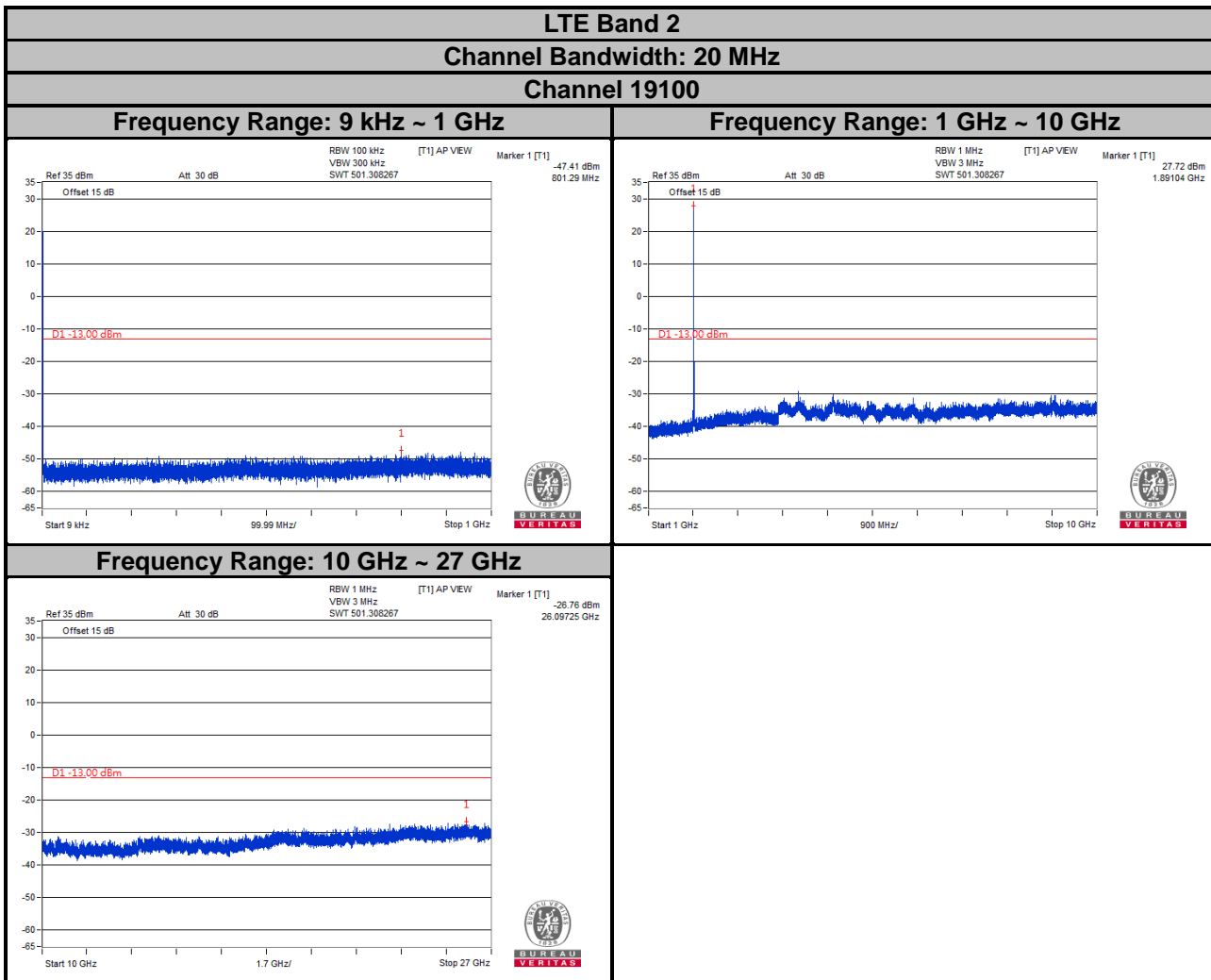
Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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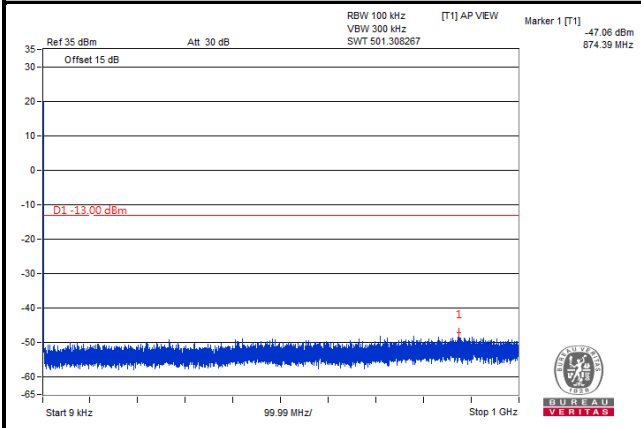
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 25**

