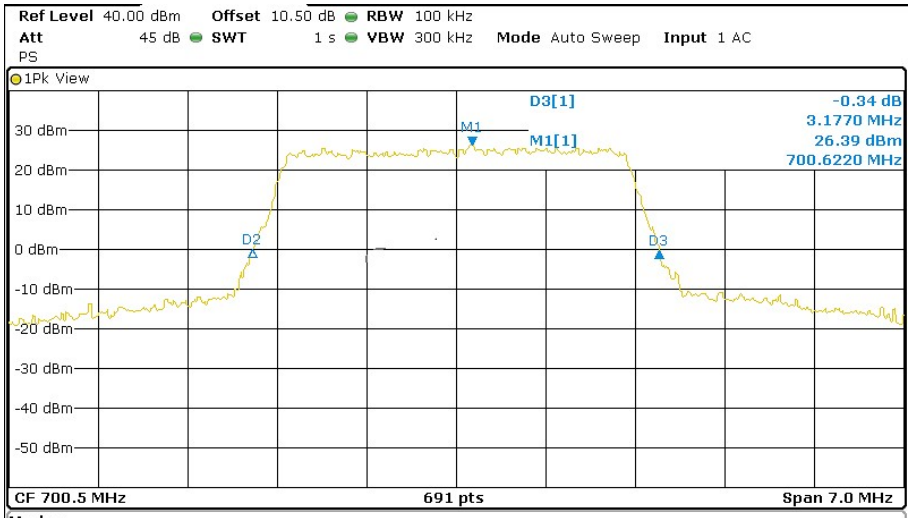
TEST RESULTS (Cont):	

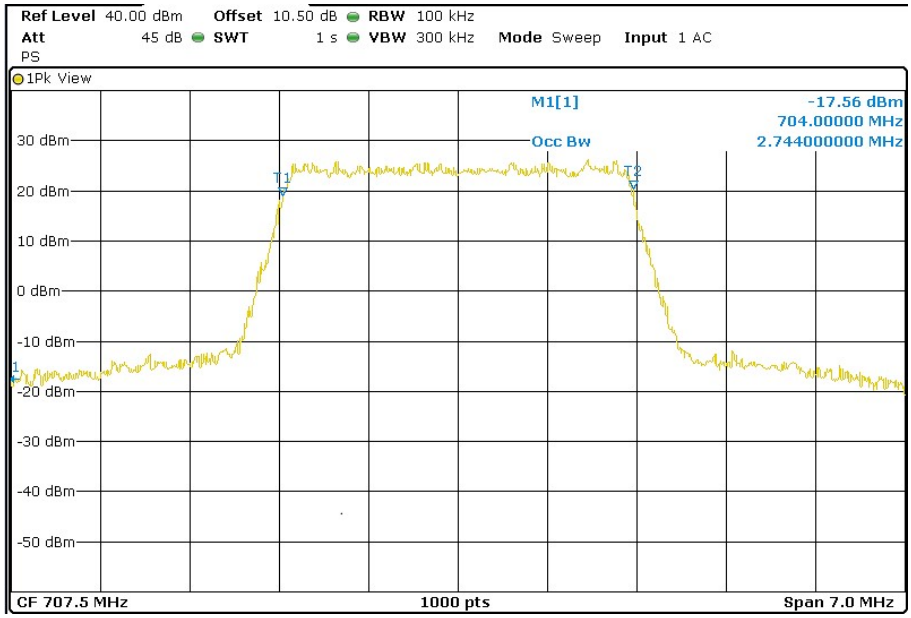
Lowest Channel -26dBc Bandwidth kHz



Marker

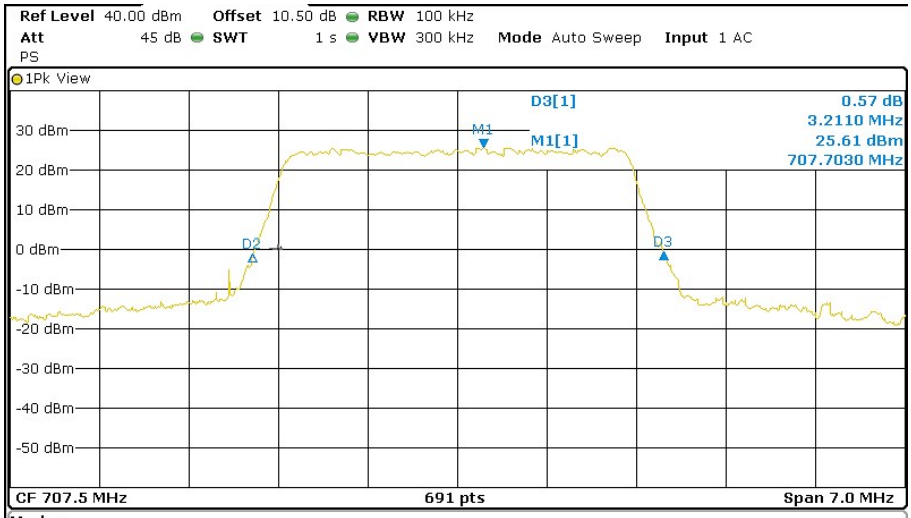
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	700.622 MHz	26.39 dBm		
D2	M1	1	-1.71 MHz	-26.37 dB		
D3	D2	1	3.177 MHz	-0.34 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

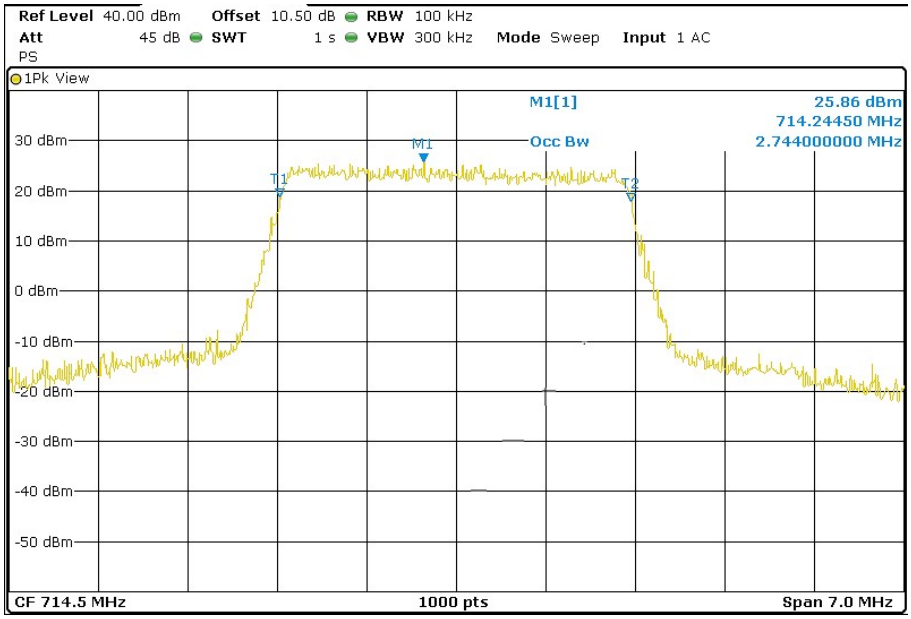
Middle Channel -26dBc Bandwidth kHz



Marker

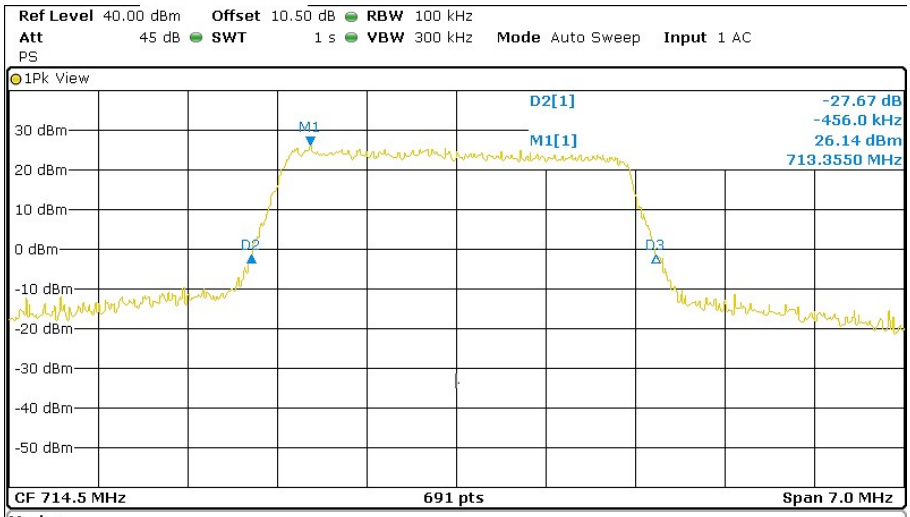
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.703 MHz	25.61 dBm		
D2	M1	1	-1.803 MHz	-26.71 dB		
D3	D2	1	3.211 MHz	0.57 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz

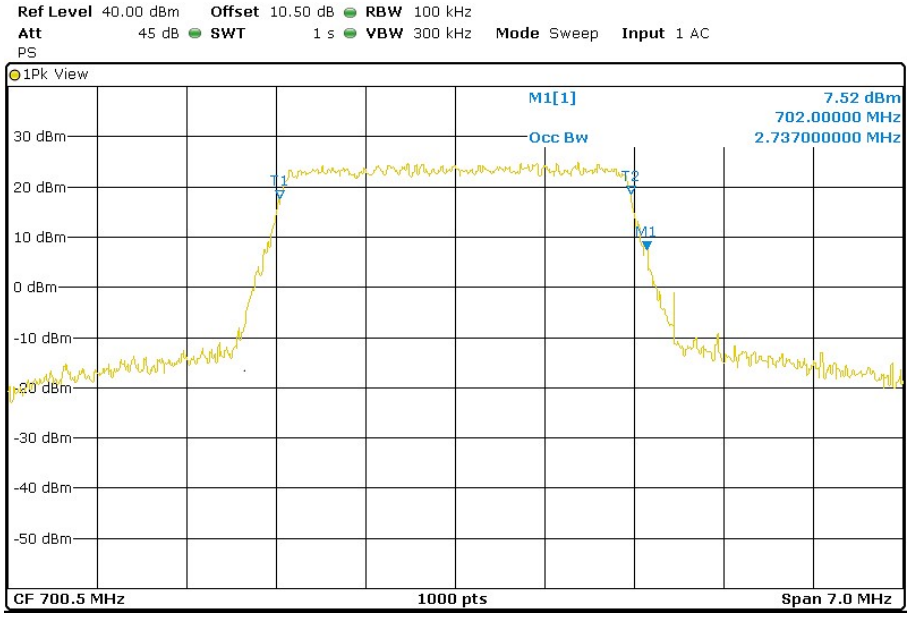


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	713.355 MHz	26.14 dBm		
D2	M1	1	-456.0 kHz	-27.67 dB		
D3	D2	1	3.161 MHz	0.07 dB		

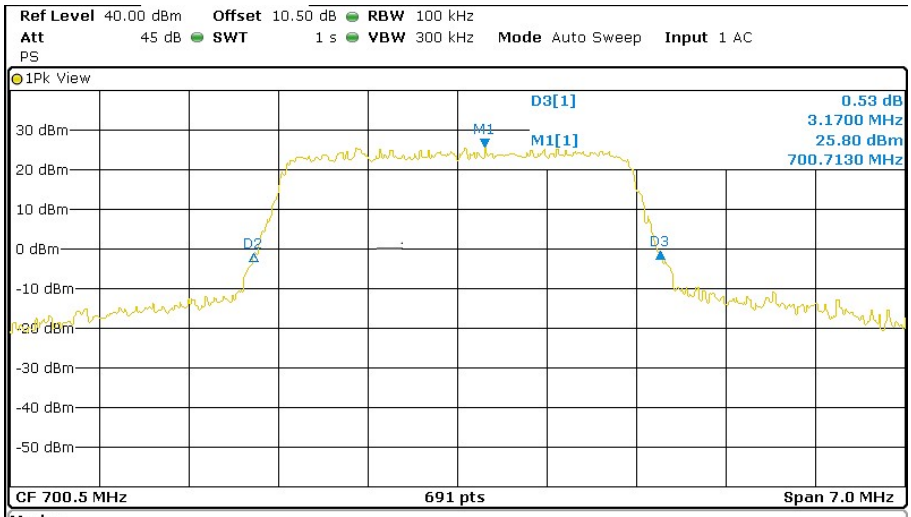
LTE 16QAM MODULATION. BW = 3 MHz

Lowest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

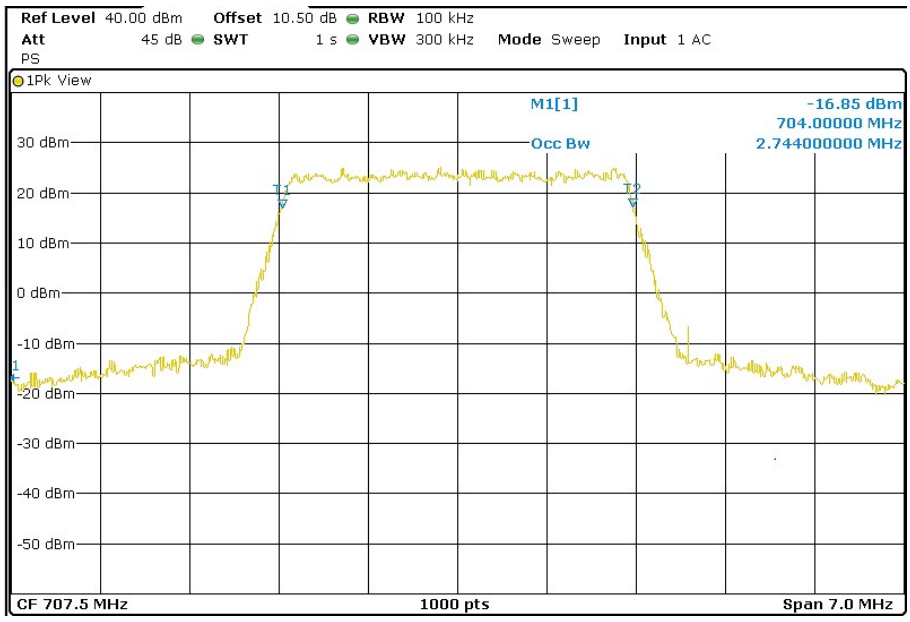
Lowest Channel -26dBc Bandwidth kHz



Marker

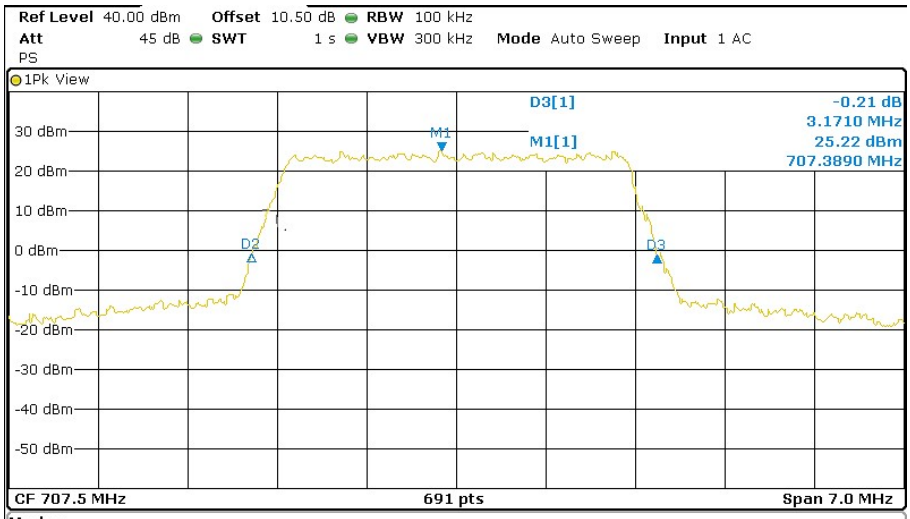
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	700.713 MHz	25.80 dBm		
D2	M1	1	-1.803 MHz	-26.83 dB		
D3	D2	1	3.17 MHz	0.53 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

