LTE Band XII (Part27) result

Low channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1408	V	-36.28	-13	-23.28
1408	H	-31.17	-13	-18.17
412.56	V	-34.15	-13	-21.15
646.73	H	-34.13	-13	-21.13

Middle channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1415	V	-28.95	-13	-15.95
1415	H	-36.37	-13	-23.37
454.85	V	-40.88	-13	-27.88
811.29	H	-34.8	-13	-21.8

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1422	V	-30.08	-13	-17.08
1422	H	-35.59	-13	-22.59
344.41	V	-40.55	-13	-27.55
543.54	H	-32.93	-13	-19.93

Note:

*1, The testing has been conformed to 10*715.3MHz=7,153MHz*
2, All other emissions more than 30 dB below the limit
3, X-Axis, Y-Axis and Z–Axis were investigated. The results above show only the worst case.

LTE Band XVII (Part27) result

Low channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1418	V	-36.4	-13	-23.4
1418	H	-37.5	-13	-24.5
320.71	V	-35.97	-13	-22.97
713.19	H	-33.95	-13	-20.95

Middle channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1420	V	-32.38	-13	-19.38
1420	H	-39.04	-13	-26.04
238.63	V	-39.51	-13	-26.51
564.62	H	-35.91	-13	-22.91

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1422	V	-30.86	-13	-17.86
1422	H	-36.82	-13	-23.82
816.44	V	-39.57	-13	-26.57
433.89	H	-36.21	-13	-23.21

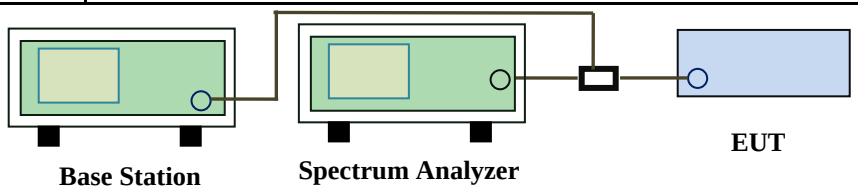
Note:

*1, The testing has been conformed to 10*713.5MHz=7,135MHz*
2, All other emissions more than 30 dB below the limit
3, X-Axis, Y-Axis and Z–Axis were investigated. The results above show only the worst case.

6.7 Band Edge

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	January 24&27, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.917(a) §24.238(a) § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.	☑
Test setup			
Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

LTE Band II (Part 24E) result

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	18607	1850	16QAM	-23.686	-13
			QPSK	-23.612	-13
1.4	18900	1910	16QAM	-21.865	-13
			QPSK	-22.074	-13
3	18615	1850	16QAM	-23.493	-13
			QPSK	-22.722	-13
3	19185	1910	16QAM	-19.586	-13
			QPSK	-20.136	-13
5	18625	1850	16QAM	-18.002	-13
			QPSK	-17.156	-13
5	19175	1910	16QAM	-19.601	-13
			QPSK	-16.429	-13
10	18650	1850	16QAM	-15.691	-13
			QPSK	-19.397	-13
10	19150	1910	16QAM	-20.593	-13
			QPSK	-19.19	-13
15	18675	1850	16QAM	-17.397	-13
			QPSK	-16.781	-13
15	19125	1910	16QAM	-18.262	-13
			QPSK	-18.088	-13
20	18700	1850	16QAM	-22.495	-13
			QPSK	-23.501	-13
20	19100	1910	16QAM	-23.422	-13
			QPSK	-25.11	-13