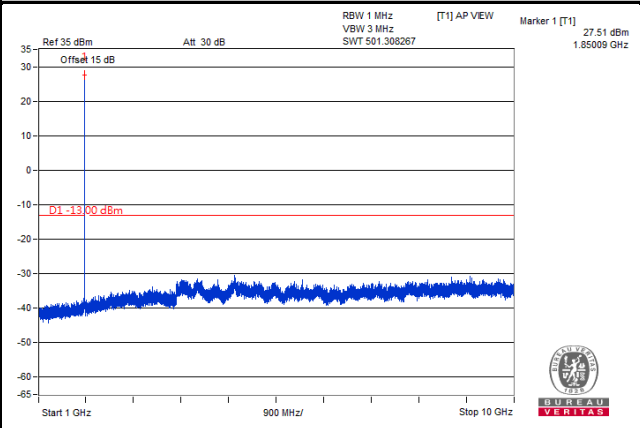
**Channel Bandwidth: 1.4 MHz**

**Channel 26047**

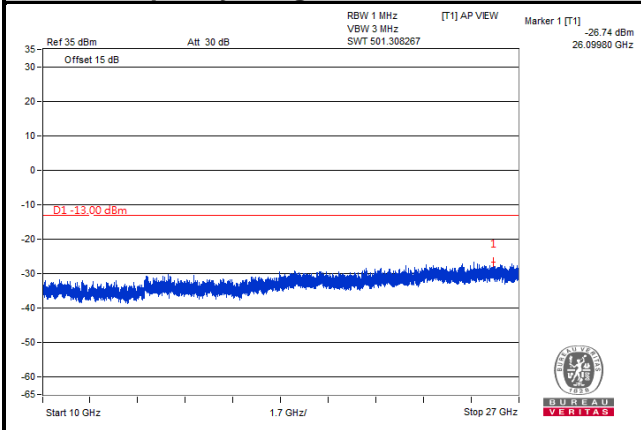
**Frequency Range: 9 kHz ~ 1 GHz**



**Frequency Range: 1 GHz ~ 10 GHz**



**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

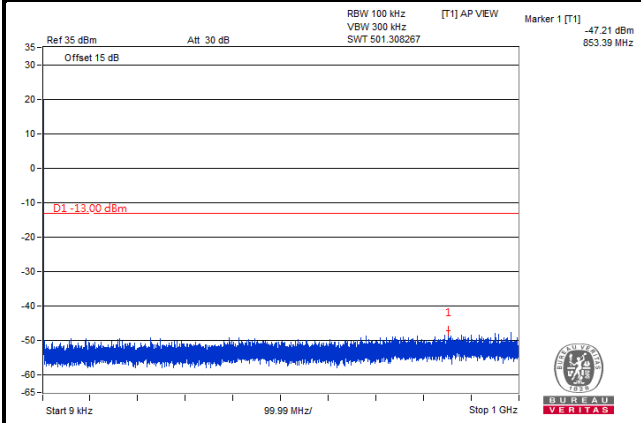


**LTE Band 25**

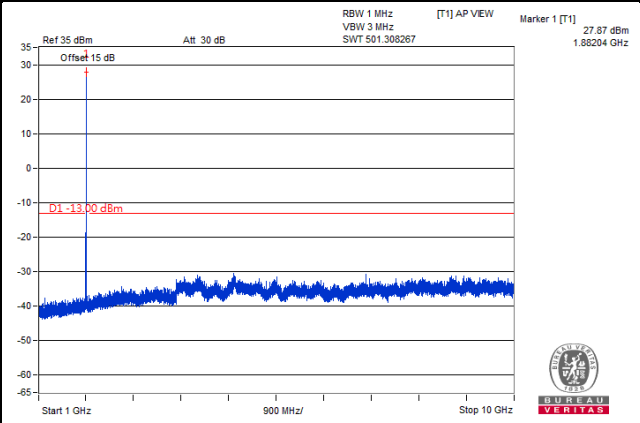
**Channel Bandwidth: 1.4 MHz**

**Channel 26365**

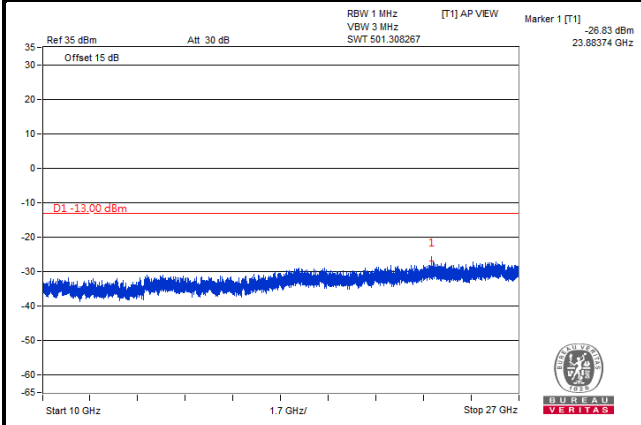
**Frequency Range: 9 kHz ~ 1 GHz**



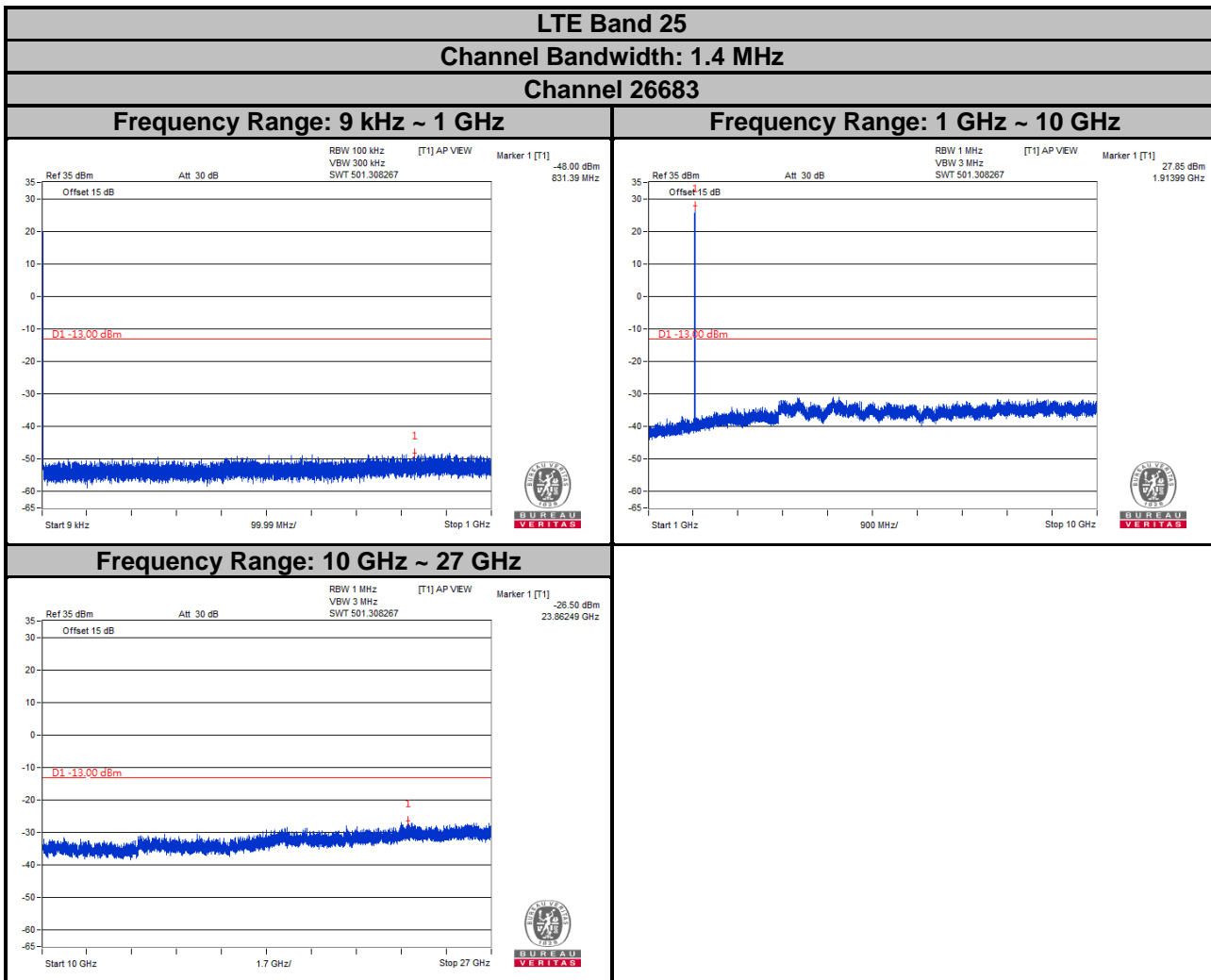
**Frequency Range: 1 GHz ~ 10 GHz**



**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

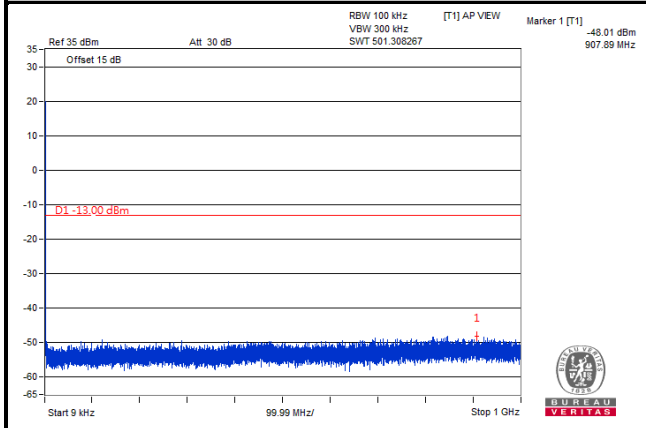


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

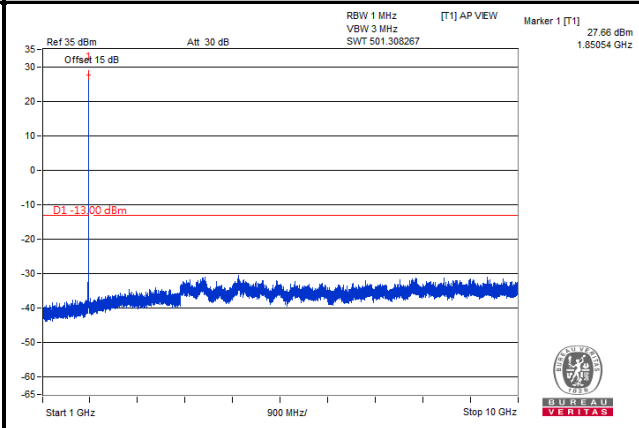
**LTE Band 25**  
**Channel Bandwidth: 3 MHz**