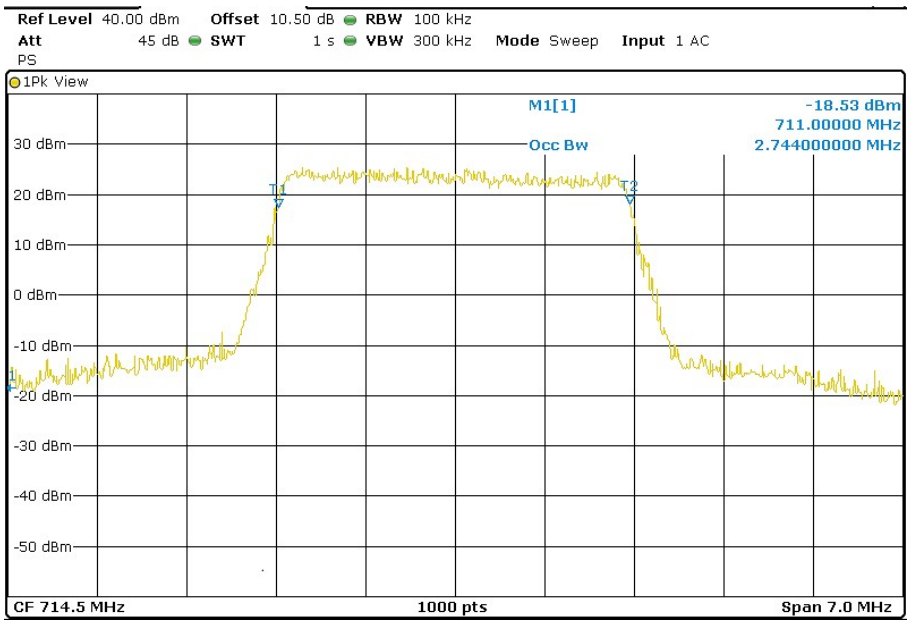
Middle Channel -26dBc Bandwidth kHz



Marker

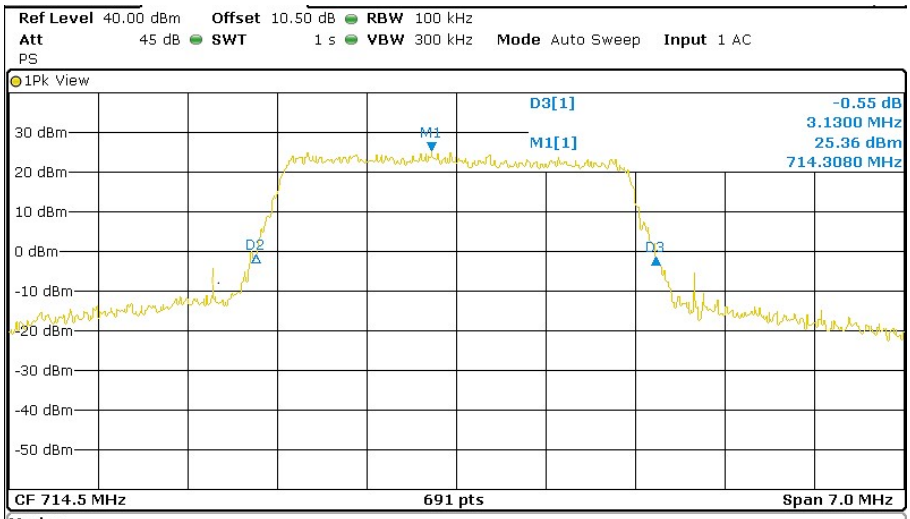
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.389 MHz	25.22 dBm		
D2	M1	1	-1.489 MHz	-26.02 dB		
D3	D2	1	3.171 MHz	-0.21 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz

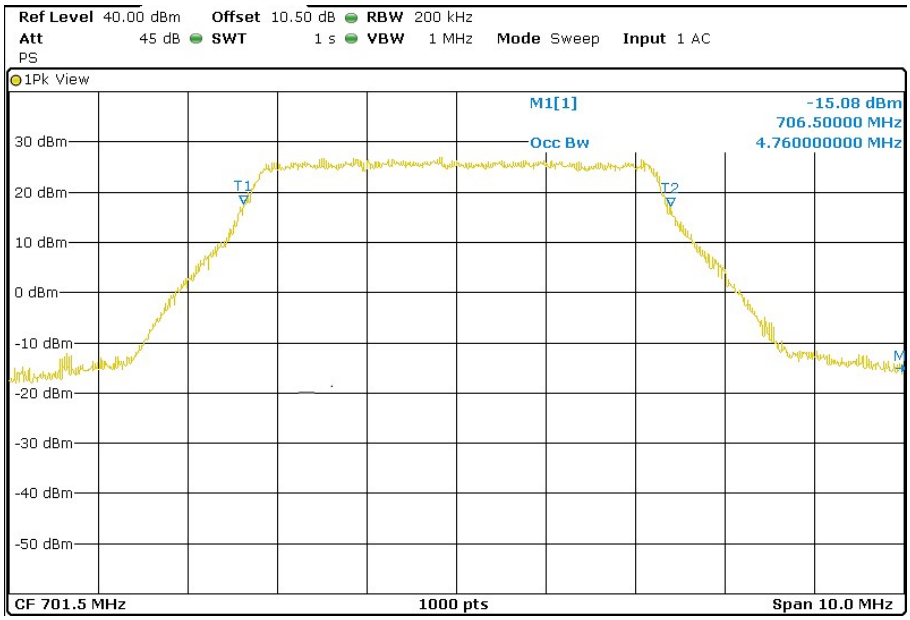


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	714.308 MHz	25.36 dBm		
D2	M1	1	-1.378 MHz	-26.12 dB		
D3	D2	1	3.13 MHz	-0.55 dB		

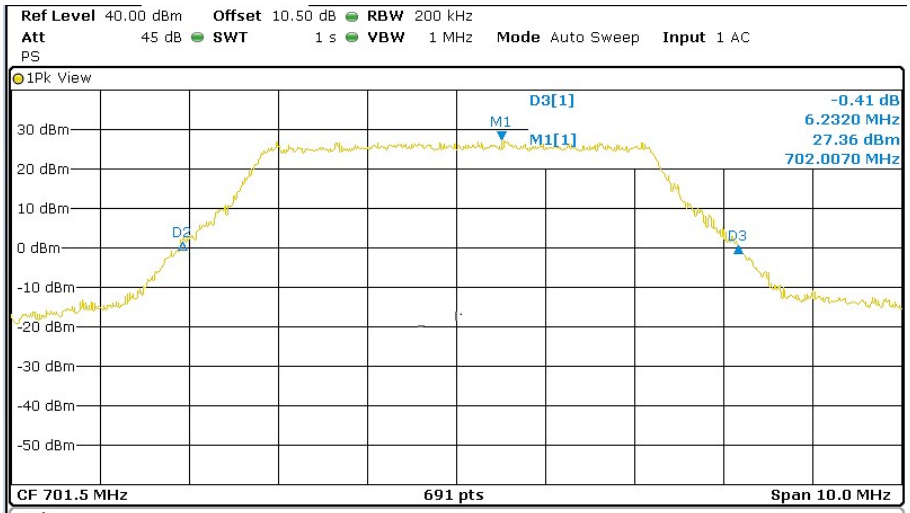
LTE QPSK MODULATION. BW = 5 MHz

Lowest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

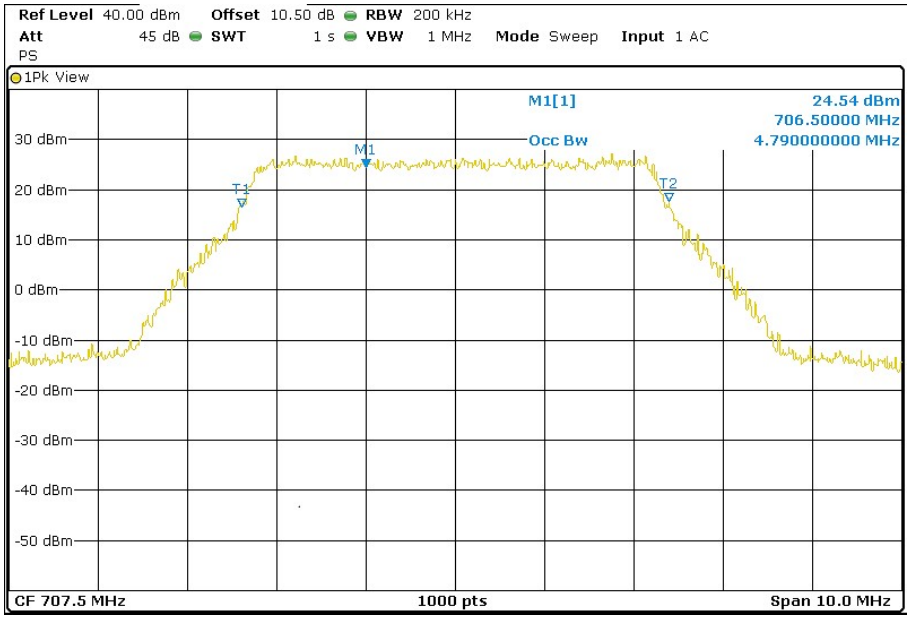
Lowest Channel -26dBc Bandwidth kHz



Marker

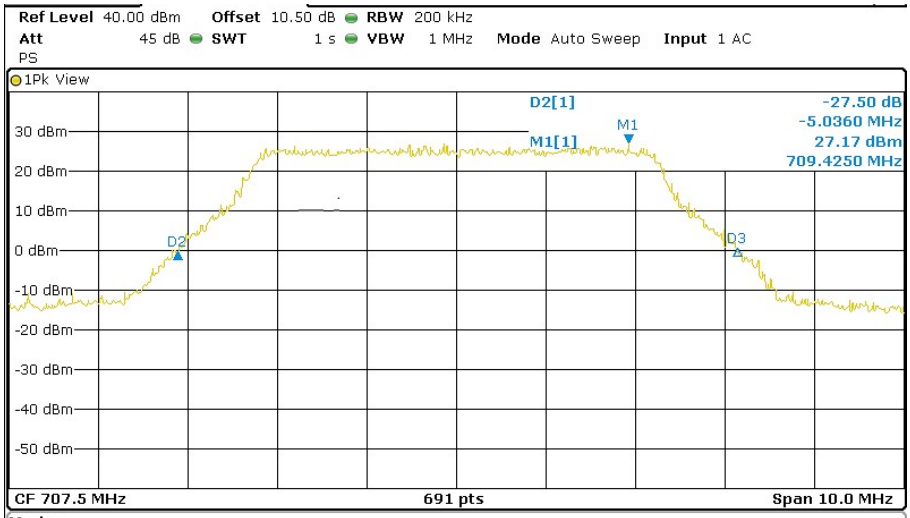
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	702.007 MHz	27.36 dBm		
D2	M1	1	-3.583 MHz	-26.49 dB		
D3	D2	1	6.232 MHz	-0.41 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

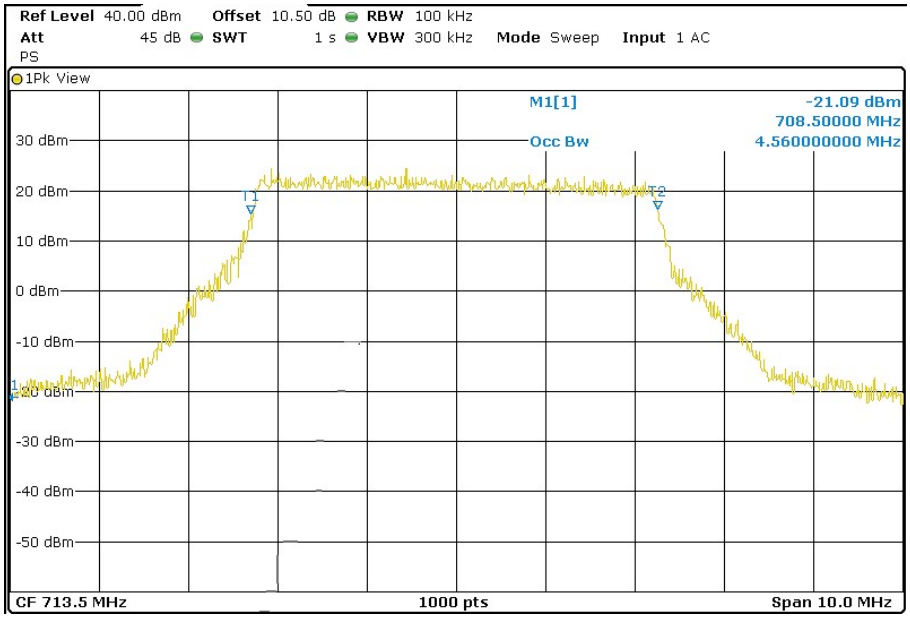
Middle Channel -26dBc Bandwidth kHz



Marker

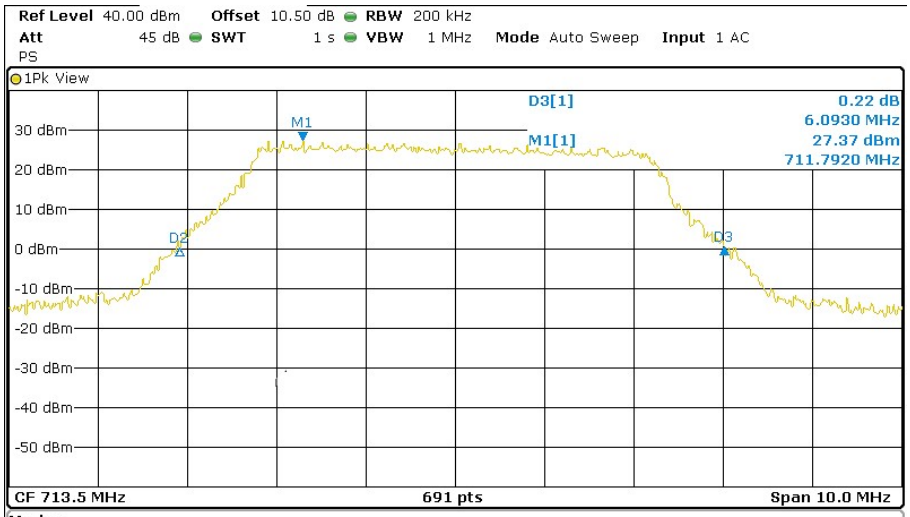
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	709.425 MHz	27.17 dBm		
D2	M1	1	-5.036 MHz	-27.50 dB		
D3	D2	1	6.243 MHz	0.90 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz

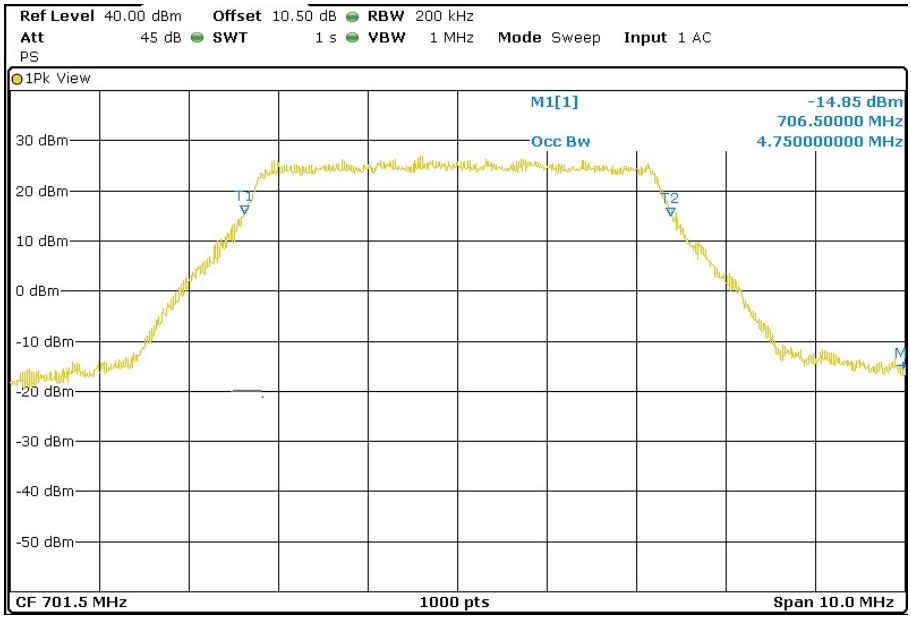


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.792 MHz	27.37 dBm		
D2	M1	1	-1.375 MHz	-27.05 dB		
D3	D2	1	6.093 MHz	0.22 dB		