LTE Band IV (Part 27) result

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	19957	1709.9	16QAM	-26.753	-13
			QPSK	-25.614	-13
1.4	20393	1755	16QAM	-26.236	-13
			QPSK	-26.82	-13
3	19965	1709.9	16QAM	-24.097	-13
			QPSK	-21.615	-13
3	20385	1755	16QAM	-21.209	-13
			QPSK	-20.641	-13
5	19975	1709.9	16QAM	-15.885	-13
			QPSK	-15.845	-13
5	20375	1755	16QAM	-18.402	-13
			QPSK	-17.938	-13
10	20000	1709.9	16QAM	-16.29	-13
			QPSK	-16.397	-13
10	20350	1755	16QAM	-16.723	-13
			QPSK	-17.977	-13
15	20025	1709.9	16QAM	-17.111	-13
			QPSK	-16.15	-13
15	20325	1755	16QAM	-16.946	-13
			QPSK	-17.503	-13
20	20050	1709.9	16QAM	-23.682	-13
			QPSK	-23.088	-13
20	20300	1755	16QAM	-23.211	-13
			QPSK	-24.036	-13

LTE Band XII (Part 27) result

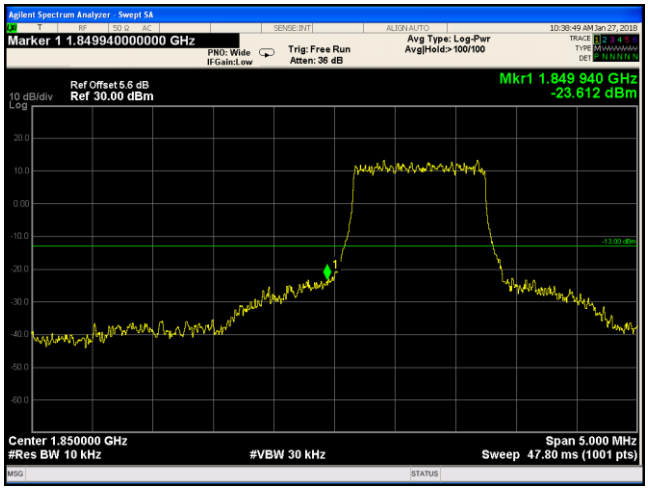
BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	23017	699	16QAM	-19.842	-13
			QPSK	-18.602	-13
1.4	23173	716	16QAM	-19.299	-13
			QPSK	-18.166	-13
3	23025	699	16QAM	-17.227	-13
			QPSK	-17.957	-13
3	23165	716	16QAM	-19.875	-13
			QPSK	-19.635	-13
5	23035	699	16QAM	-20.861	-13
			QPSK	-22.669	-13
5	23155	716	16QAM	-16.829	-13
			QPSK	-19.308	-13
10	23060	698	16QAM	-26.168	-13
			QPSK	-23.21	-13
10	23130	716	16QAM	-21.114	-13
			QPSK	-20.016	-13

LTE Band XVII (Part 27) result

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
5	23755	704	16QAM	-18.794	-13
			QPSK	-16.883	-13
5	23825	716	16QAM	-18.21	-13
			QPSK	-17.897	-13
10	23780	704	16QAM	-18.406	-13
			QPSK	-18.54	-13
10	23800	716	16QAM	-19.747	-13
			QPSK	-20.665	-13

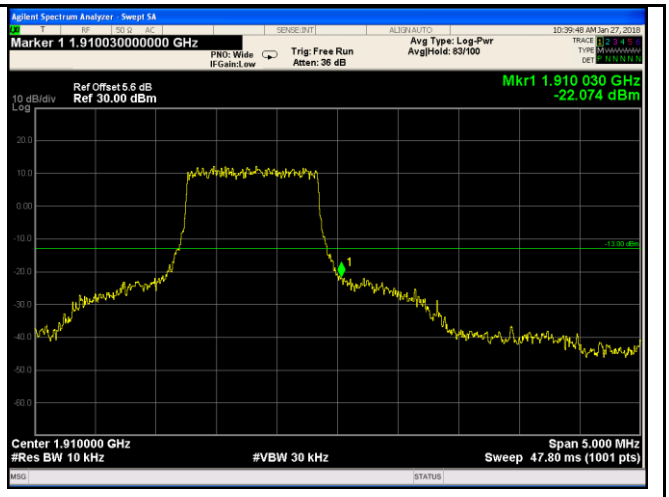
Test Plots

LTE Band II (Part 24E)