**Channel 26055**

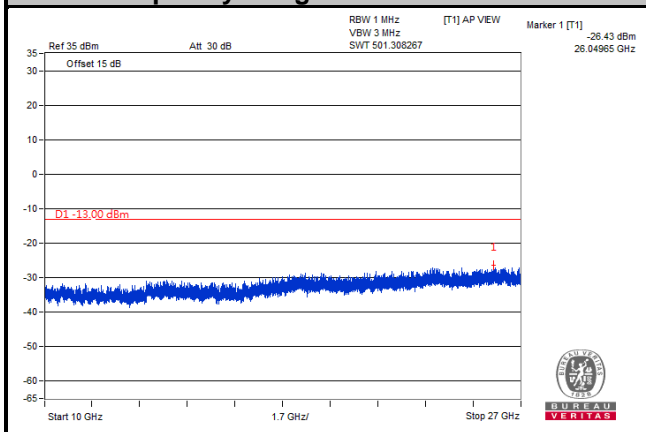
**Frequency Range: 9 kHz ~ 1 GHz**



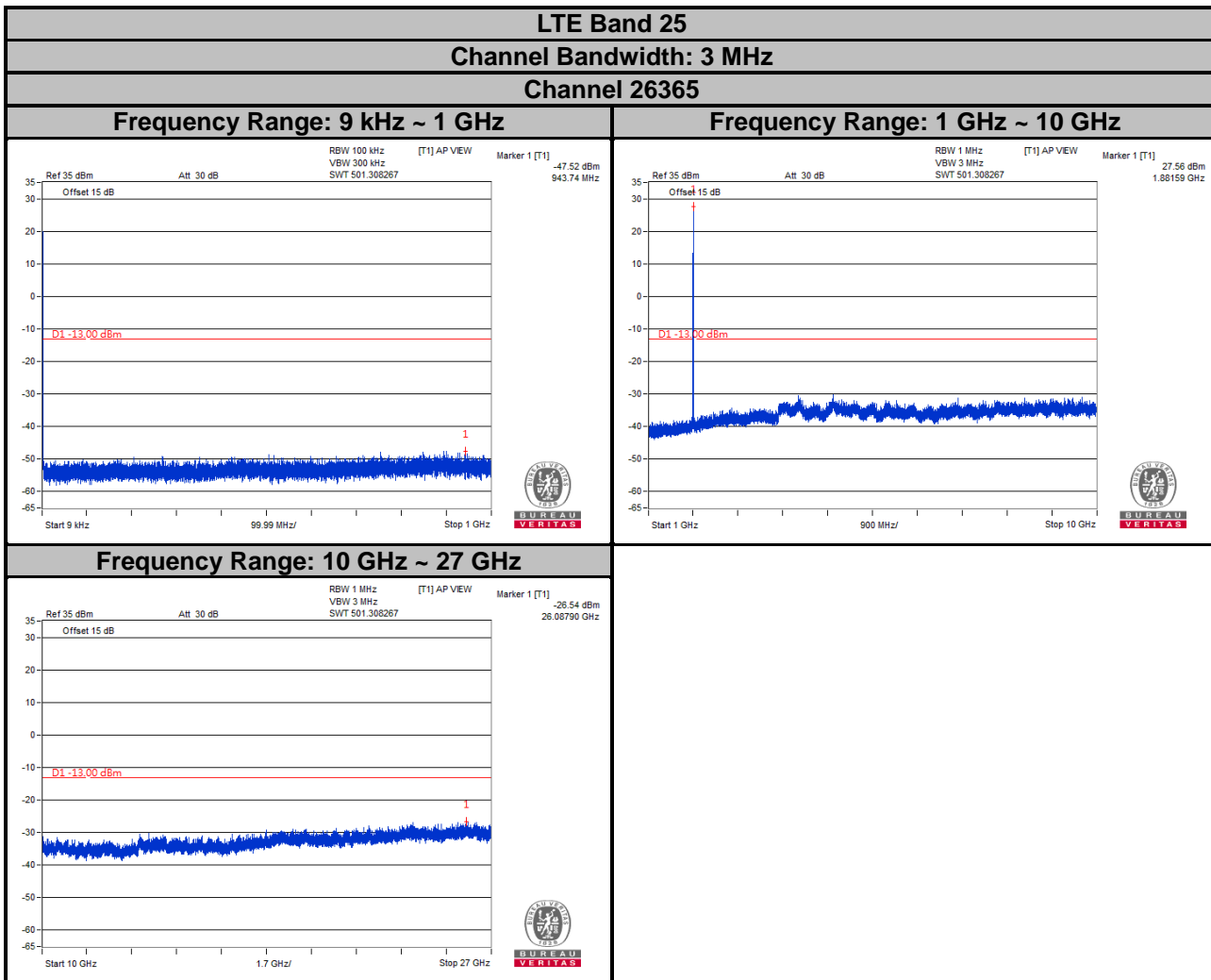
**Frequency Range: 1 GHz ~ 10 GHz**



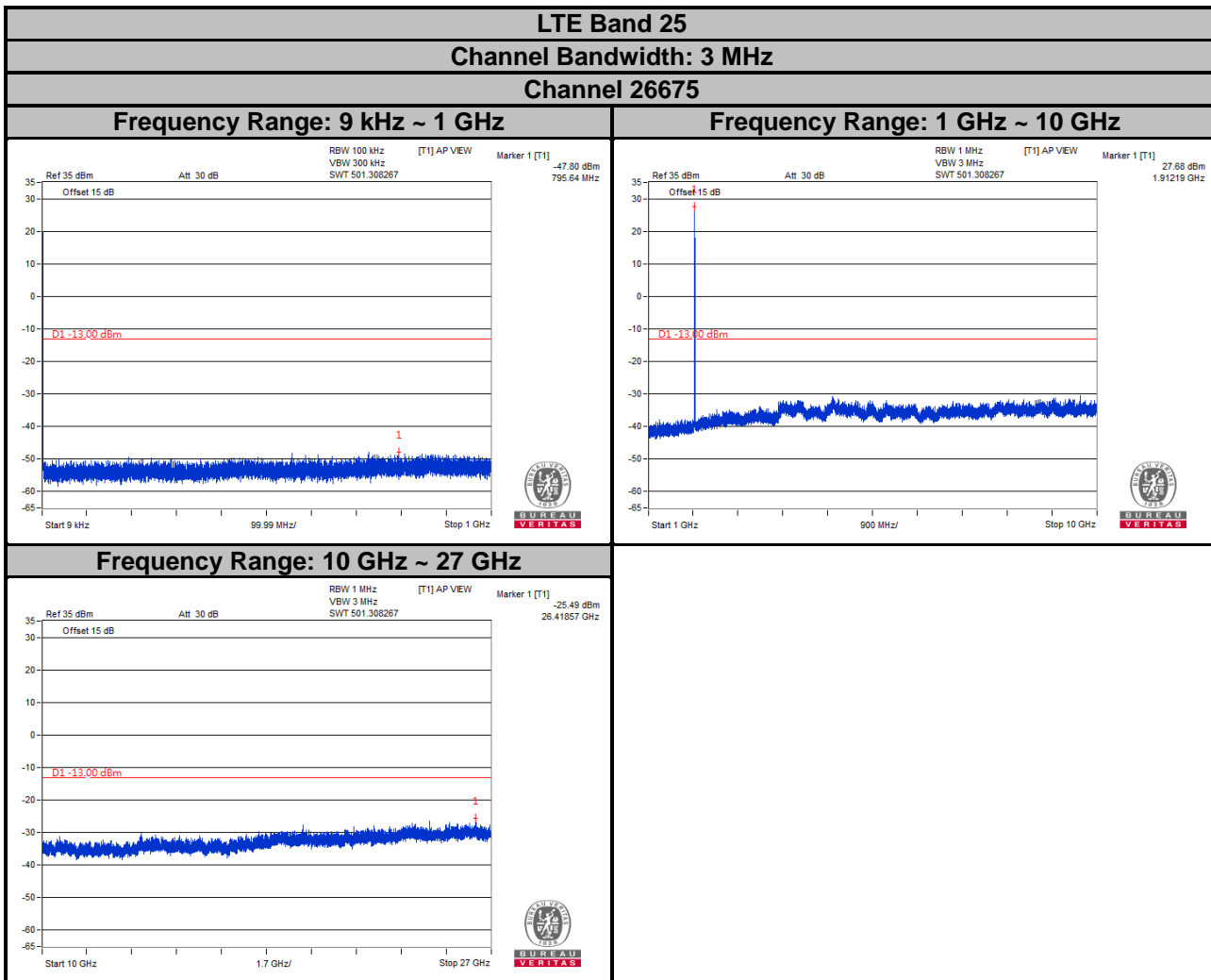
**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



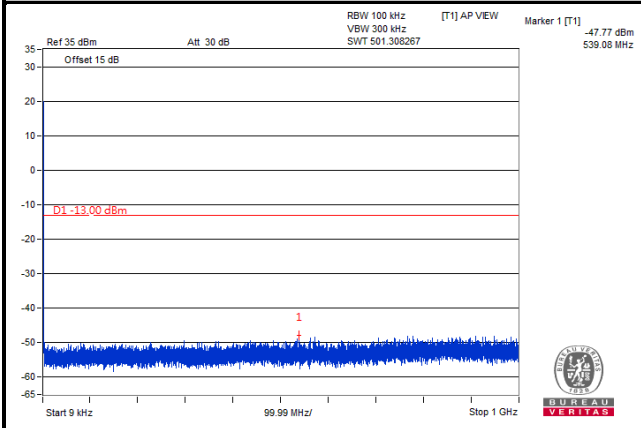
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 25**