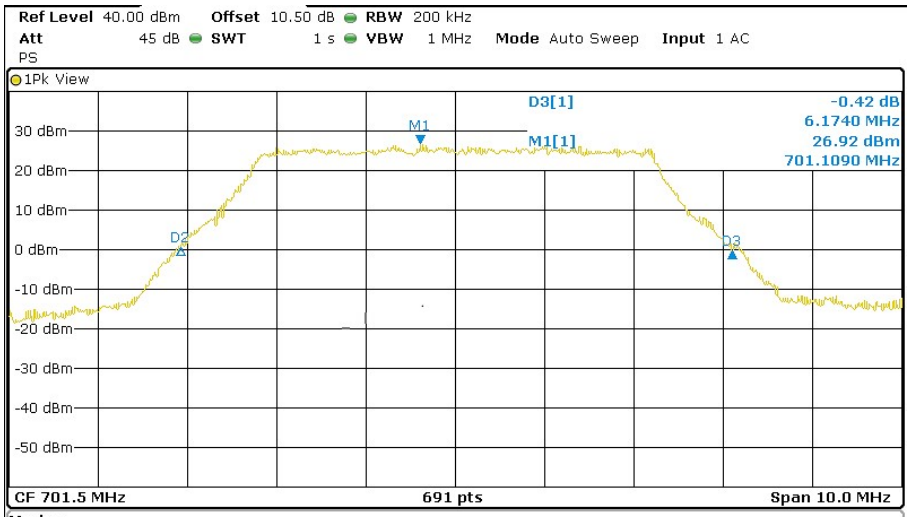
LTE 16QAM MODULATION. BW = 5 MHz

Lowest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

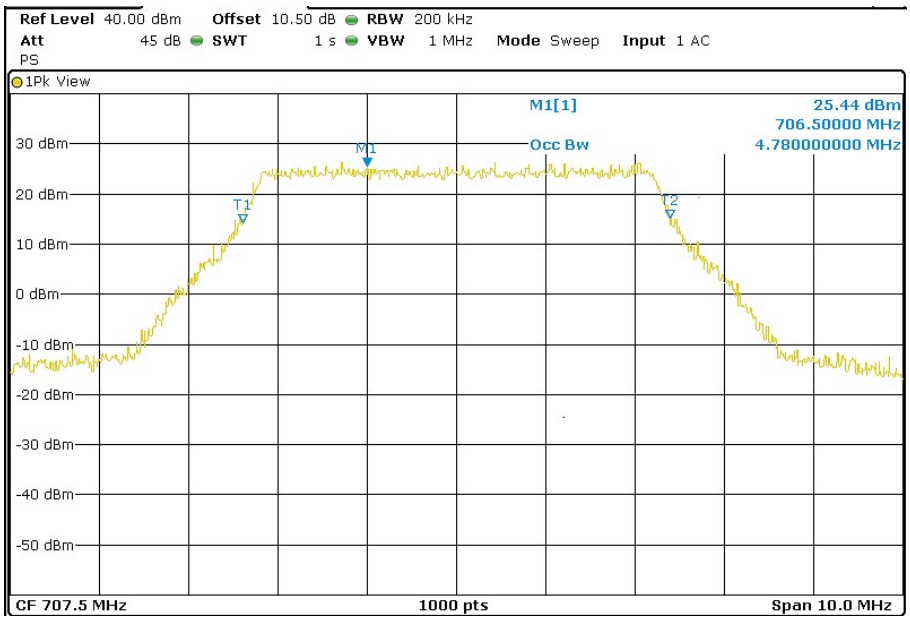
Lowest Channel -26dBc Bandwidth kHz



Marker

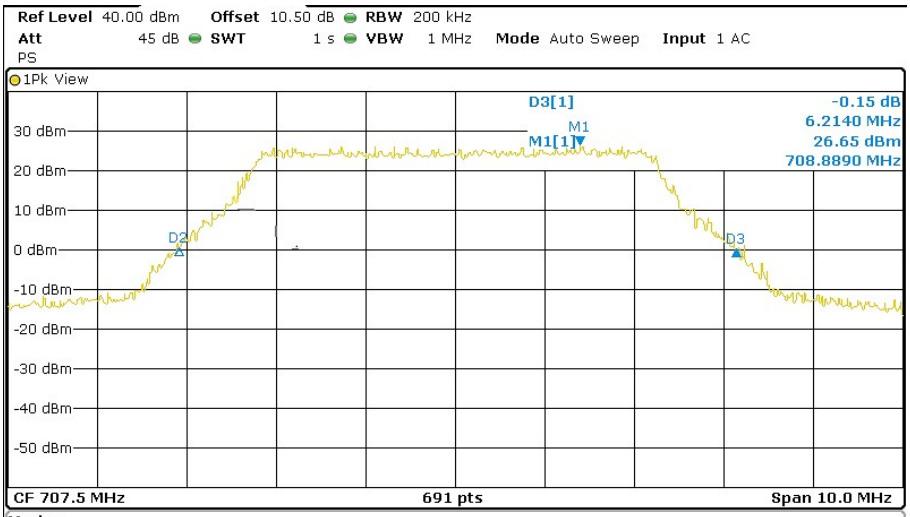
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	701.109 MHz	26.92 dBm		
D2	M1	1	-2.686 MHz	-26.86 dB		
D3	D2	1	6.174 MHz	-0.42 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

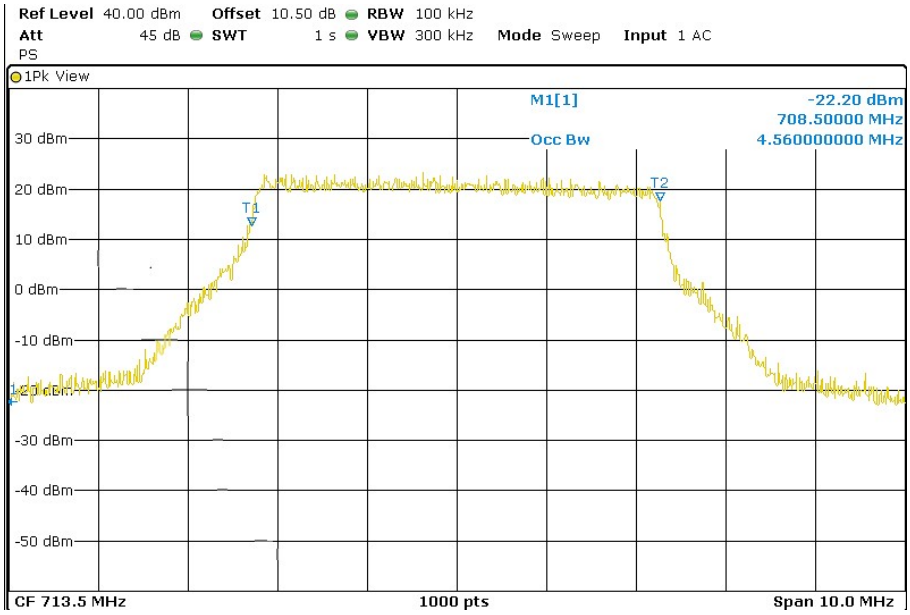
Middle Channel -26dBc Bandwidth kHz



Marker

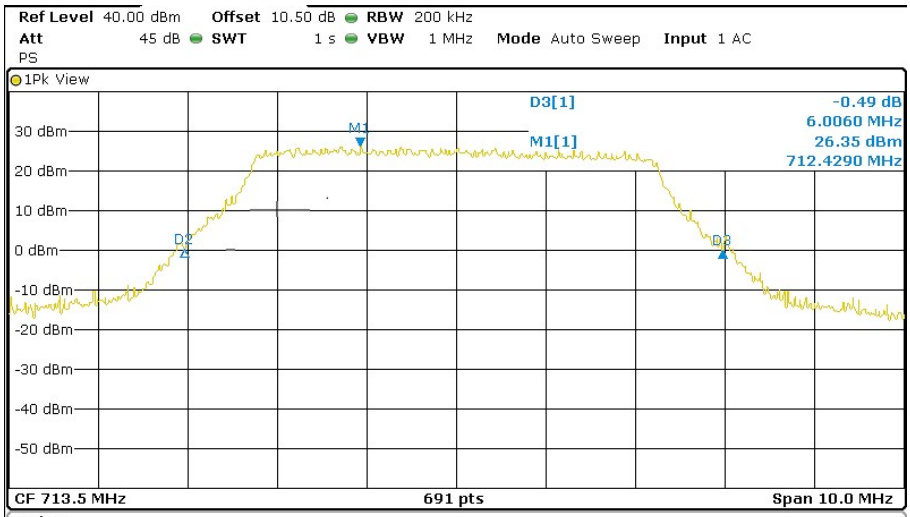
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	708.889 MHz	26.65 dBm		
D2	M1	1	-4.472 MHz	-26.14 dB		
D3	D2	1	6.214 MHz	-0.15 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz

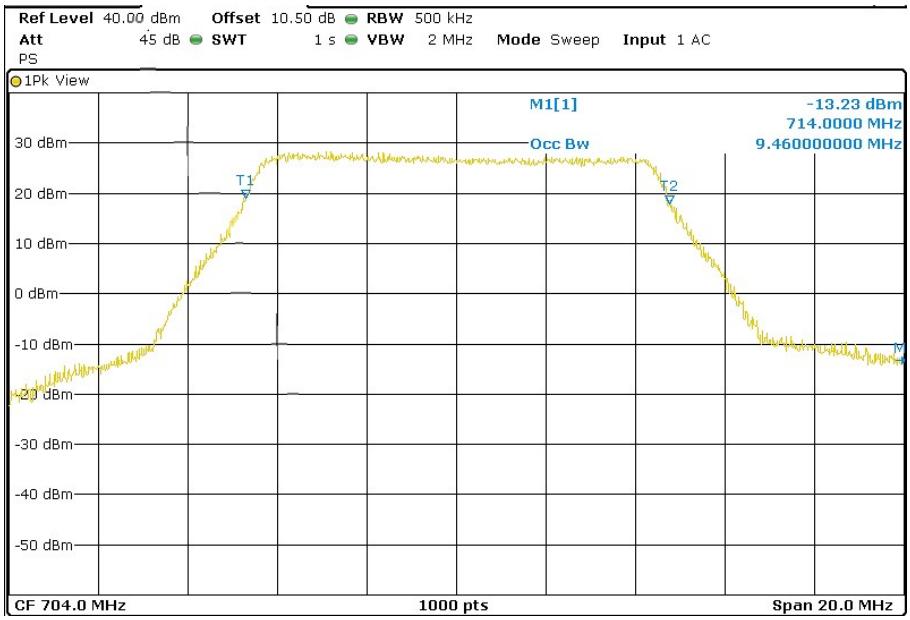


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	712.429 MHz	26.35 dBm		
D2	M1	1	-1.968 MHz	-26.03 dB		
D3	D2	1	6.006 MHz	-0.49 dB		

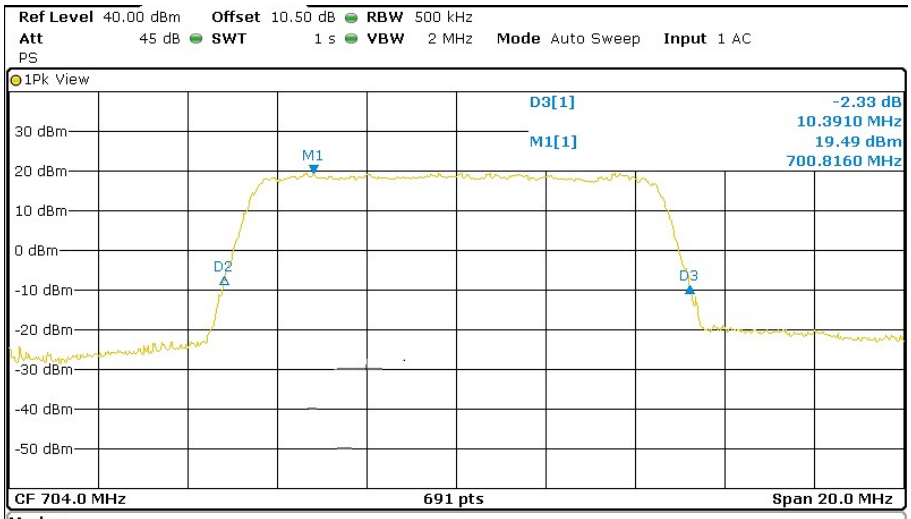
LTE QPSK MODULATION. BW = 10 MHz

Lowest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

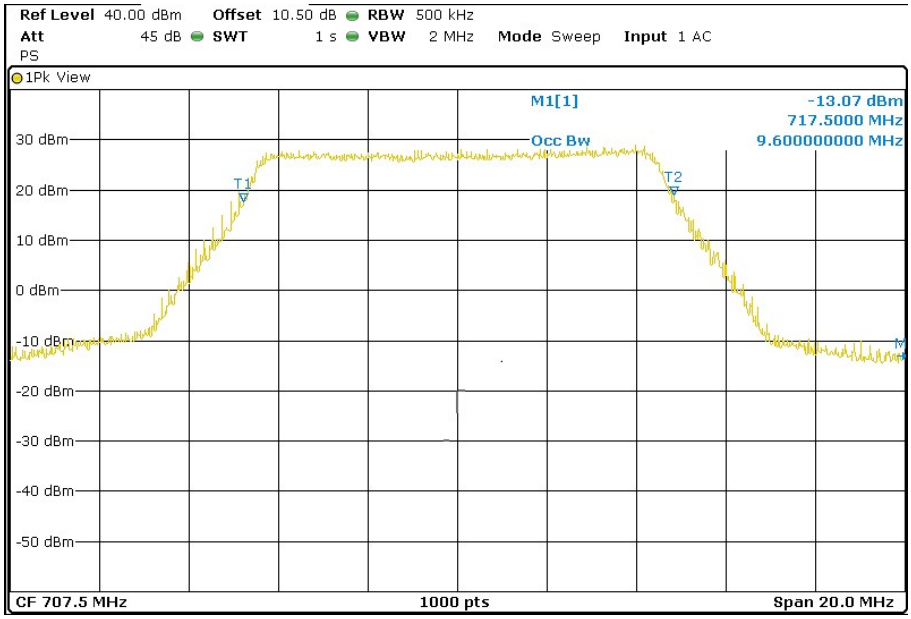
Lowest Channel -26dBc Bandwidth kHz



Marker

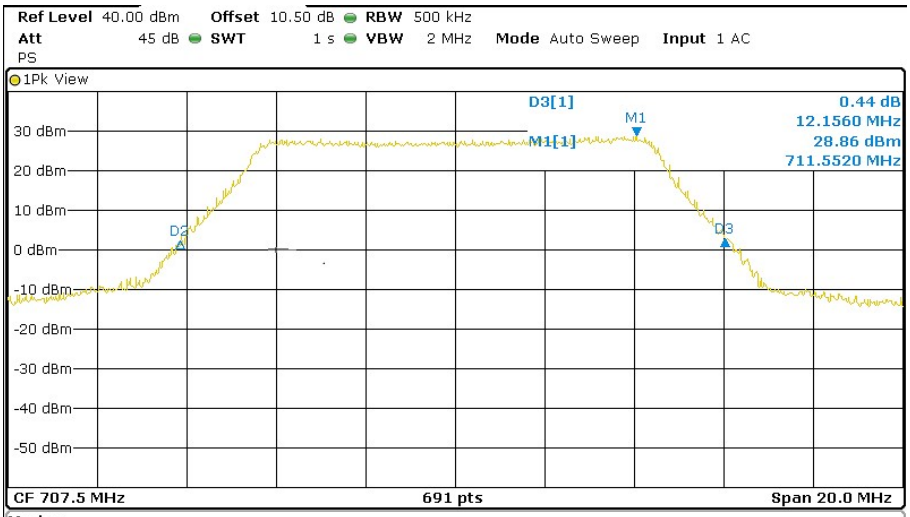
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	700.816 MHz	19.49 dBm		
D2	M1	1	-2.002 MHz	-26.07 dB		
D3	D2	1	10.391 MHz	-2.33 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