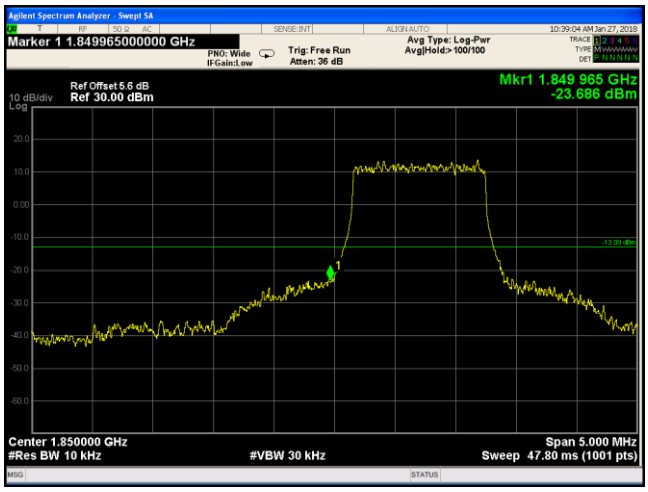
LTE Band II - Low Channel QPSK-1.4

Note: Offset=Cable loss (4.5) + 10log (13.09)=4.5+1.1=5.6dB



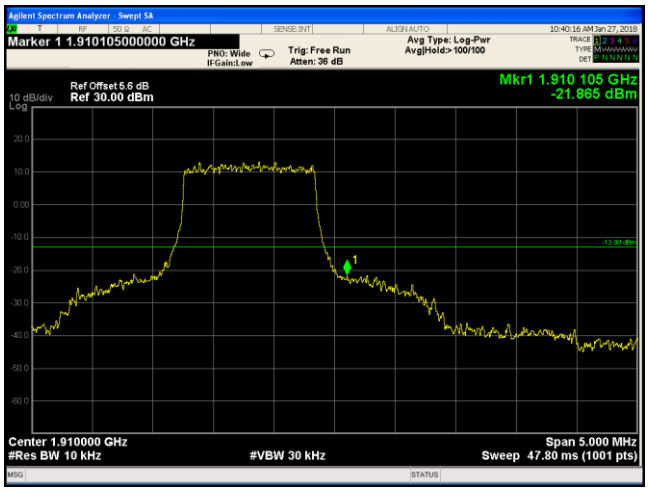
LTE Band II - High Channel QPSK-1.4

Note: Offset=Cable loss (4.5) + 10log (13.15)=4.5+1.1=5.6dB



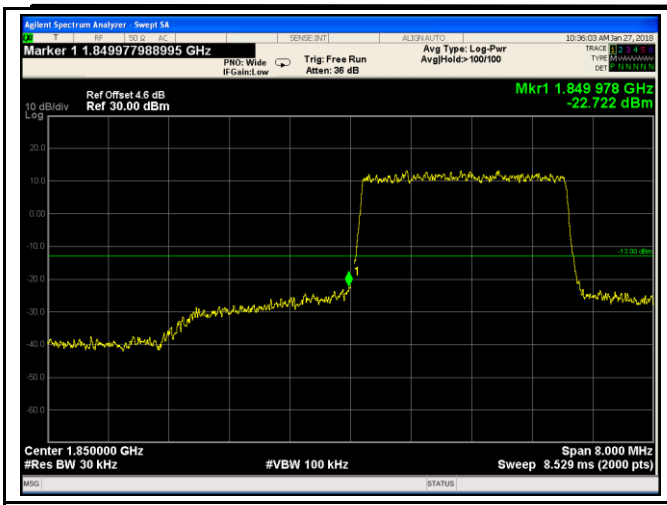
LTE Band II - Low Channel 16QAM-1.4

Note: Offset=Cable loss (4.5) + 10log (13.20/10)=4.5+1.1=5.6 dB