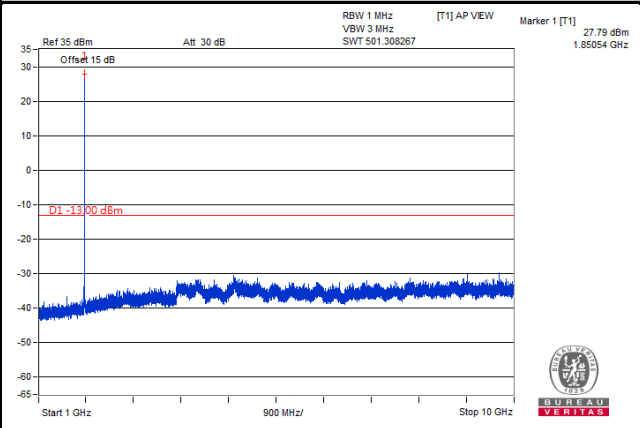
**Channel Bandwidth: 5 MHz**

**Channel 26065**

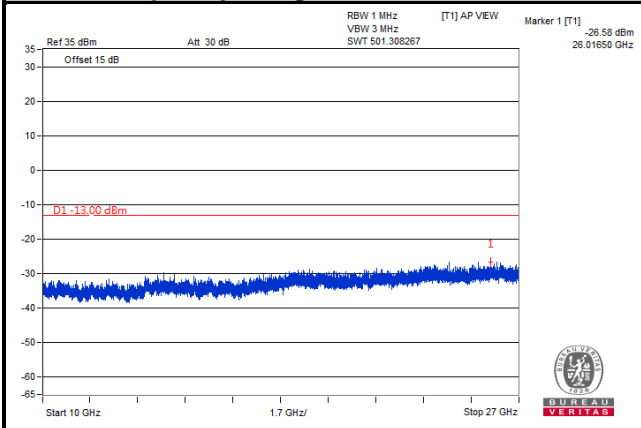
**Frequency Range: 9 kHz ~ 1 GHz**



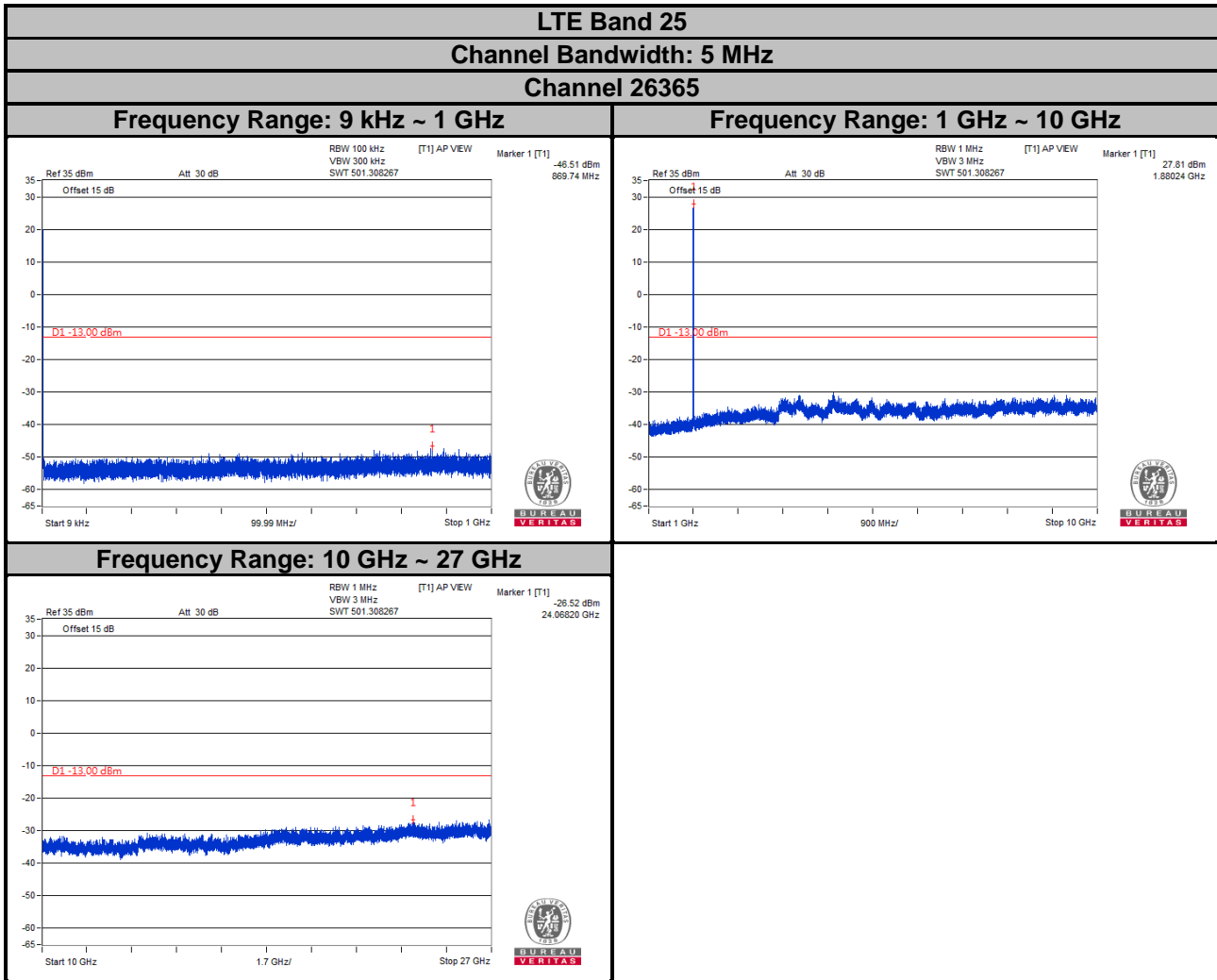
**Frequency Range: 1 GHz ~ 10 GHz**



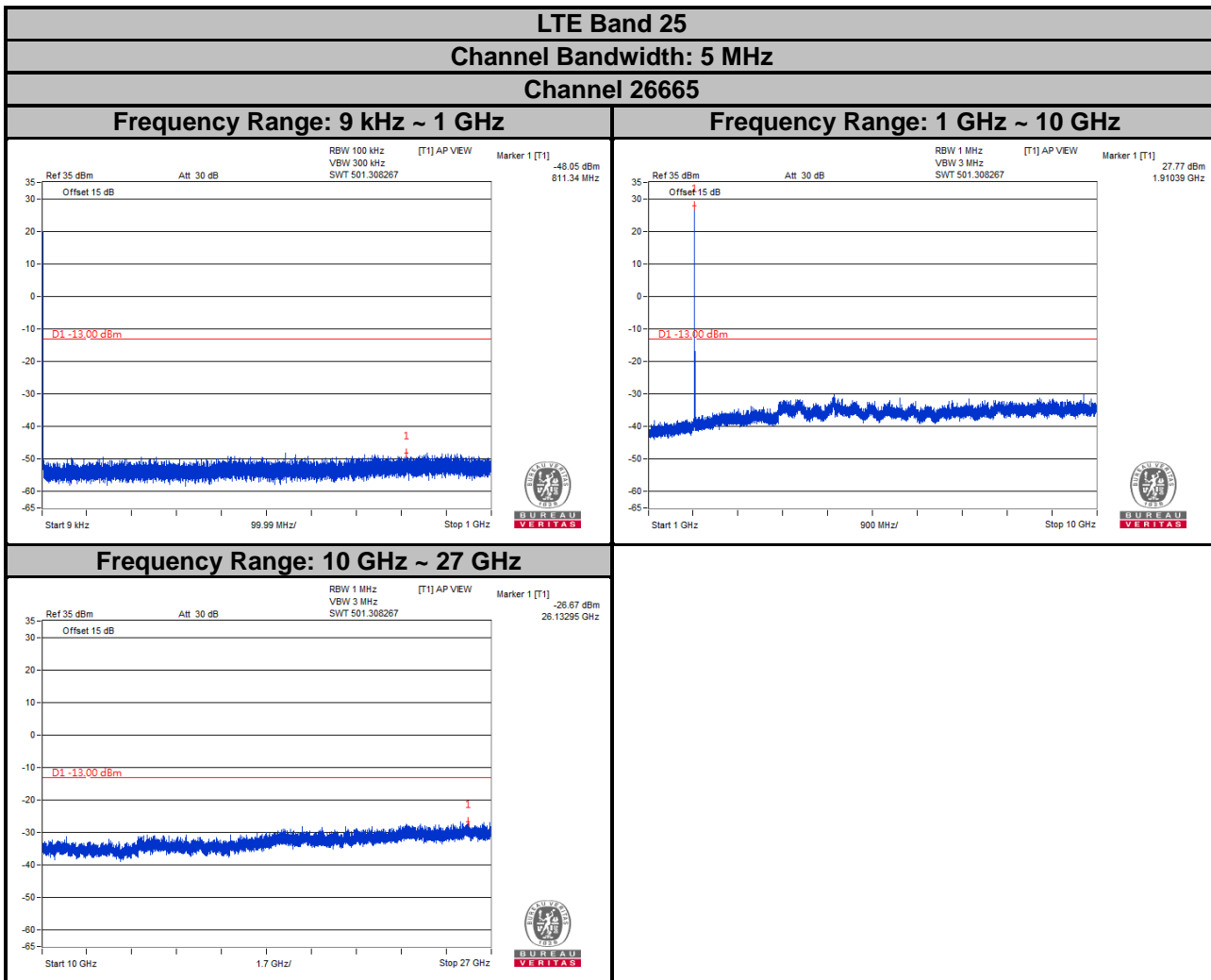
**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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Note: The signal over the limit in 9 kHz is from spectrum analyzer.