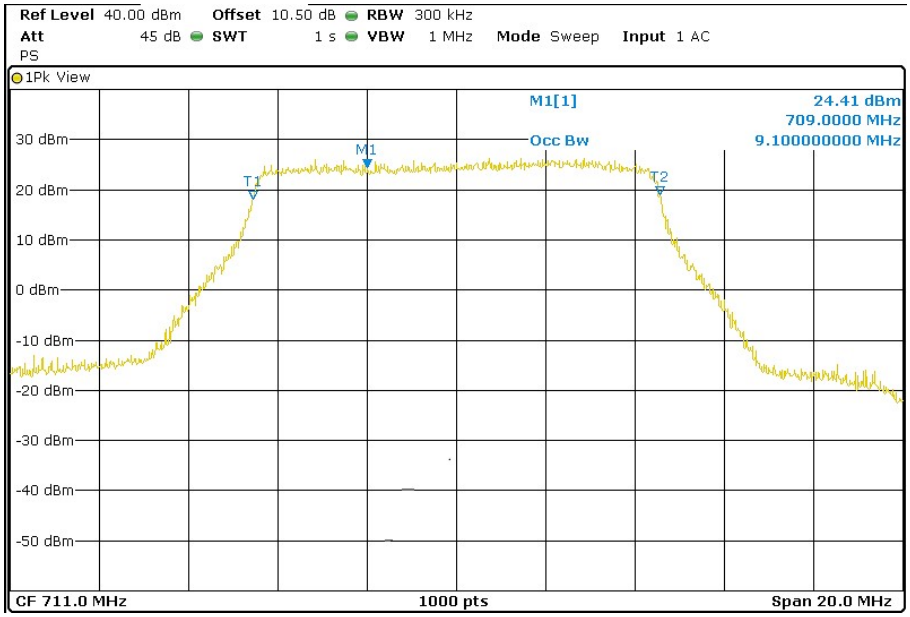
Middle Channel -26dBc Bandwidth kHz



Marker

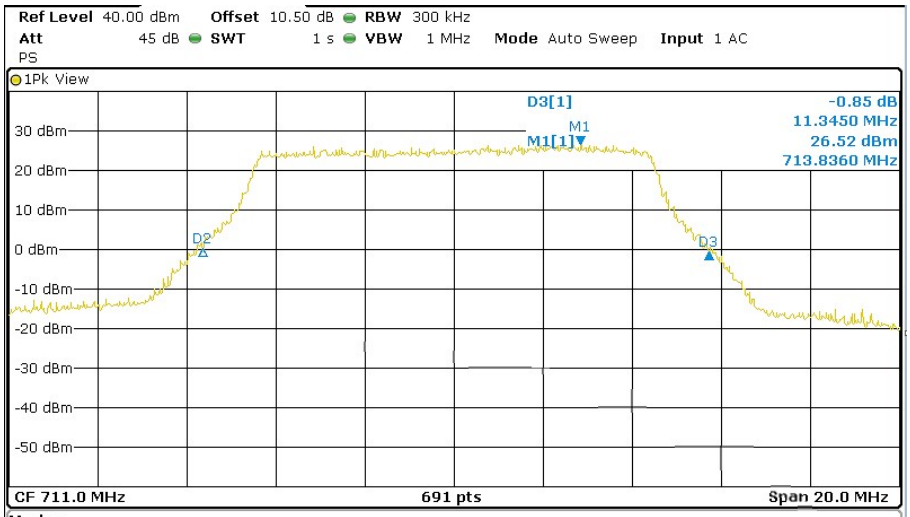
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.552 MHz	28.86 dBm		
D2	M1	1	-10.191 MHz	-26.55 dB		
D3	D2	1	12.156 MHz	0.44 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz

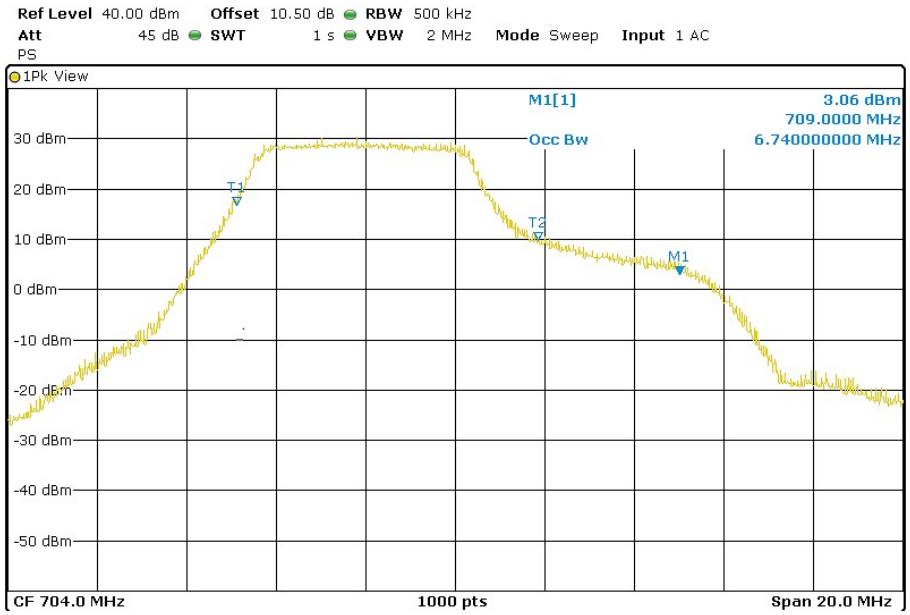


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	713.836 MHz	26.52 dBm		
D2	M1	1	-8.48 MHz	-26.21 dB		
D3	D2	1	11.345 MHz	-0.85 dB		

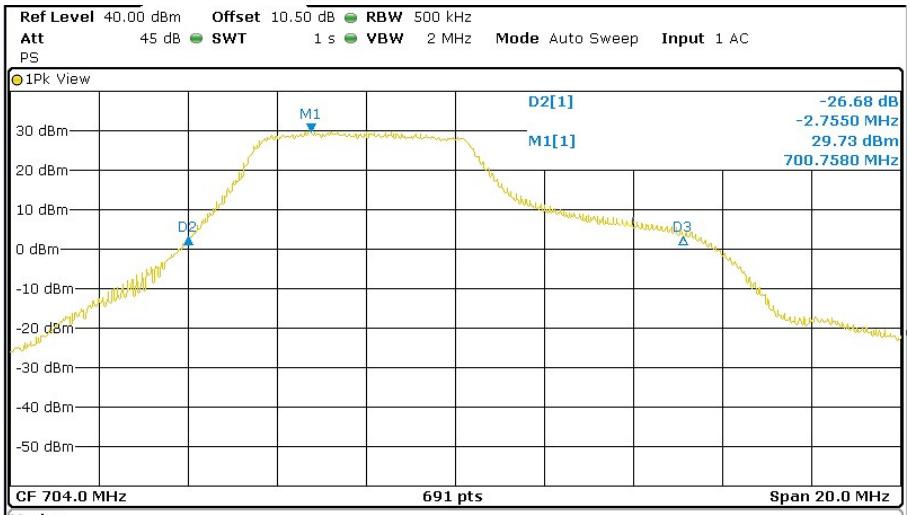
LTE 16QAM MODULATION. BW = 10 MHz

Lowest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

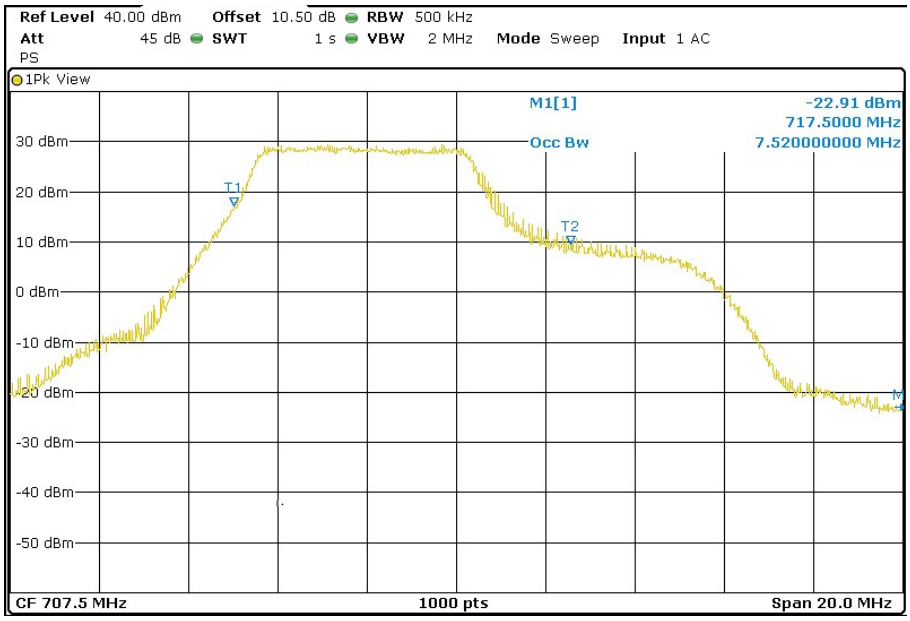
Lowest Channel -26dBc Bandwidth kHz



Marker

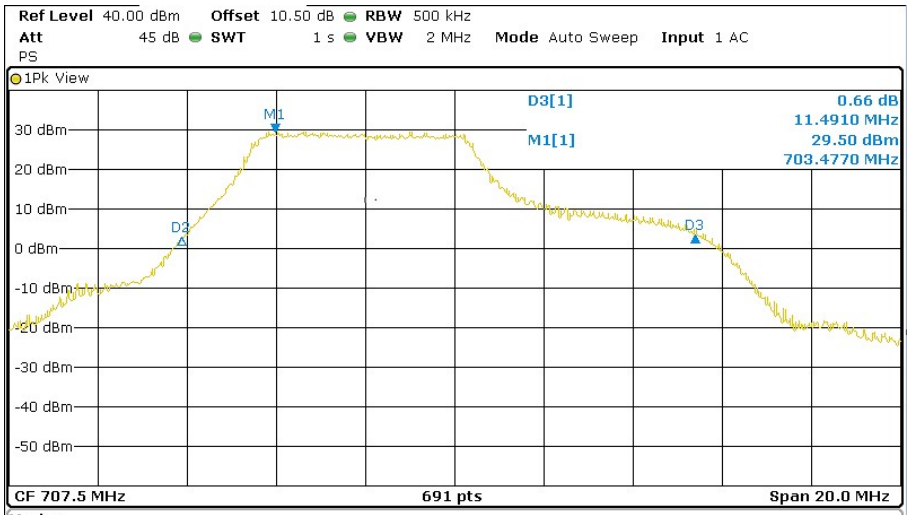
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	700.758 MHz	29.73 dBm		
D2	M1	1	-2.755 MHz	-26.68 dB		
D3	D2	1	11.114 MHz	0.12 dB		

Middle Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

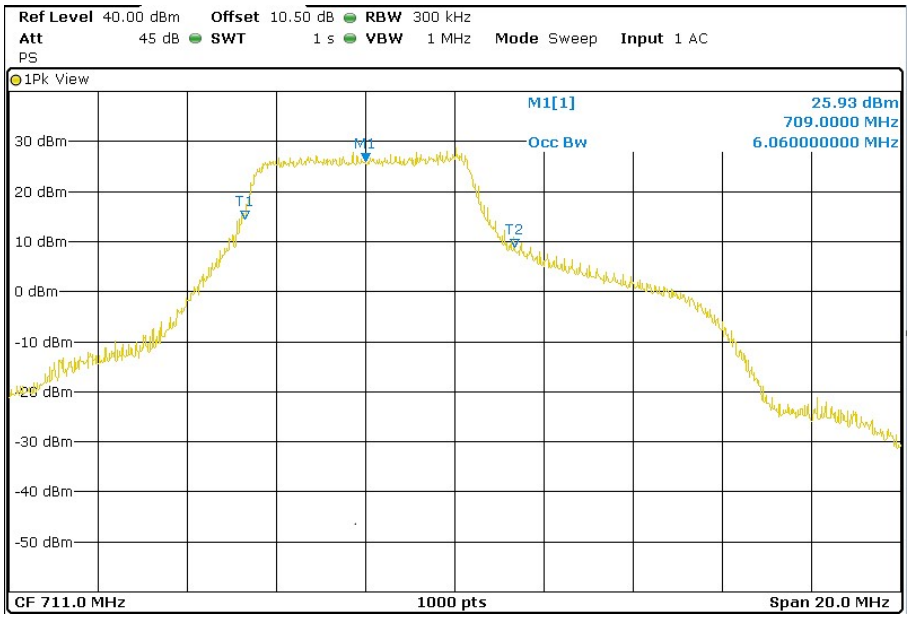
Middle Channel -26dBc Bandwidth kHz



Marker

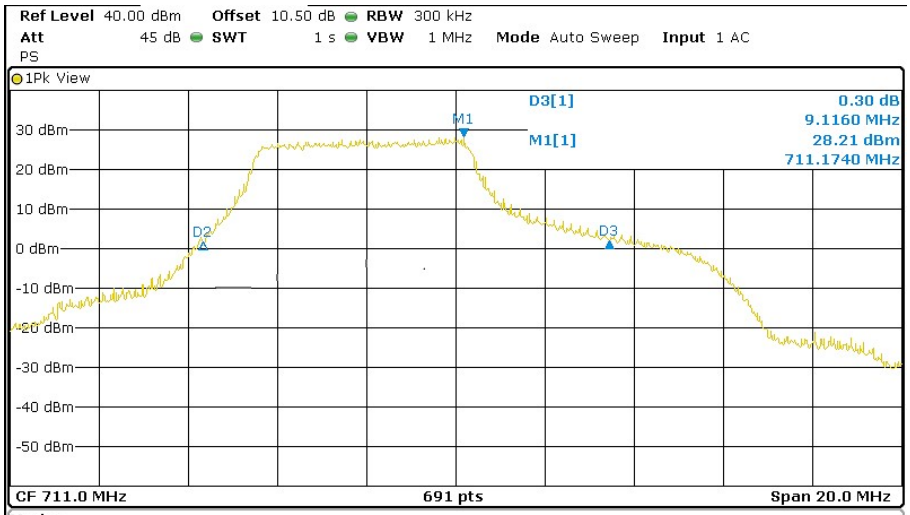
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	703.477 MHz	29.50 dBm		
D2	M1	1	-2.087 MHz	-26.77 dB		
D3	D2	1	11.491 MHz	0.66 dB		

Highest Channel 99% Occupied Bandwidth



TEST RESULTS (Cont):	

Highest Channel -26dBc Bandwidth kHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.174 MHz	28.21 dBm		
D2	M1	1	-5.847 MHz	-26.44 dB		
D3	D2	1	9.116 MHz	0.30 dB		

TEST A.5: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

LIMITS:	Product standard:	FCC Part 27 / IC RSS-130
	Test standard:	FCC §2.1051 and § 27.53/ RSS-130 Clause 4.7

LIMITS

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. P in watts.

At Po transmitting power of 2 watts (33 dBm), the specified minimum attenuation becomes 43+10log (Po). and the level in dBm relative to Po becomes:

Po (dBm) – [43 + 10 log (Po in watts)] = -13 dBm

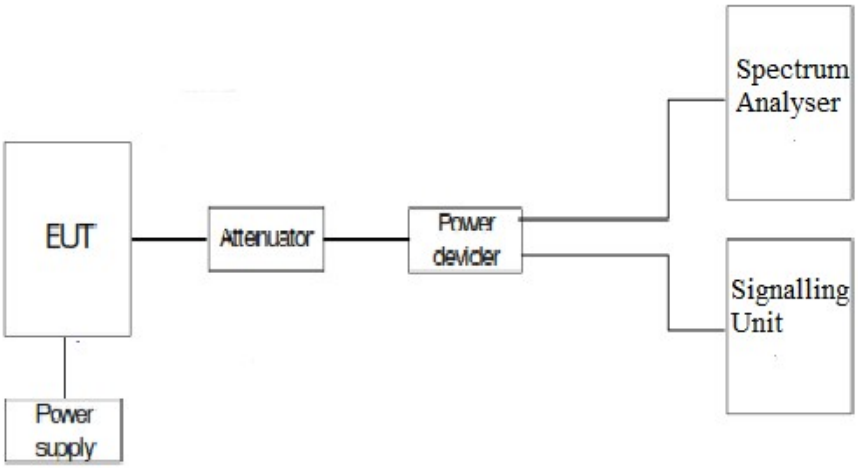
TEST SETUP

The EUT RF output connector was connected to a spectrum analyzer and to the Universal Radio Communication Tester R&S CMW500 (selecting maximum transmission power of the EUT and different modes of modulation) using a 50-ohm attenuator and a power splitter.

The spectrum was investigated from 9 kHz to 18 GHz for LTE Band XII.

The reading of the spectrum analyzer is corrected with the attenuation loss of connection between output terminal of EUT and input of the spectrum analyzer.

For LTE mode the configuration of Resource Blocks and modulation which is the worst case for conducted power was used.