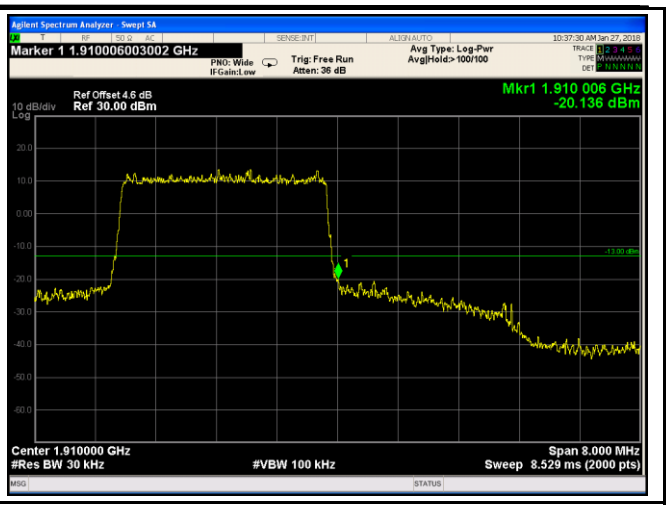
LTE Band II - High Channel 16QAM-1.4

Note: Offset=Cable loss (4.5) + 10log (13.10)=4.5+1.1=5.6dB



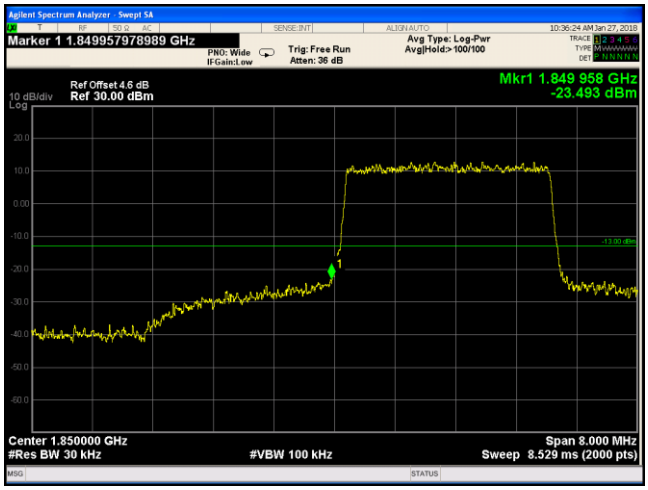
LTE Band II - Low Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (30.58/30)=4.5+0.1=4.6 dB



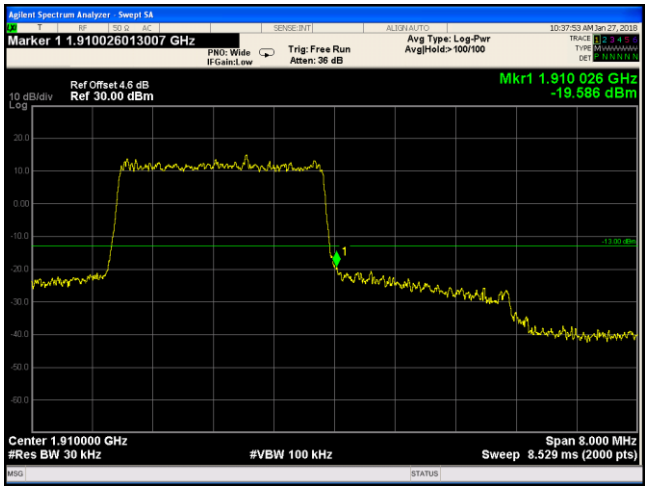
LTE Band II - High Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (31.00/30)=4.5+0.1=4.6 dB