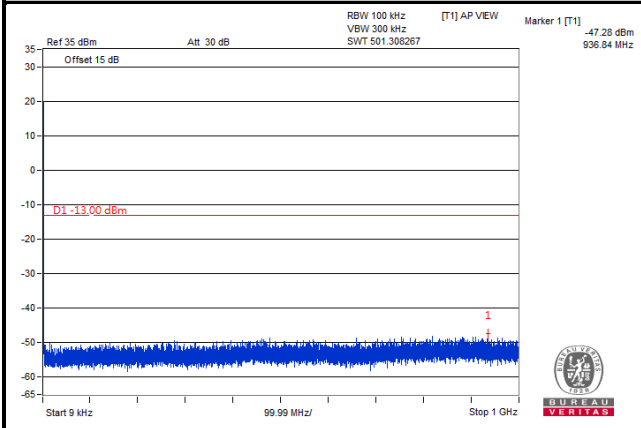


**LTE Band 25**

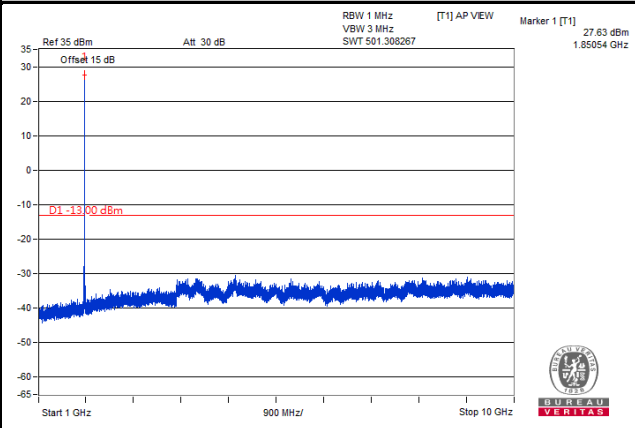
**Channel Bandwidth: 10 MHz**

**Channel 26090**

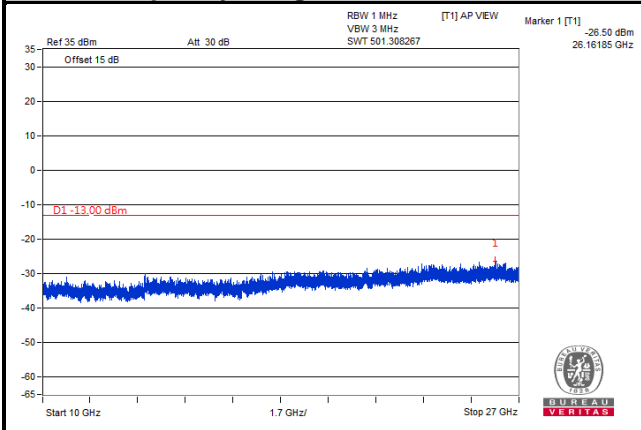
**Frequency Range: 9 kHz ~ 1 GHz**



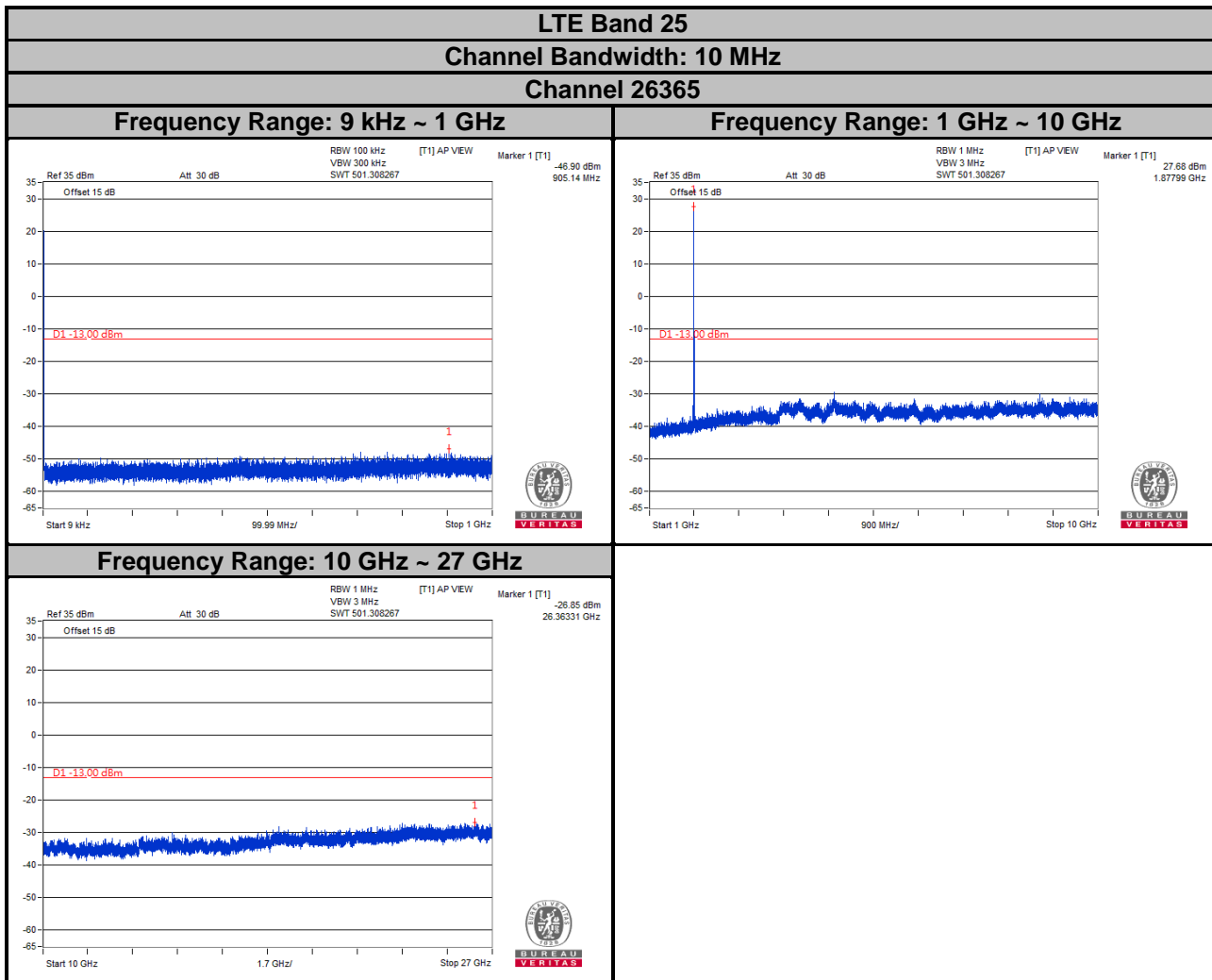
**Frequency Range: 1 GHz ~ 10 GHz**



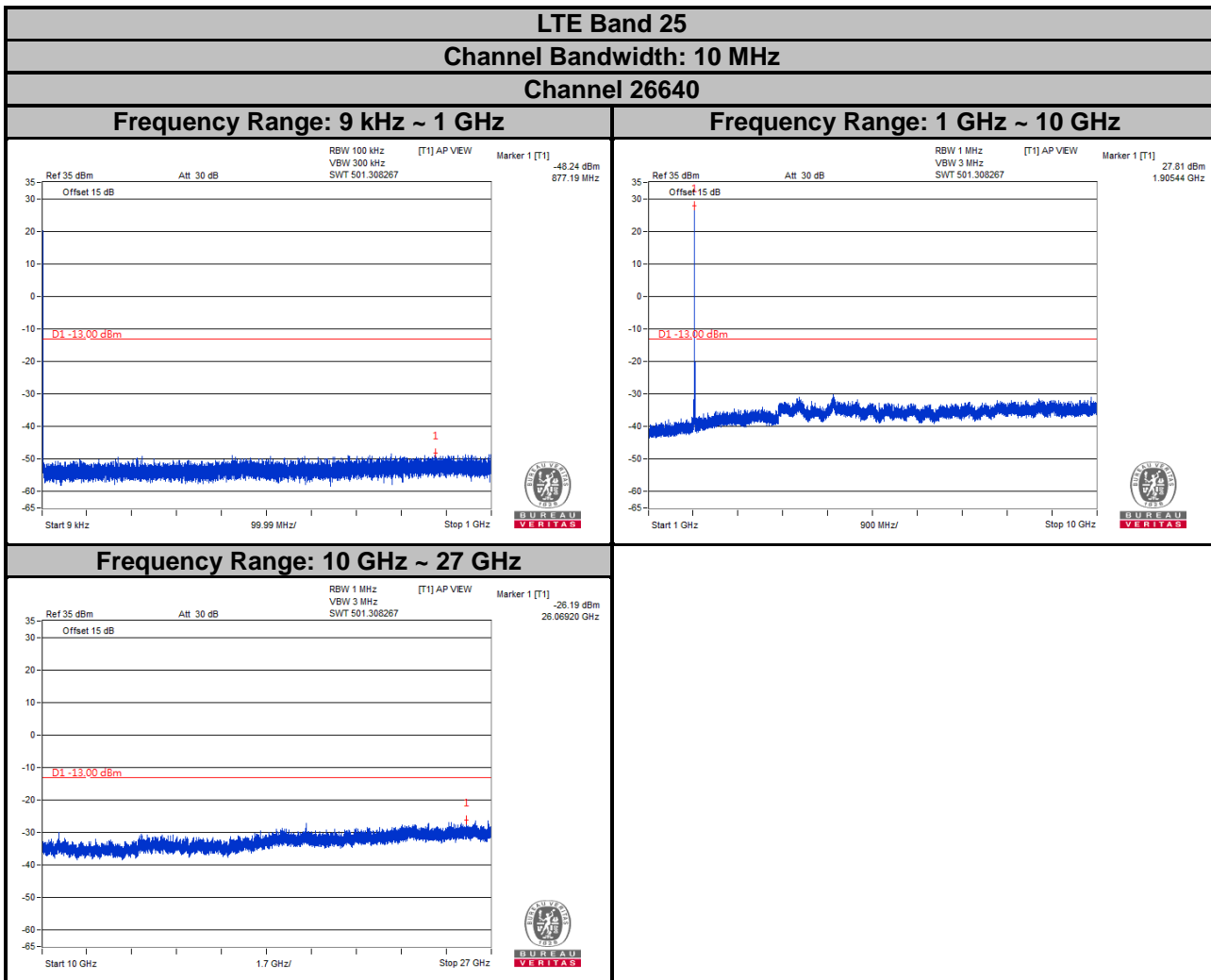
**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



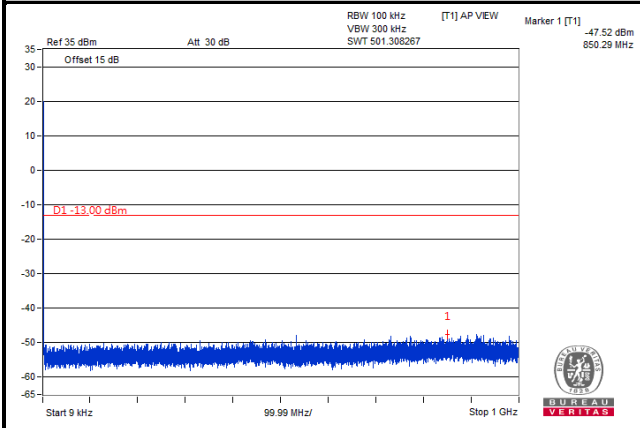
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 25**