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Frequency range 9 kHz – 18 GHz

LTE QPSK MODULATION. BW = 1.4 MHz

Lowest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Middle Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Highest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

LTE QPSK MODULATION. BW = 3 MHz

Lowest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Middle Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Highest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

LTE QPSK MODULATION. BW = 5 MHz

Lowest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Middle Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Highest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

LTE QPSK MODULATION. BW = 10 MHz

Lowest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

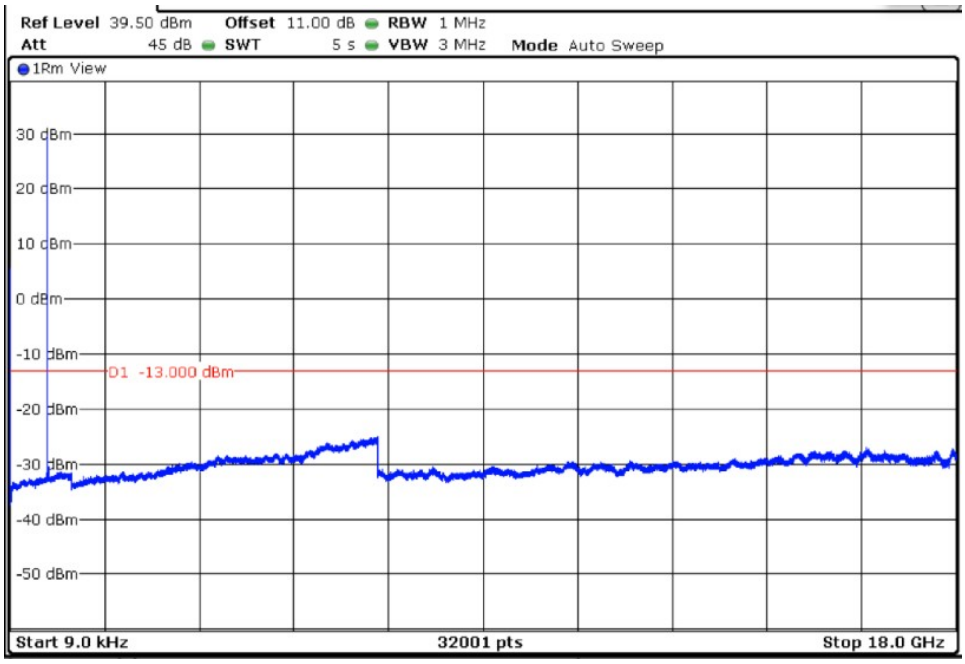
Middle Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

Highest Channel
No spurious signal was found at less than 20dB respect to the limit in the frequency range.

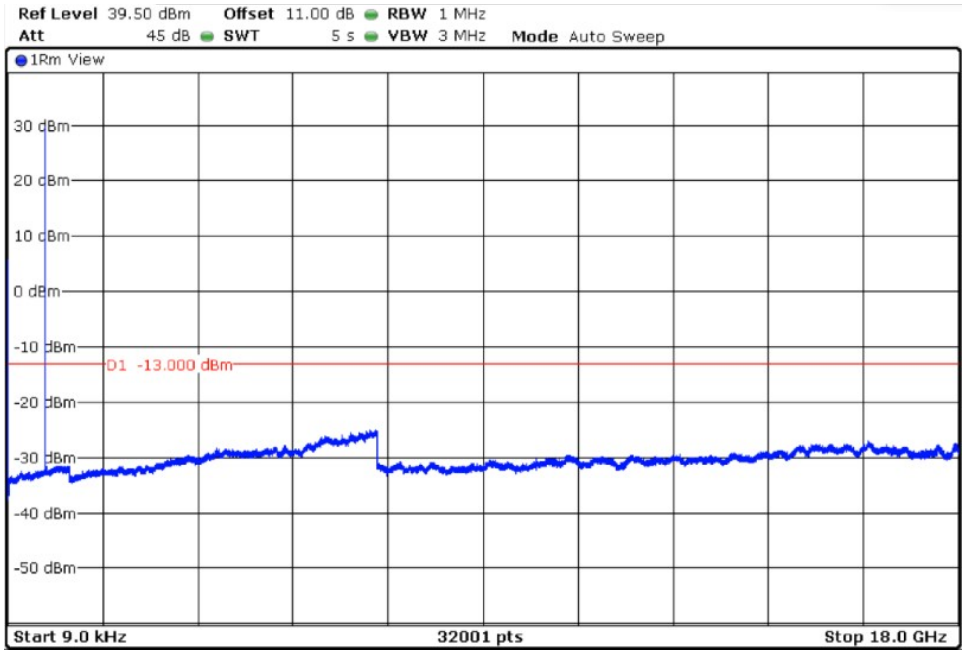
TEST RESULTS (Cont):	

LTE QPSK MODULATION. BW = 1.4MHz

Lowest Channel

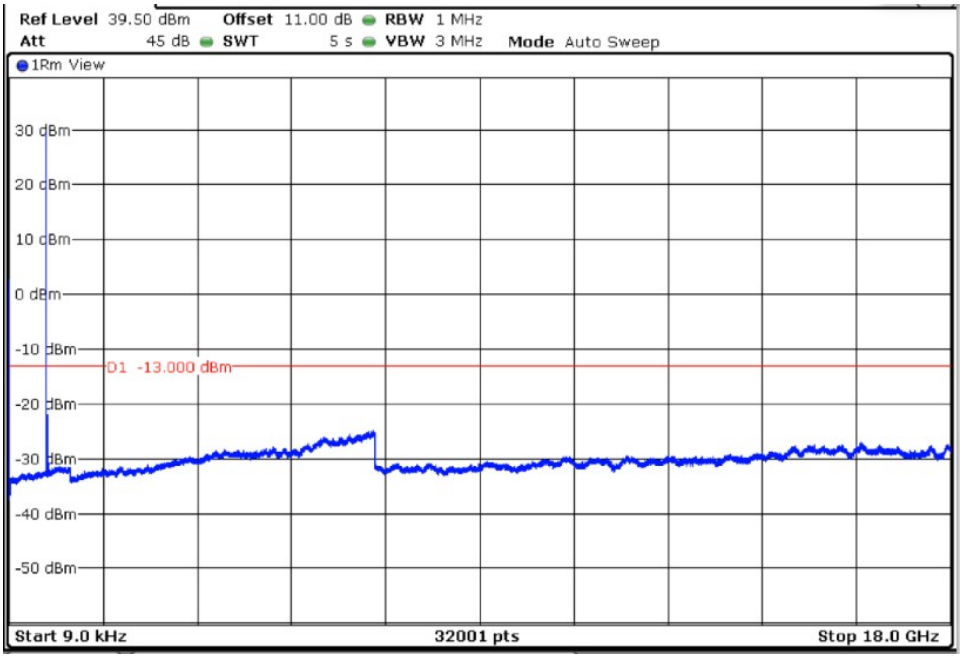


Middle Channel



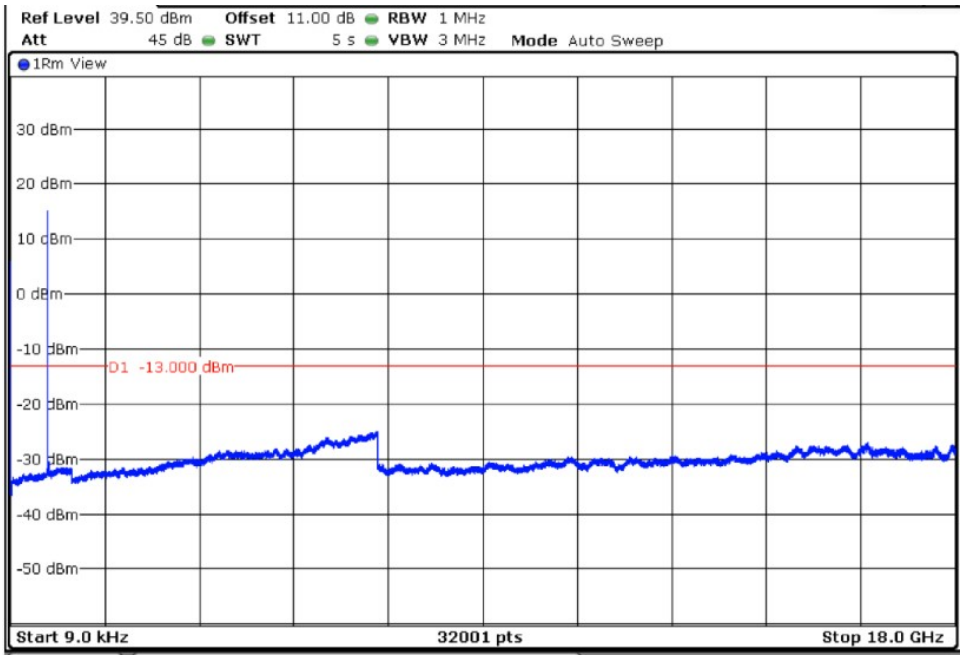
TEST RESULTS (Cont):	

Highest Channel



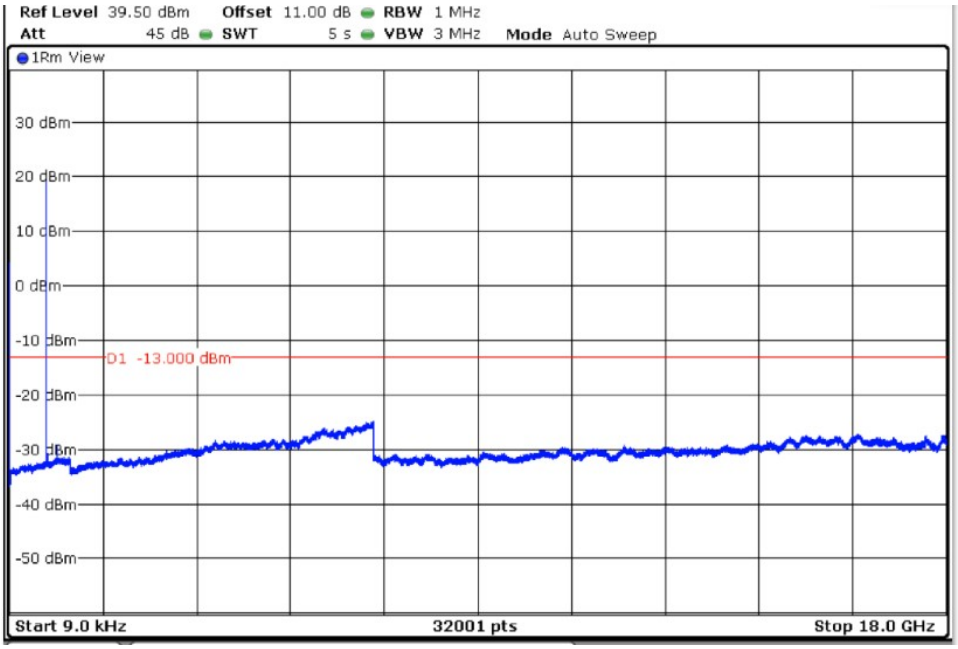
LTE QPSK MODULATION. BW = 3 MHz

Lowest Channel

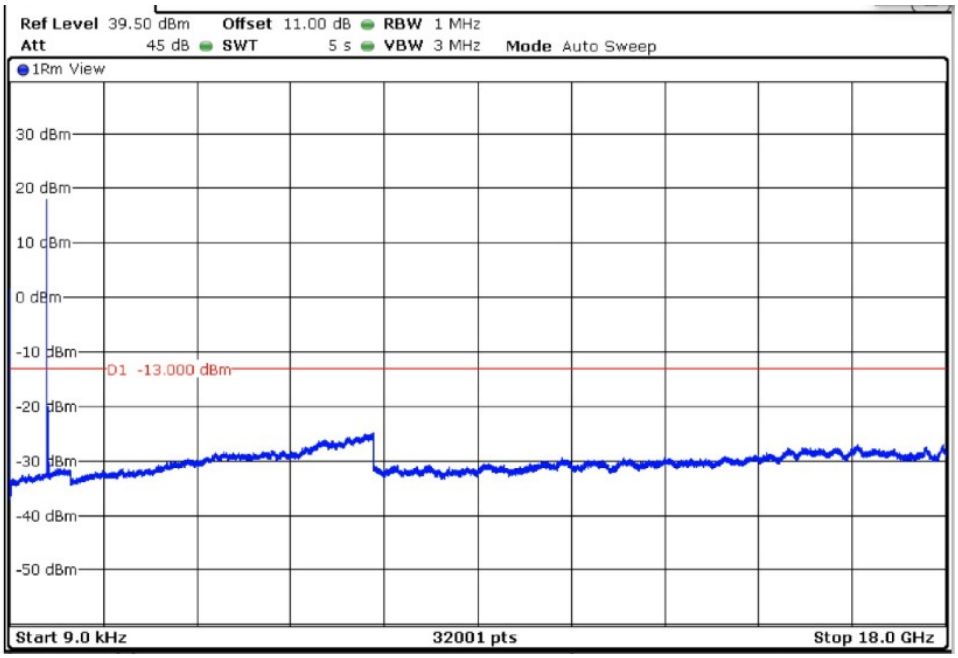


TEST RESULTS (Cont):	

Middle Channel



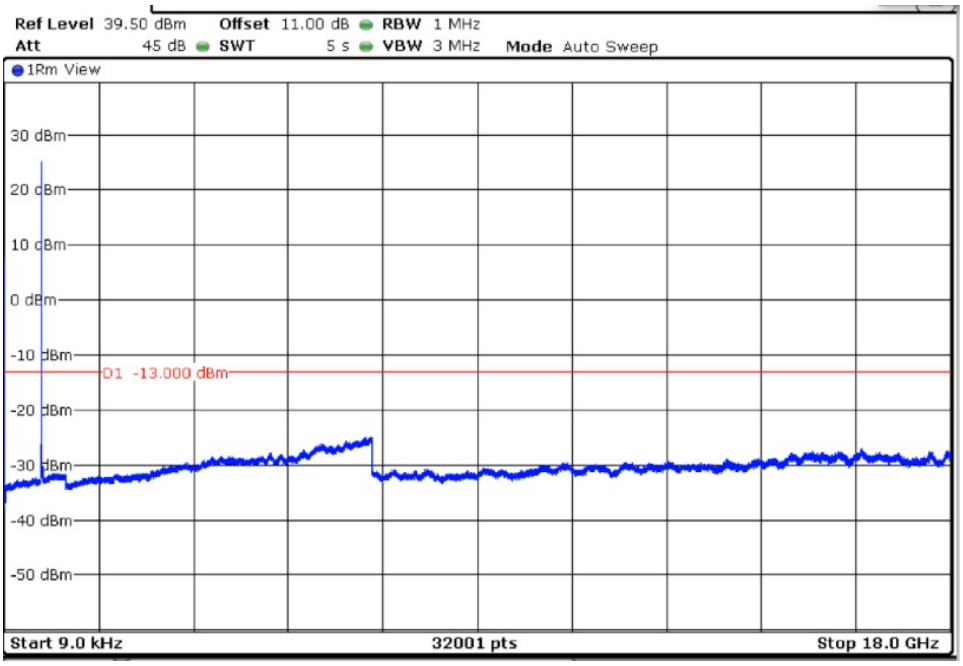
Highest Channel



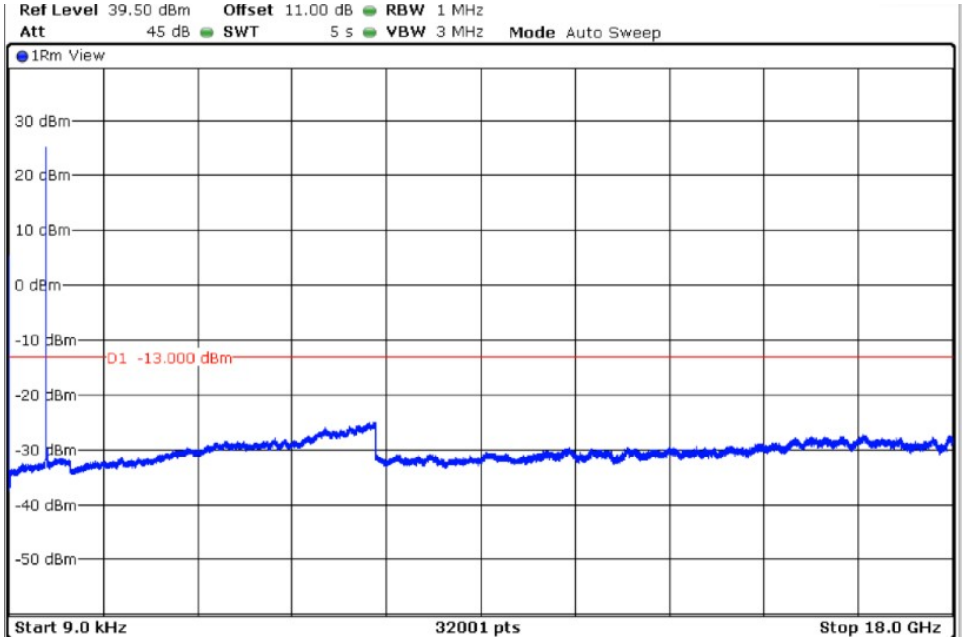
TEST RESULTS (Cont):	