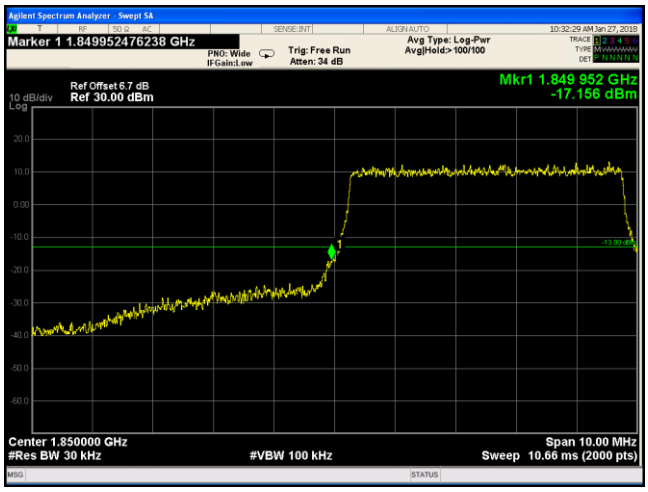
LTE Band II - Low Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (30.66/30)=4.5+0.1=4.6 dB



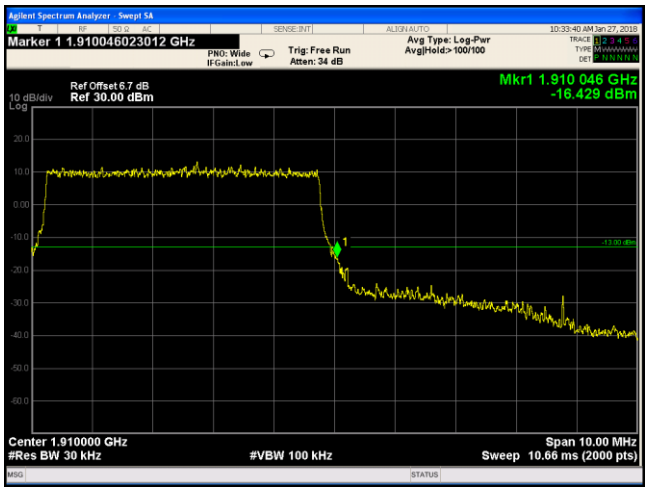
LTE Band II - High Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (30.57/30)=4.5+0.1=4.6 dB



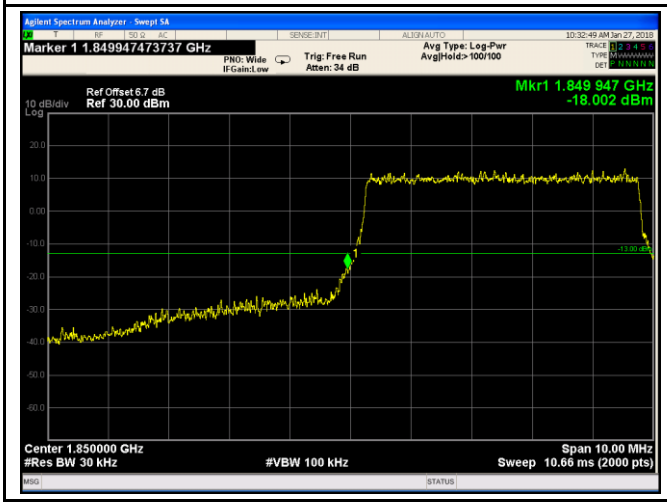
LTE Band II - Low Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (51.95/30)=4.5+2.2=6.7dB