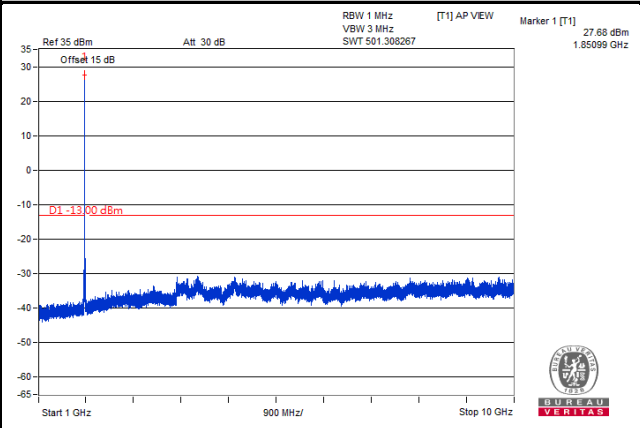
**Channel Bandwidth: 15 MHz**

**Channel 26115**

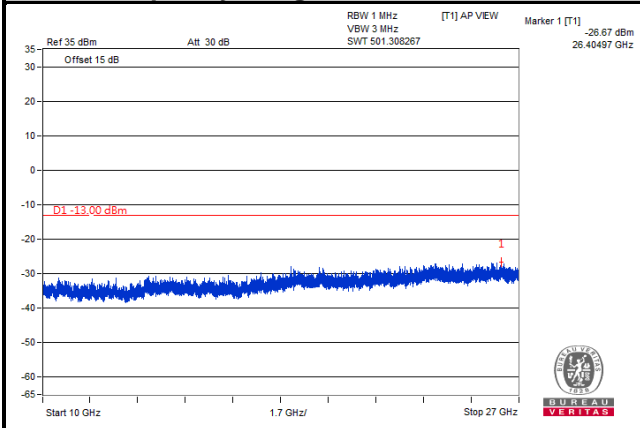
**Frequency Range: 9 kHz ~ 1 GHz**



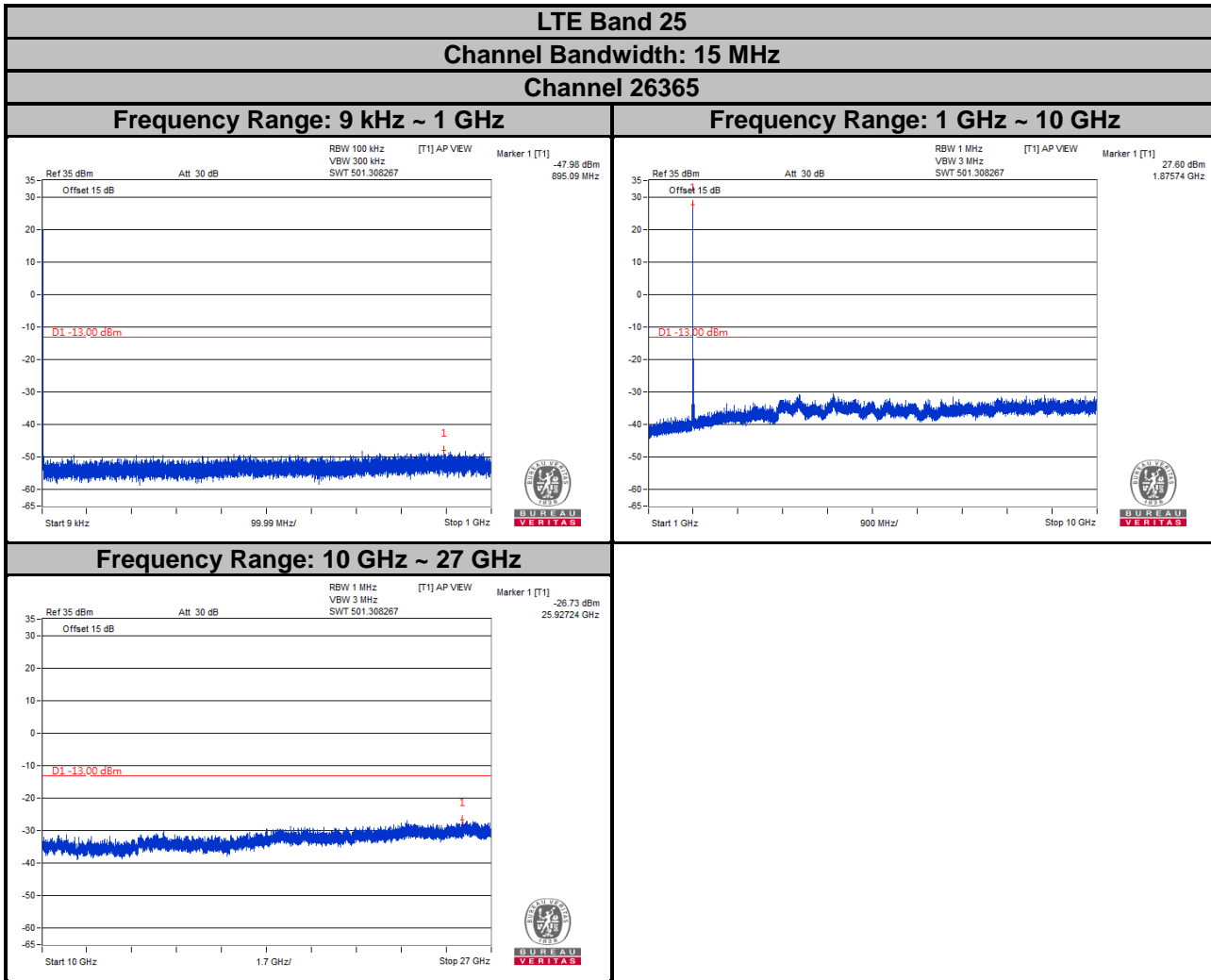
**Frequency Range: 1 GHz ~ 10 GHz**



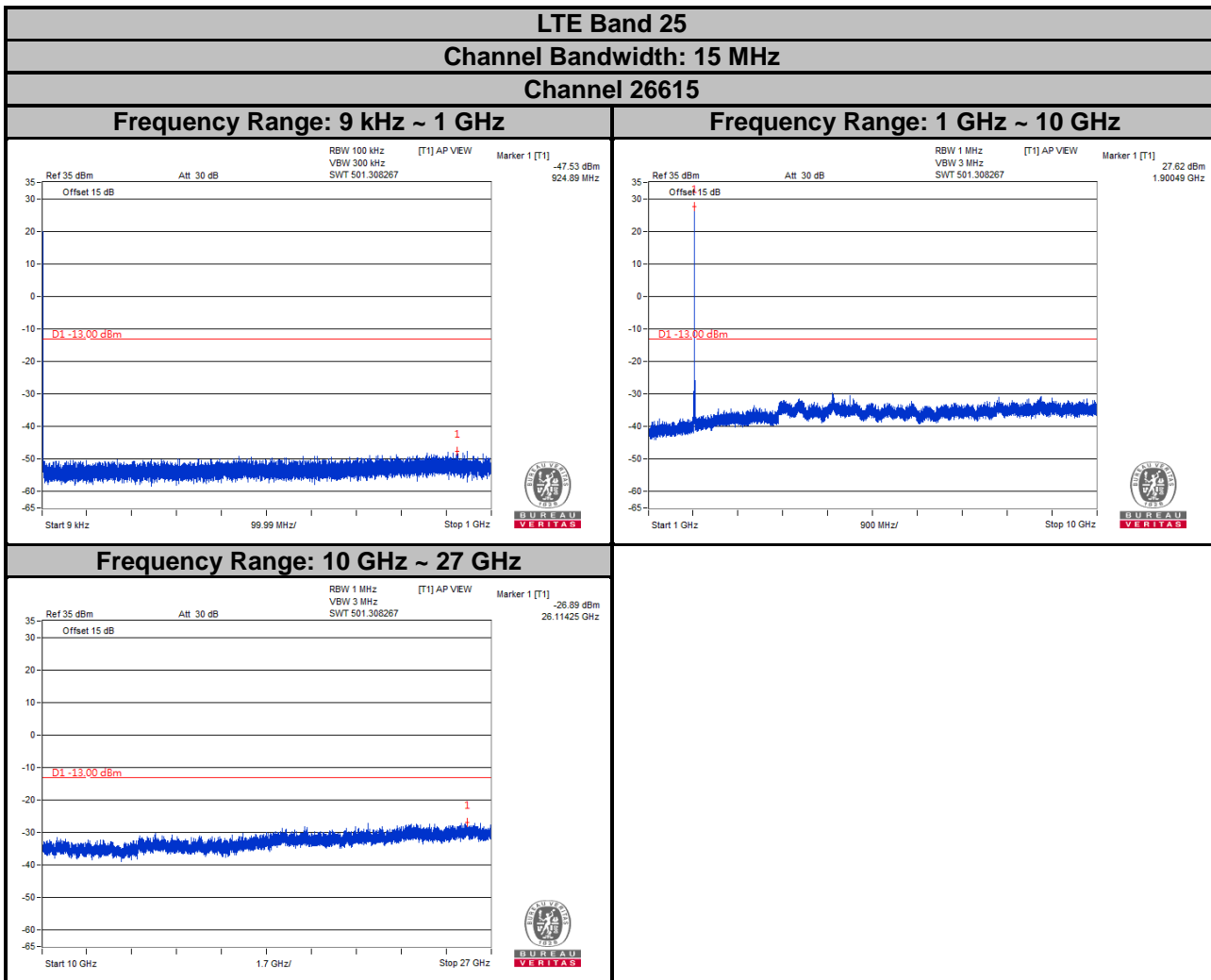