LTE QPSK MODULATION. BW = 5 MHz

Lowest Channel

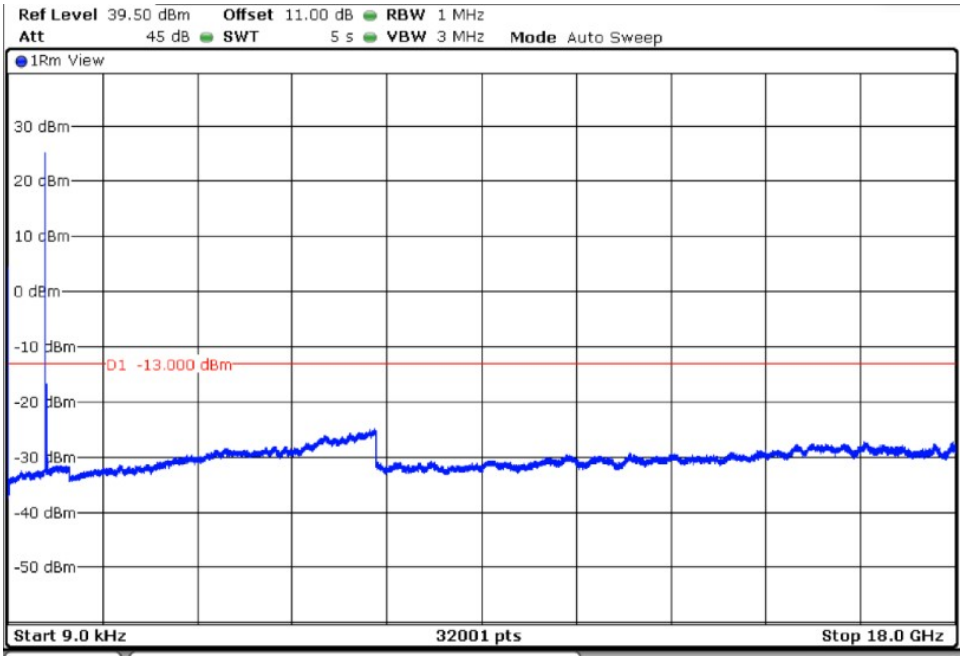


Middle Channel



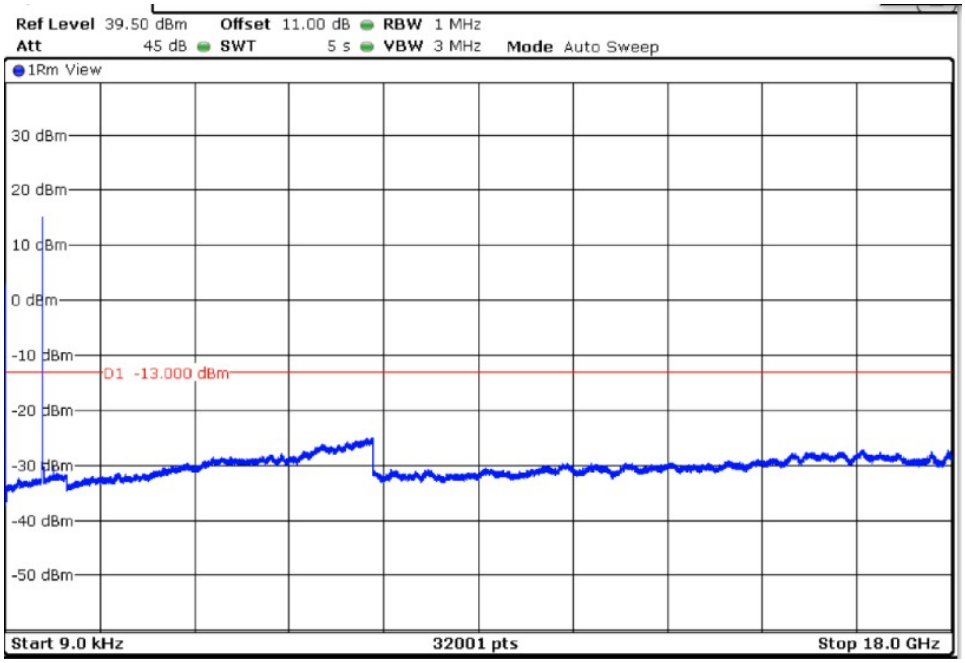
TEST RESULTS (Cont):	

Highest Channel



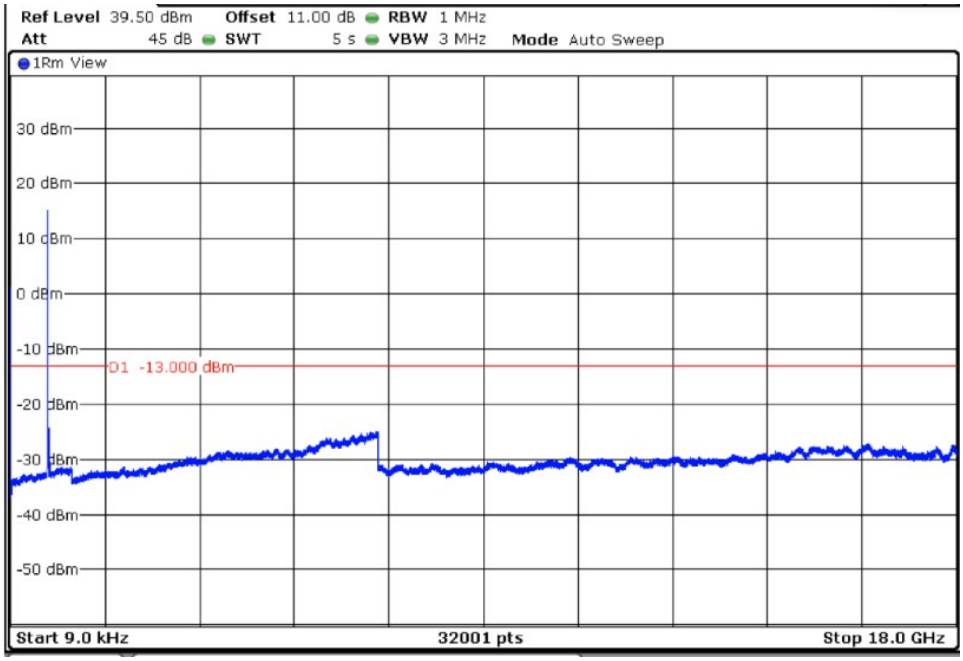
LTE QPSK MODULATION. BW = 10 MHz

Lowest Channel

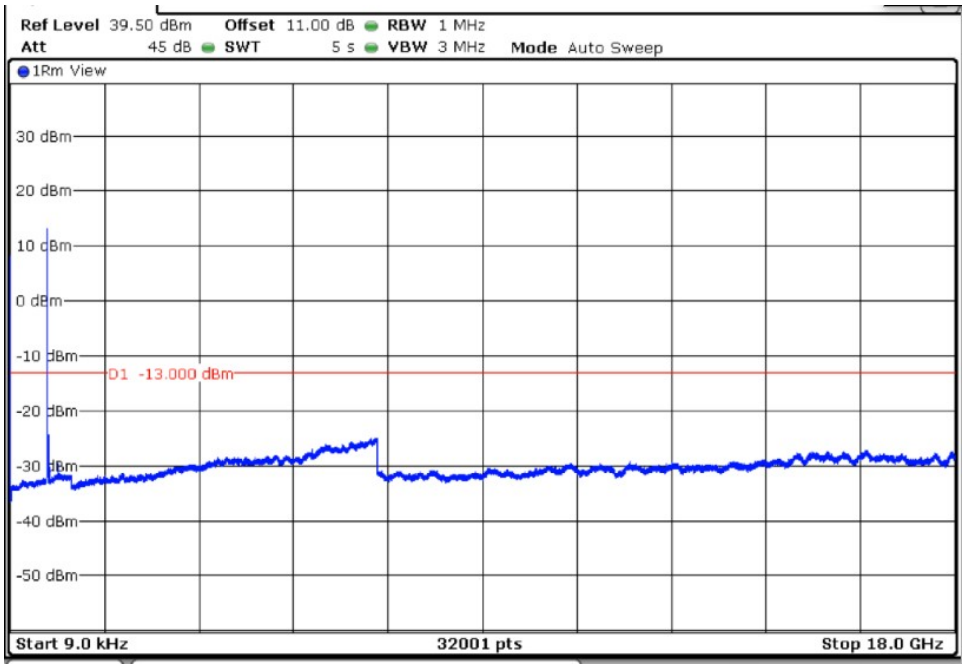


TEST RESULTS (Cont):	

Middle Channel



Highest Channel



TEST A.6: SPURIOUS EMISSIONS AT ANTENNA TERMINALS AT BLOCK EDGES

LIMITS:	Product standard:	FCC Part 27 / IC RSS-130
	Test standard:	FCC § 27.53 / RSS-130 Clause 4.7

LIMITS

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. P in watts.

At Po transmitting power of 2 watts (33 dBm), the specified minimum attenuation becomes 43+10log (Po). and the level in dBm relative to Po becomes:

Po (dBm) – [43 + 10 log (Po in watts)] = -13 dBm

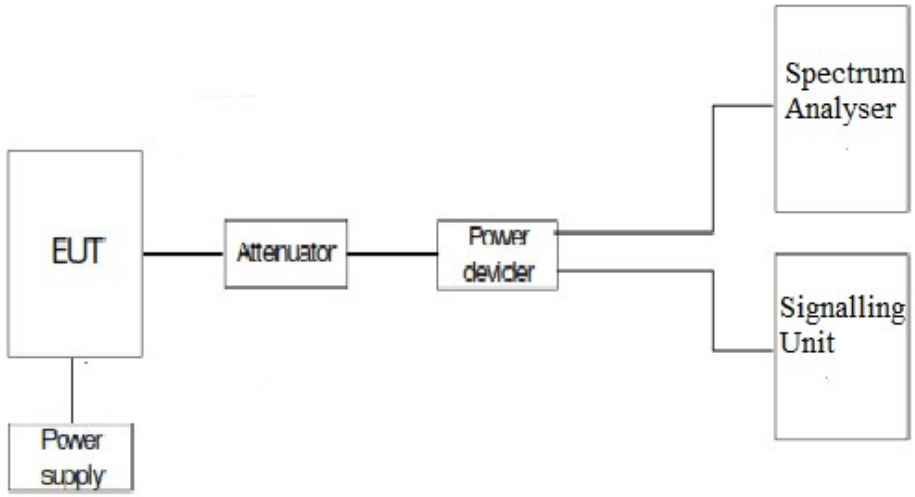
TEST SETUP

The EUT RF output connector was connected to a spectrum analyzer and to the Universal Radio Communication tester R&S CMW500 (selecting maximum transmission power of the EUT and different modes of modulation) using a 50 ohm attenuator and a power splitter.

The reading of the spectrum analyzer is corrected with the attenuation loss of connection between output terminal of EUT and input of the spectrum analyzer.

For LTE mode the configuration of modulation which is the worst case for conducted power was used.

As indicated in FCC part 27.53 (h) (3), in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block or band, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

LTE QPSK MODULATION	RB=1 Offset =0 BW = 1.4 MHz	RB=1 Offset =0 BW = 3 MHz	RB=1. Offset =0 BW = 5 MHz	RB=1 Offset =0 BW = 10 MHz
Maximum measured level at lowest Block Edge at antenna port (dBm)	-23.63	-22.97	-18.67	-16.03

LTE QPSK MODULATION	RB=6 Offset =0 BW = 1.4 MHz	RB=15 Offset =0 BW = 3 MHz	RB=25 Offset =0 BW = 5 MHz	RB=50 Offset =0 BW = 10 MHz
Maximum measured level at lowest Block Edge at antenna port (dBm)	-21.36	-23.54	-17.74	-19.47

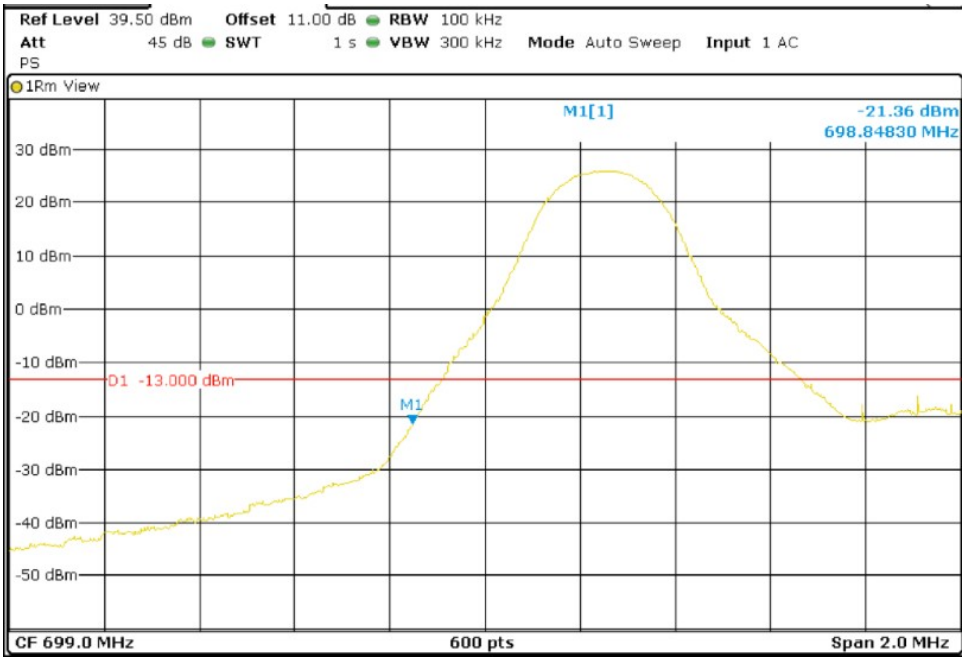
LTE QPSK MODULATION	RB=1 Offset =Max BW = 1.4 MHz	RB=1 Offset =Max BW = 3 MHz	RB=1 Offset =Max BW = 5 MHz	RB=1 Offset =Max BW = 10 MHz
Maximum measured level at Highest Block Edge at antenna port (dBm)	-28.44	-19.39	-18.47	-23.39

LTE QPSK MODULATION	RB=6 Offset =0 BW = 1.4 MHz	RB=15 Offset =0 BW = 3 MHz	RB=25 Offset =0 BW = 5 MHz	RB=50 Offset =0 BW = 10 MHz
Maximum measured level at Highest Block Edge at antenna port (dBm)	-26.99	-26.87	-20.06	-23.64

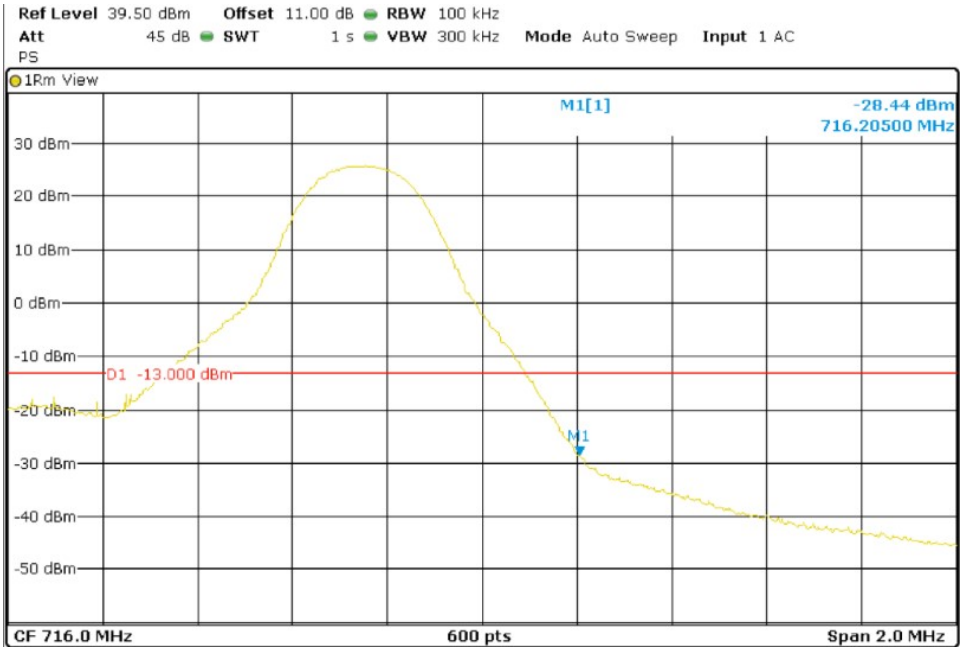
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 1. Offset = 0. BW = 1.4 MHz