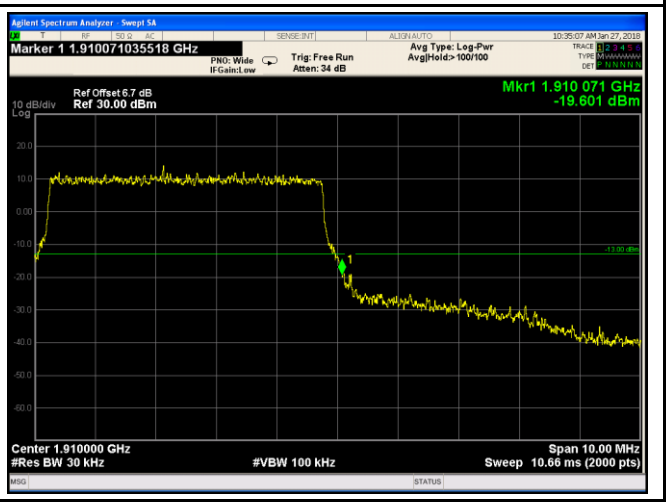
LTE Band II - High Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (52.81/30)=4.5+2.2=6.7 dB



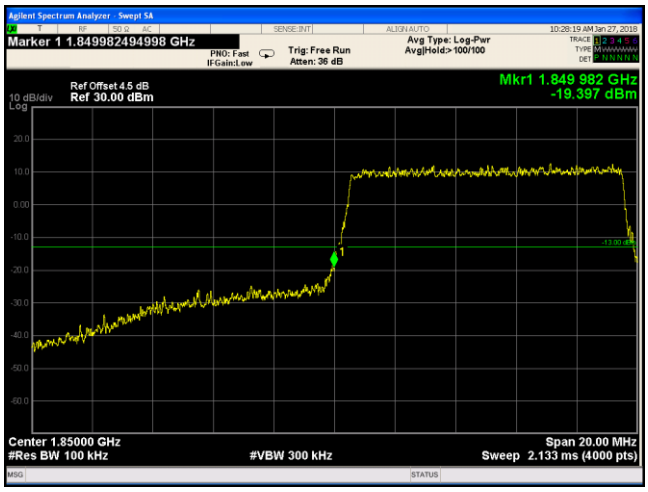
LTE Band II - Low Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log (51.81/30)=4.5+2.2=6.7 dB

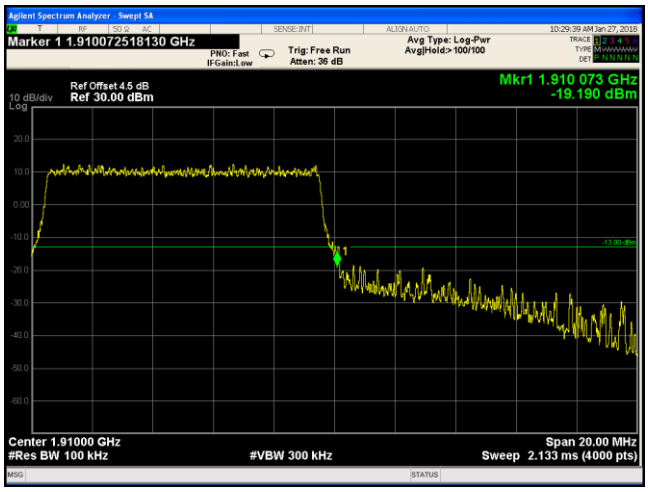


LTE Band II - High Channel 16QAM-5

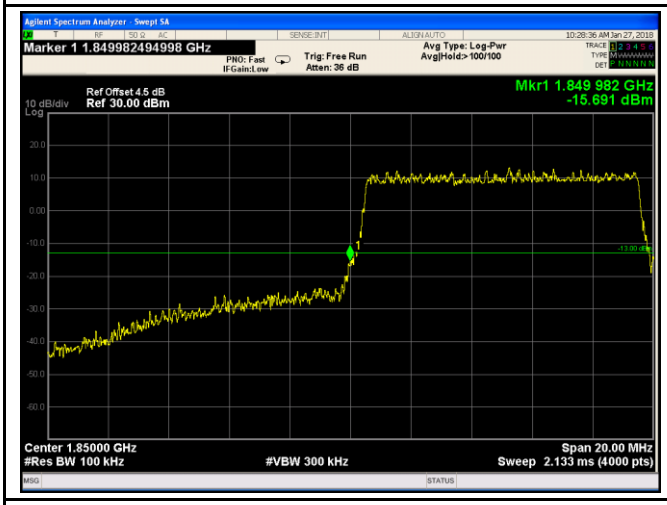
Note: Offset=Cable loss (4.5) + 10log (52.79/30)=4.5+2.2=6.7 dB