**Frequency Range: 10 GHz ~ 27 GHz**



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

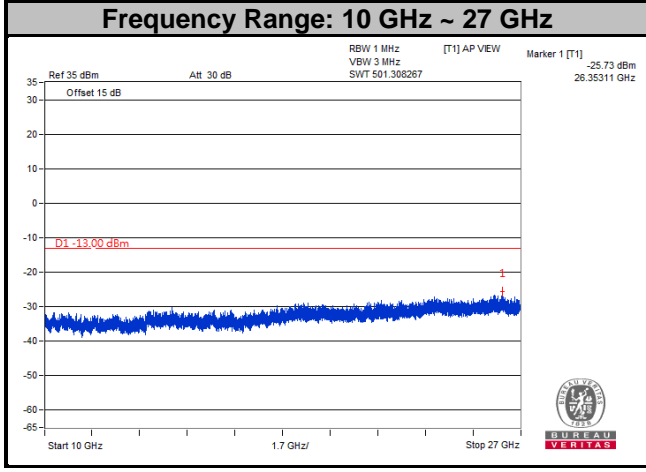
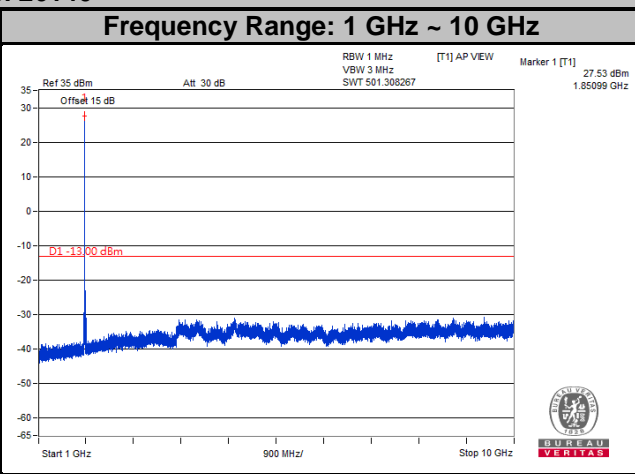
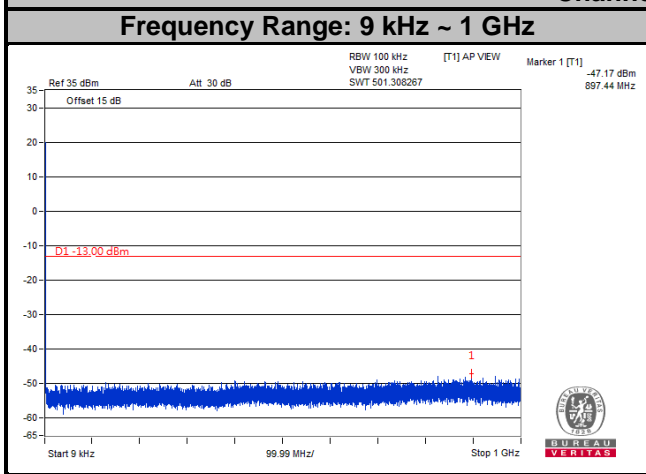