Lowest Channel



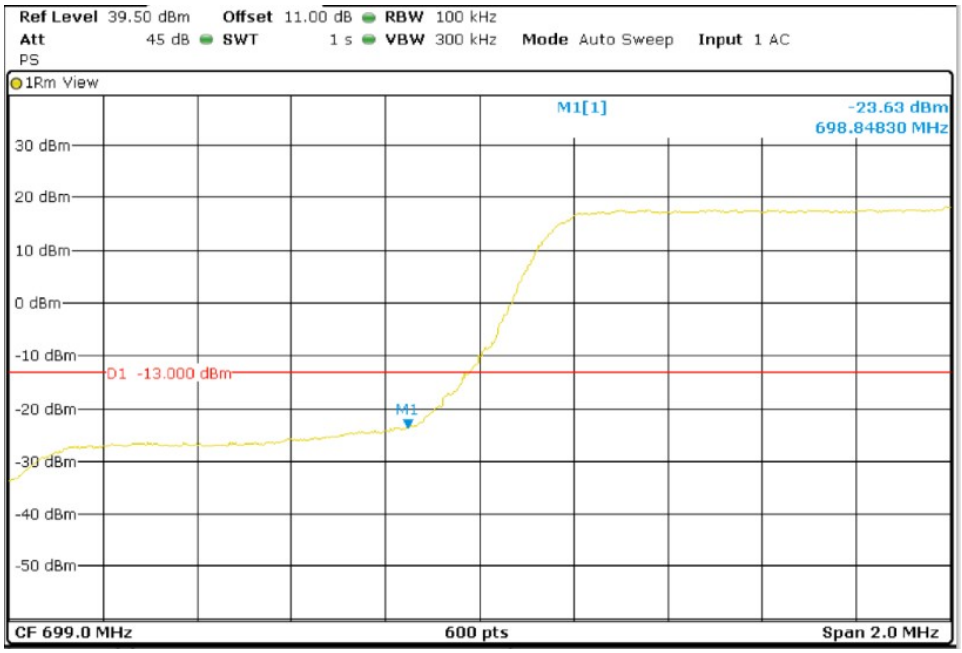
Highest Channel



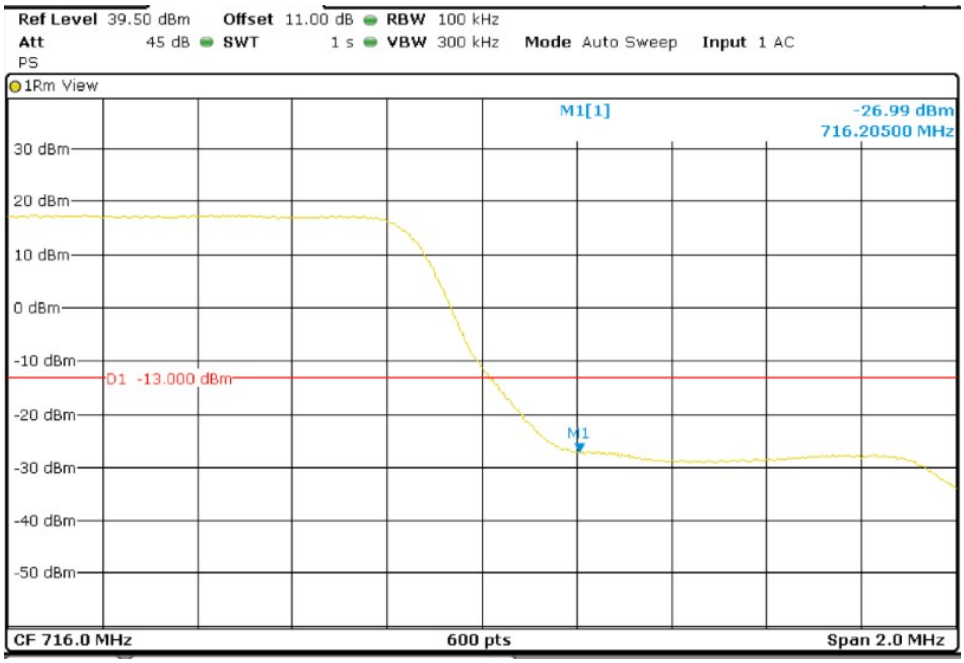
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 6. Offset = 0. BW = 1.4 MHz

Lowest Channel



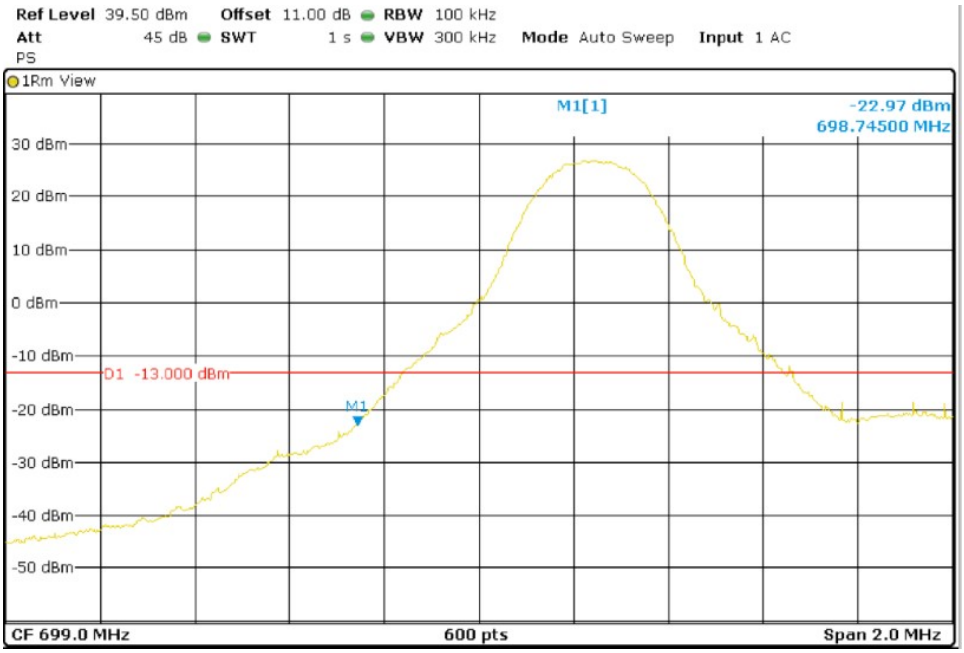
Highest Channel



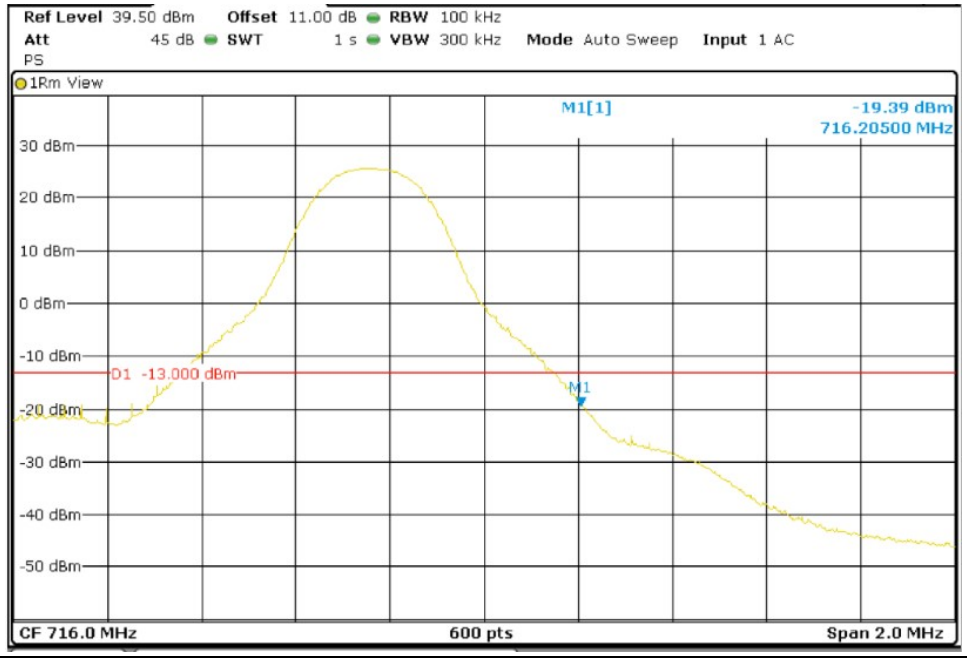
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 1. Offset = 0. BW = 3 MHz

Lowest Channel



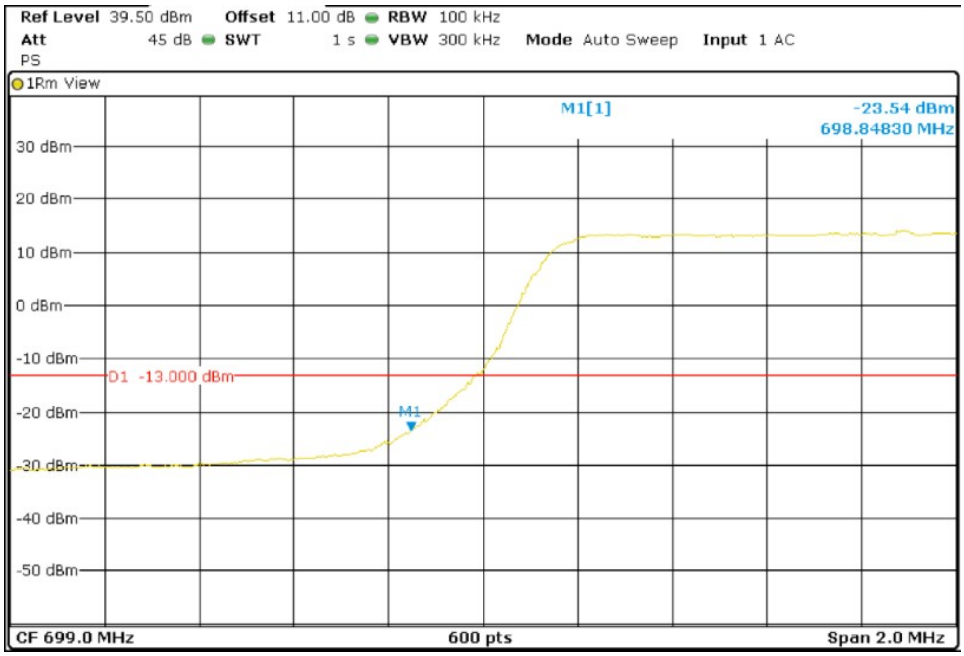
Highest Channel



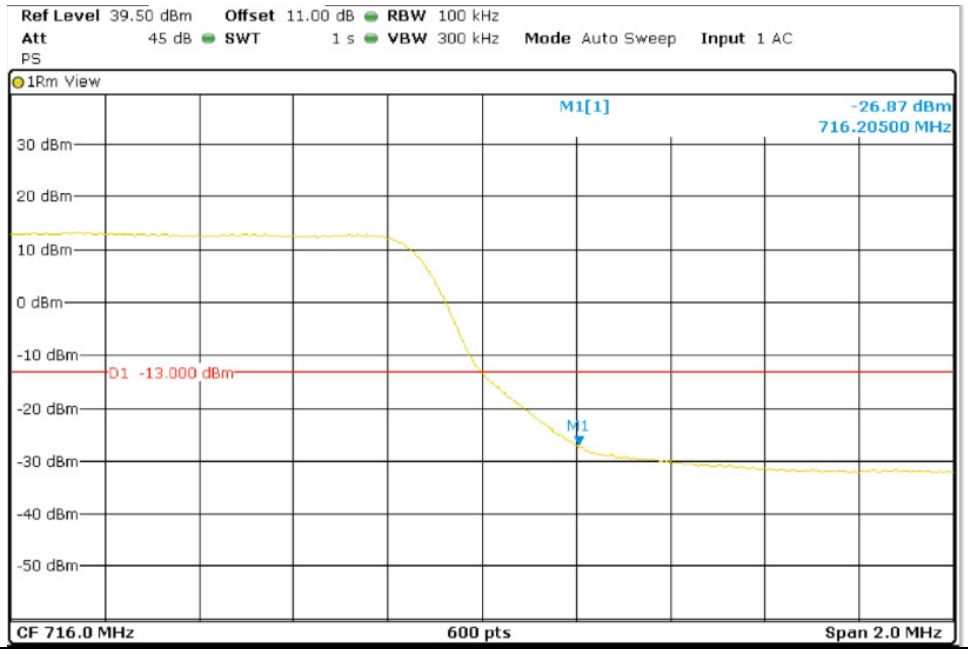
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 15. Offset = 0. BW = 3 MHz

Lowest Channel



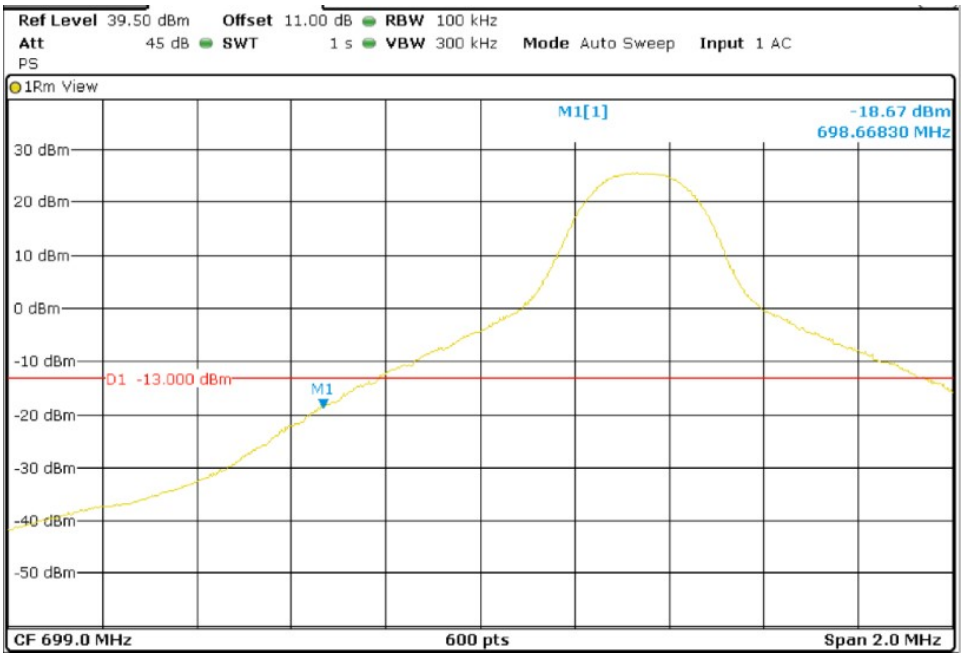
Highest Channel



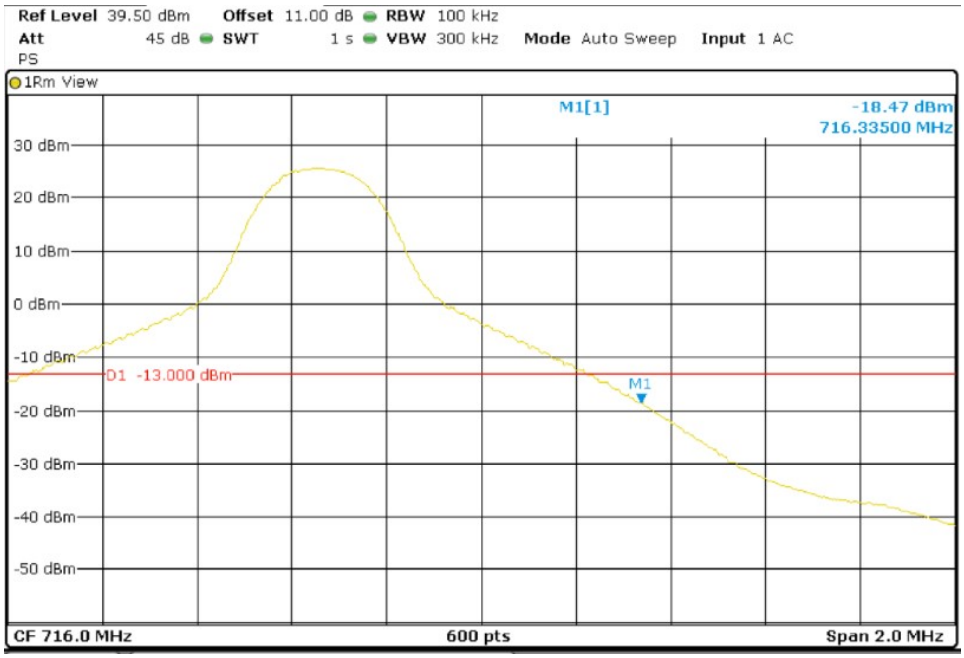
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 1. Offset = 0. BW = 5 MHz