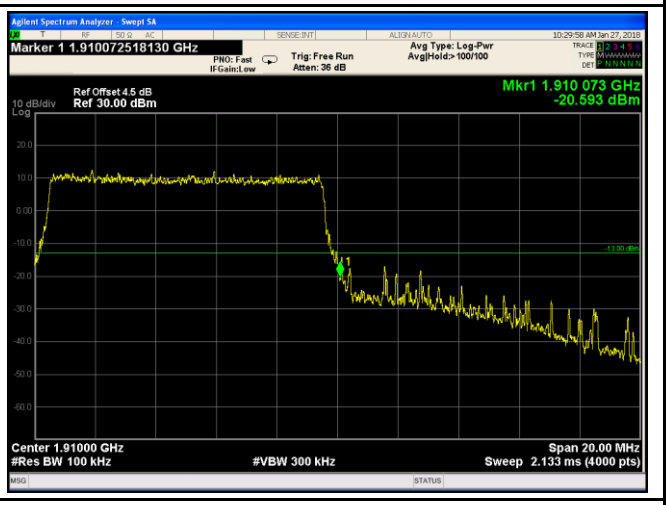
LTE Band II - Low Channel QPSK-10



LTE Band II - High Channel QPSK-10



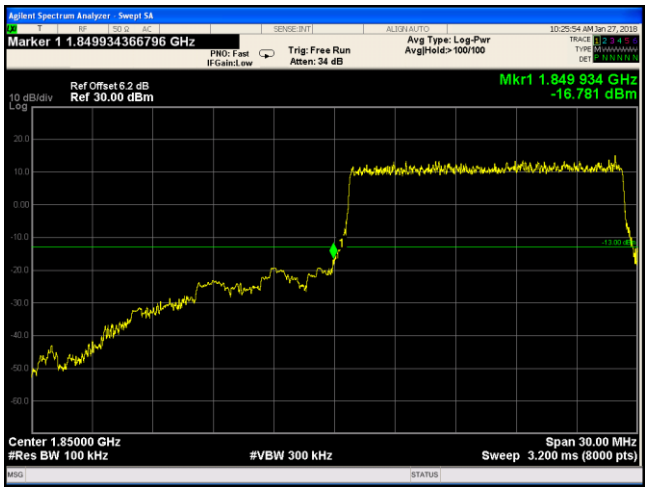
LTE Band II - Low Channel 16QAM-10



LTE Band II - High Channel 16QAM-10

Note: Offset=Cable loss (4.5) + 10log (103.9/100)=4.5+0.0=4.5 dB

Note: Offset=Cable loss (4.5) + 10log (104.6/100)=4.5+0.0=4.5 dB

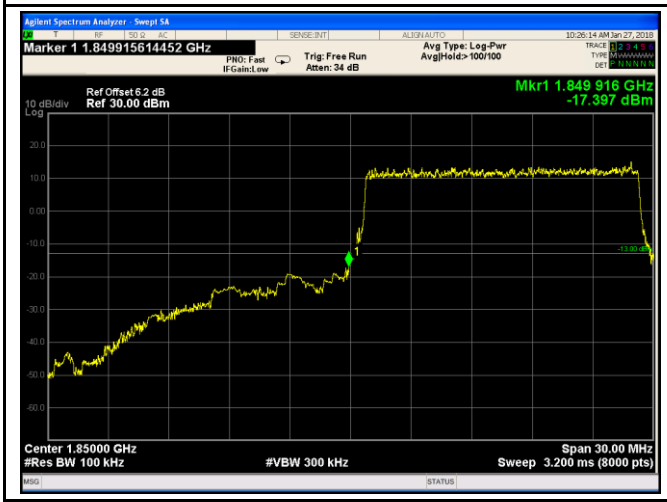


LTE Band II - Low Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log (150.1/100)=4.5+1.7=6.2 dB