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

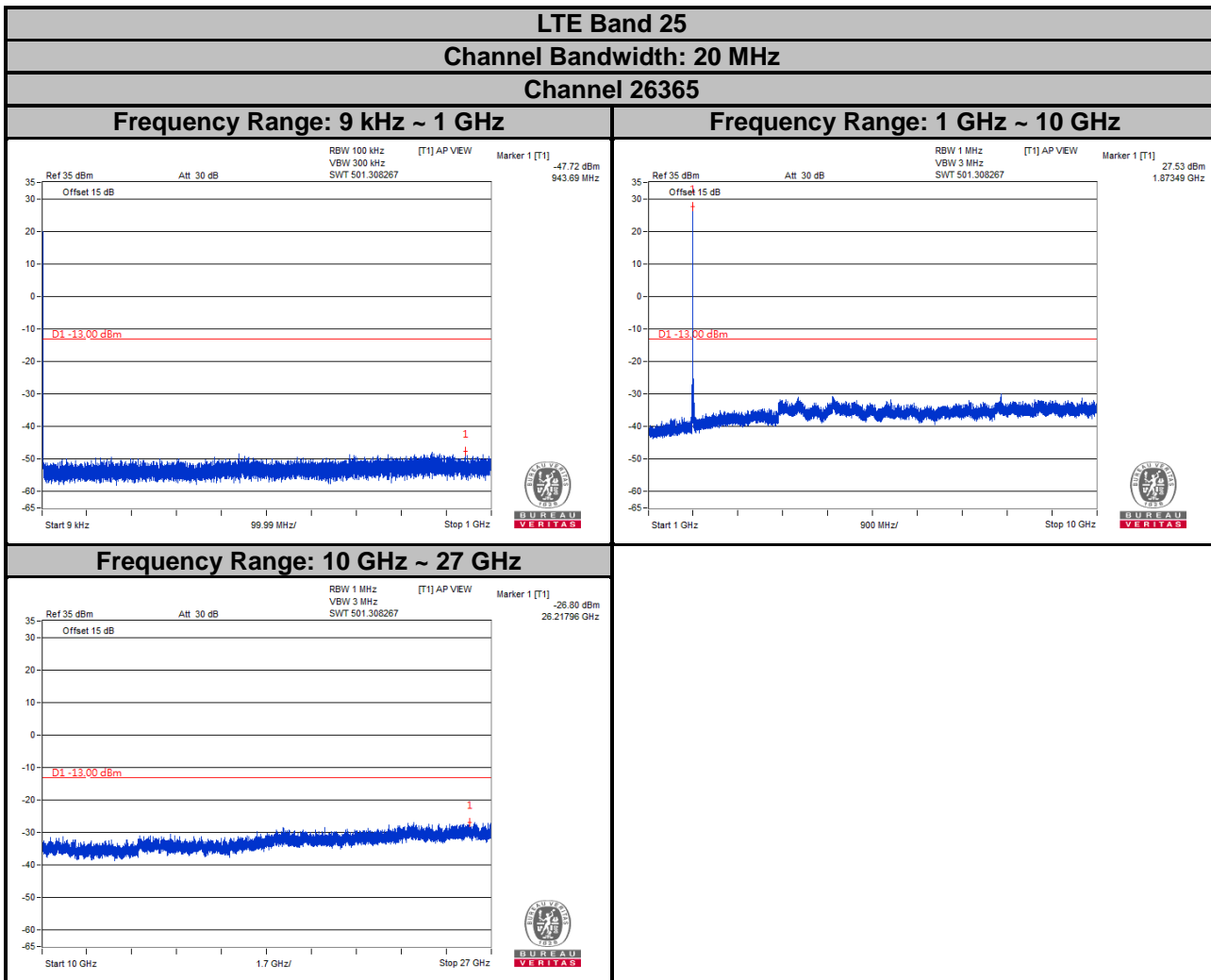


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

**LTE Band 25**  
**Channel Bandwidth: 20 MHz**  
**Channel 26140**

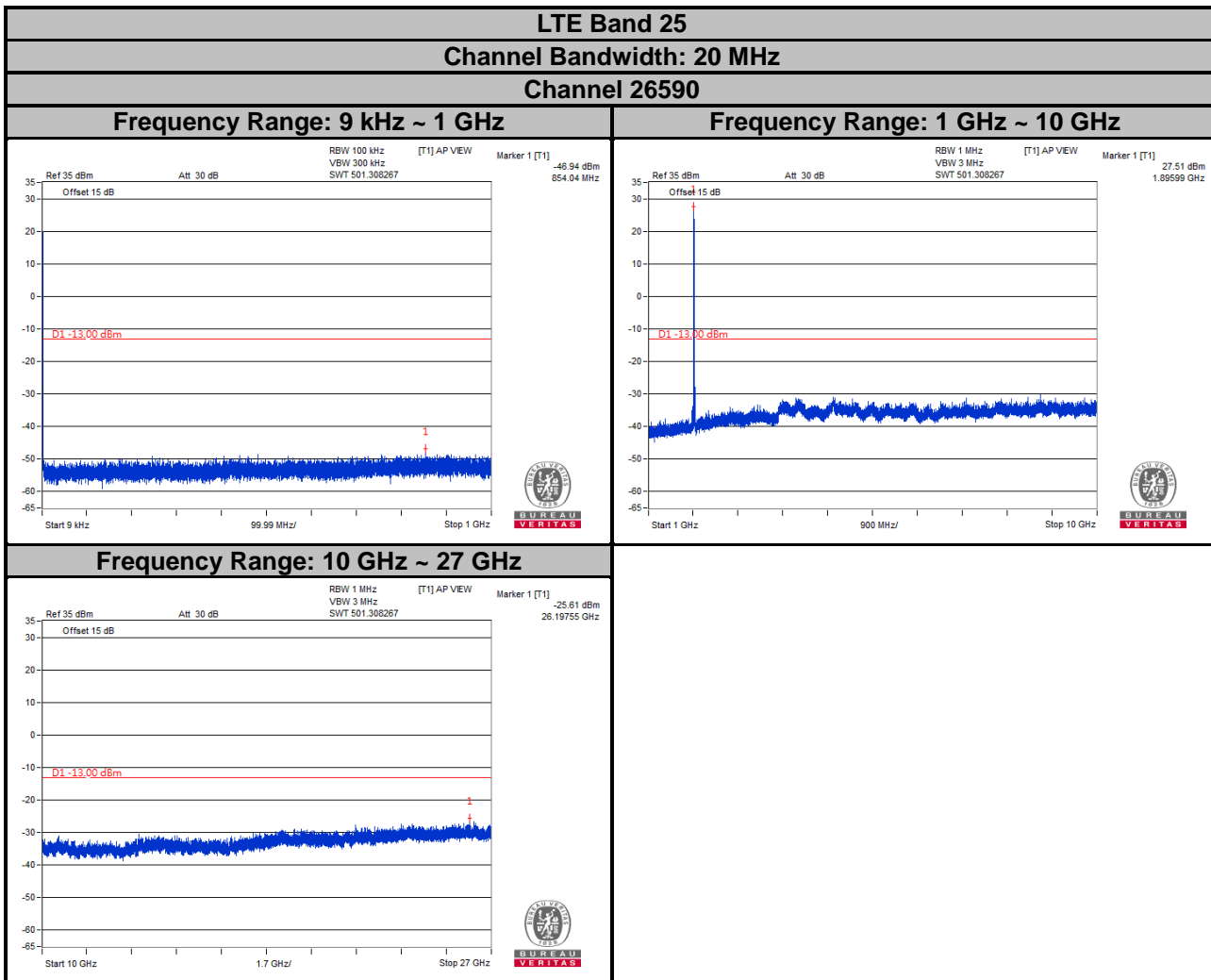


Note: The signal over the limit in 9 kHz is from spectrum analyzer.



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