Lowest Channel



Highest Channel

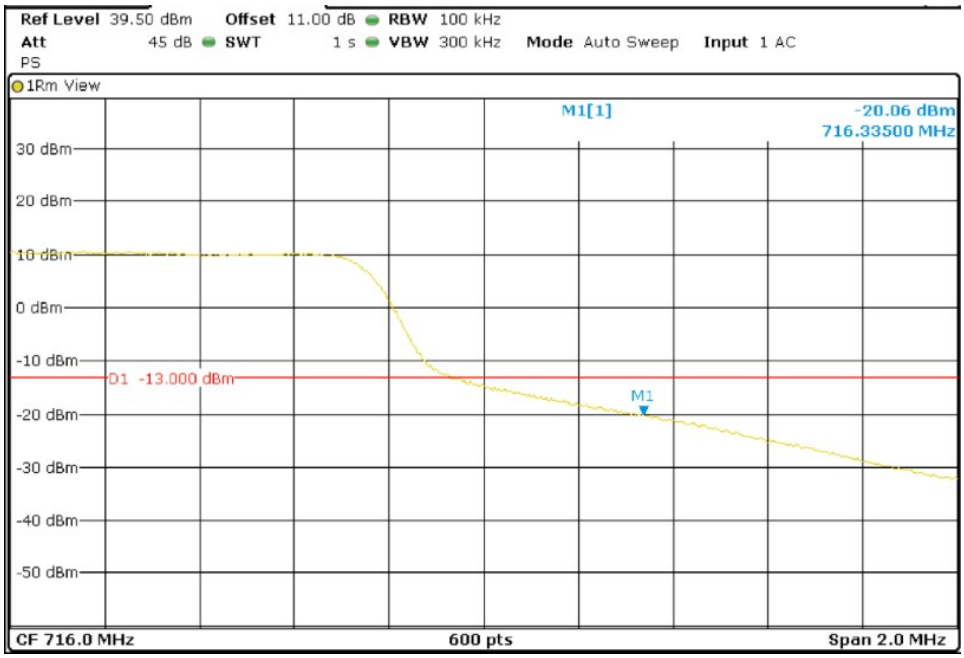


TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 25. Offset = 0. BW = 5 MHz

Lowest Channel

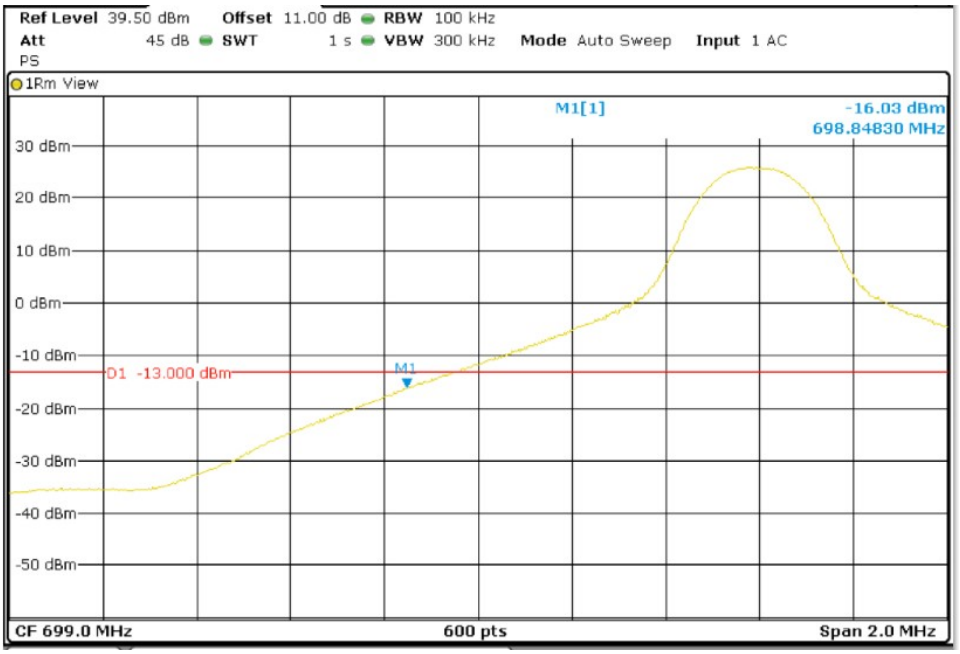
Highest Channel



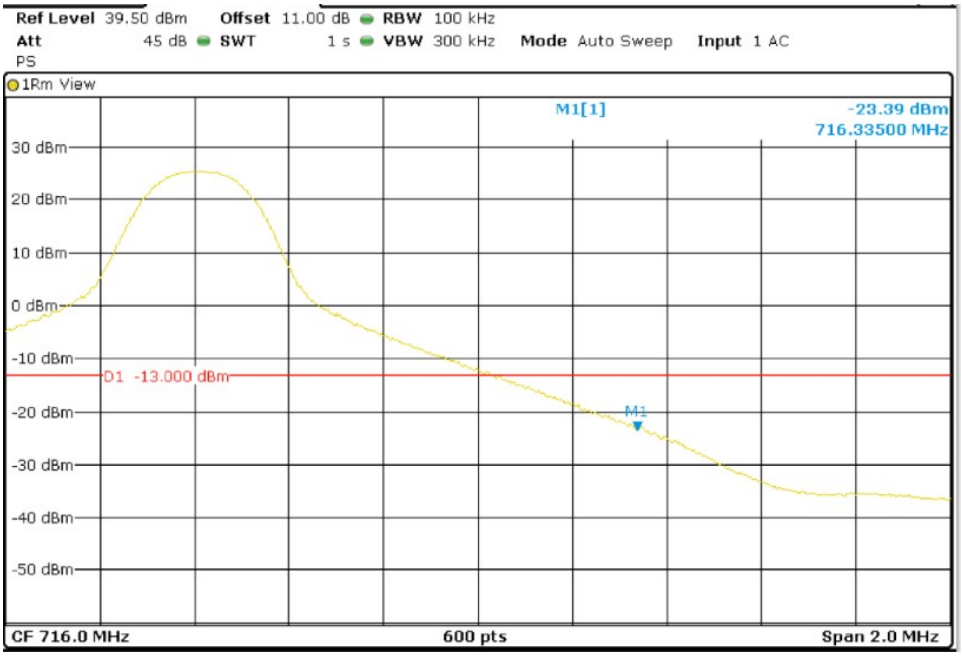
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 1. Offset = 0. BW = 10 MHz

Lowest Channel



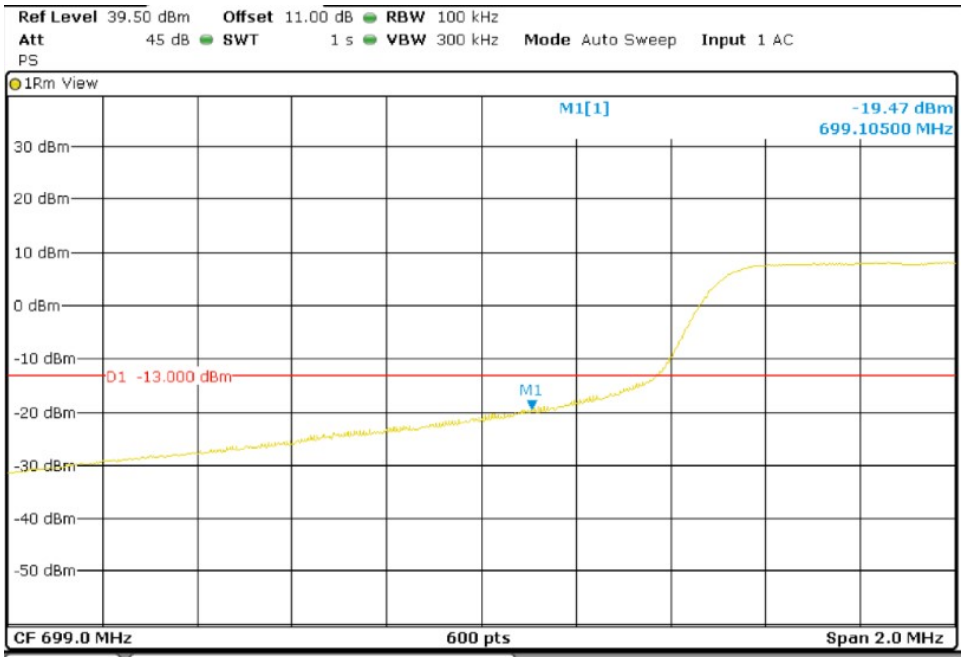
Highest Channel



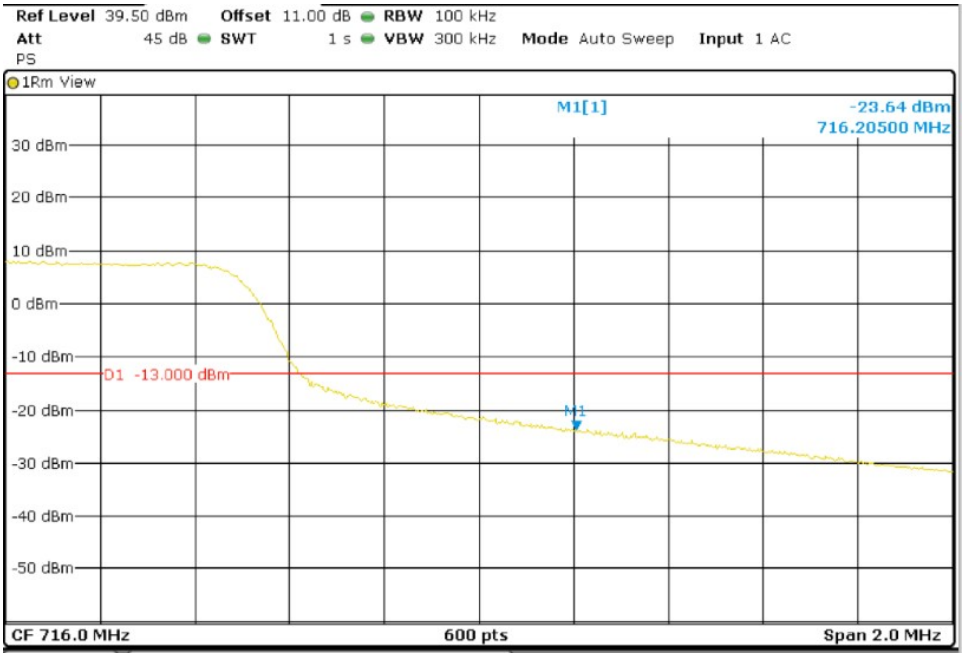
TEST RESULTS (Cont):	

LTE QPSK MODULATION. RB = 50. Offset = 0. BW = 10 MHz

Lowest Channel



Highest Channel



TEST A.7: RADIATED EMISSIONS

LIMITS:	Product standard:	FCC Part 27 / IC RSS-130
	Test standard:	FCC §2.1053 and §27.53 / RSS-130 Clause 4.7

LIMITS

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. P in watts.

At Po transmitting power of 2 watts (33 dBm), the specified minimum attenuation becomes 43+10log (Po). and the level in dBm relative to Po becomes:

Po (dBm) – [43 + 10 log (Po in watts)] = -13 dBm

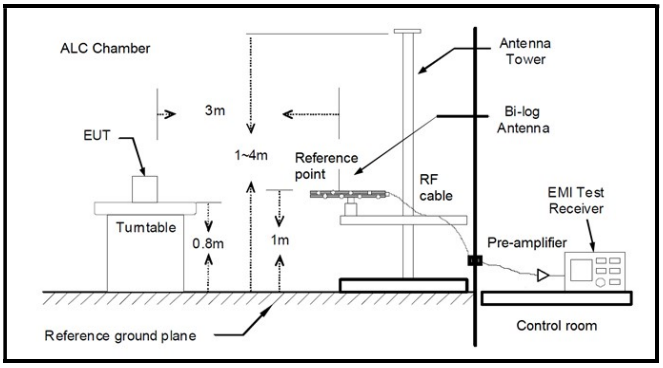
TEST SETUP

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to at least the 10th harmonic of the highest frequency generated within the equipment.

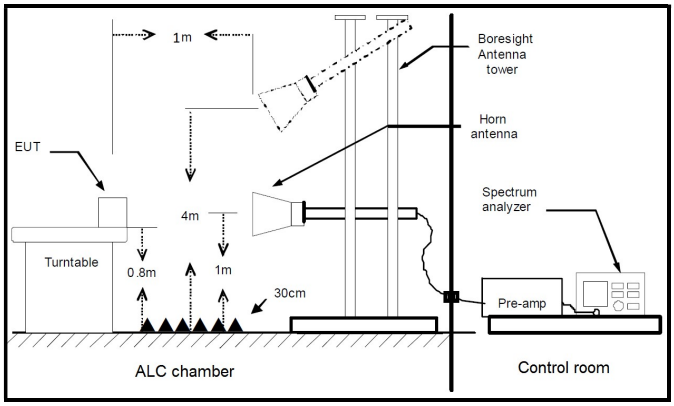
The EUT was placed on a non-conductive stand at a 3-meter distance from the measuring antenna for measurements below 1 GHz and at 1-meter distance for measurements above 1 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum reading was recorded.

Radiated measurements < 1GHz



Radiated measurements > 1GHz



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

RESULTS

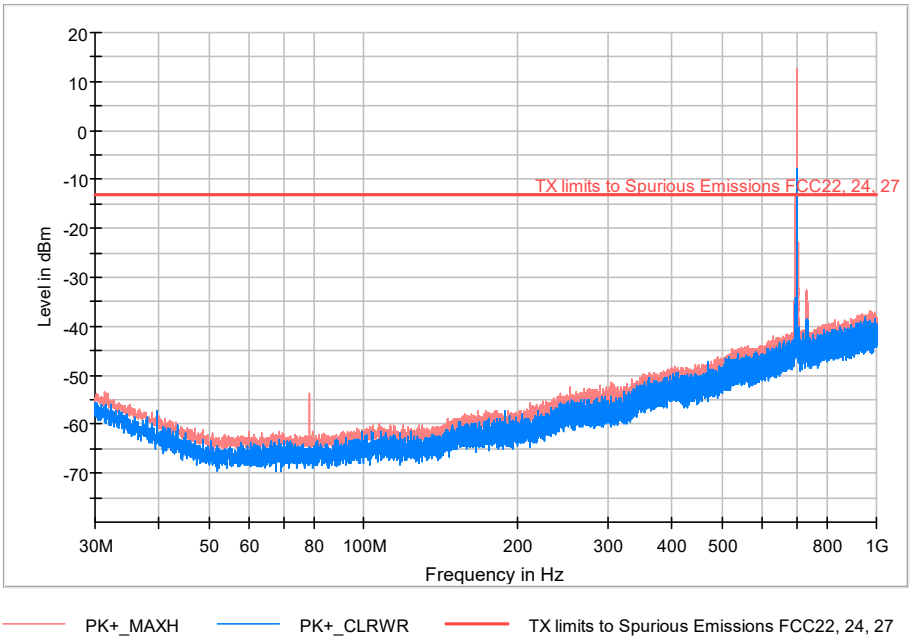
A preliminary scan determined the QPSK 5 MHz bandwidth as the worst case. The configuration of Resource Blocks which is the worst case for conducted power was used.

The following plots show the results for this configuration.

No spurious signal was found at less than 20dB respect to the limit in all the frequency ranges.

LTE QPSK MODULATION. RB = 1. Offset = 0. BW = 5 MHz

Low Channel:

FREQUENCY RANGE: 30-1000 MHz

Frequency (MHz)	PK+_CLRWR (dBm)	PK+_MAXH (dBm)	Comment
78.532333	-65.08	-53.76	
700.076000	-8.47	12.62	Fundamental
732.474000	-40.67	-32.56