LTE Band II - High Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log (151.5/100)=4.5+1.7=6.2 dB

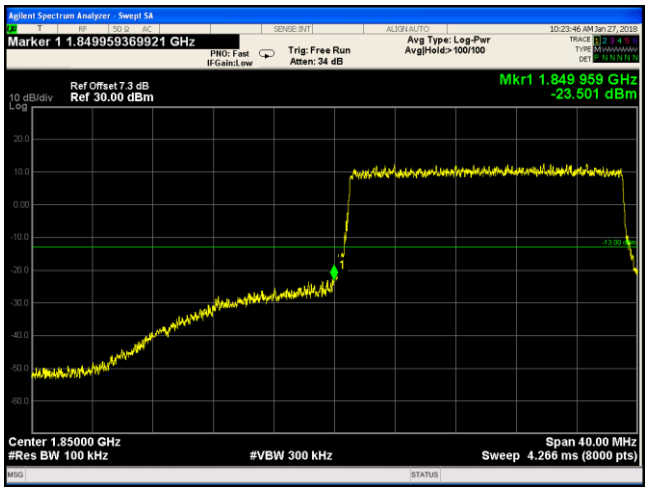


LTE Band II - Low Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (152.2/100)=4.5+1.7=6.2 dB

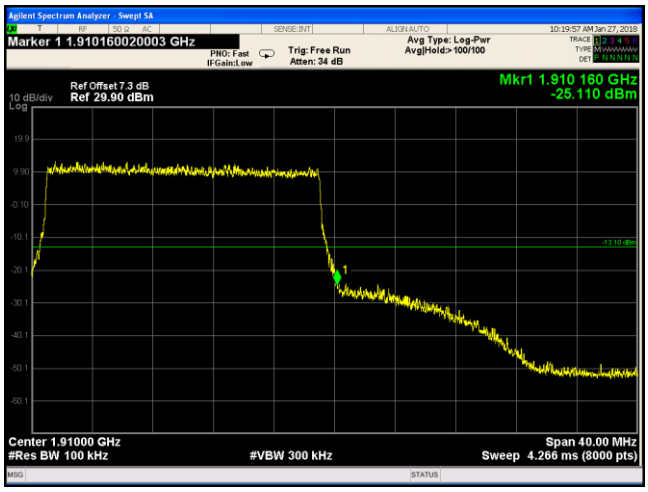
LTE Band II - High Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (151.8/100)=4.5+1.7=6.2 dB



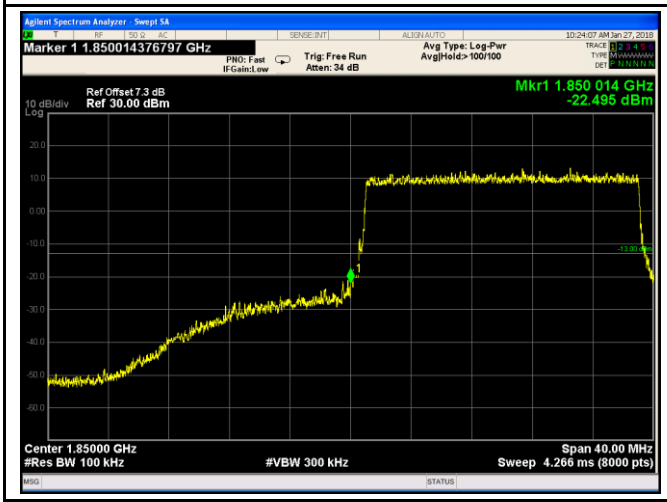
LTE Band II - Low Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (192.3/100)=4.5+2.8=7.3 dB



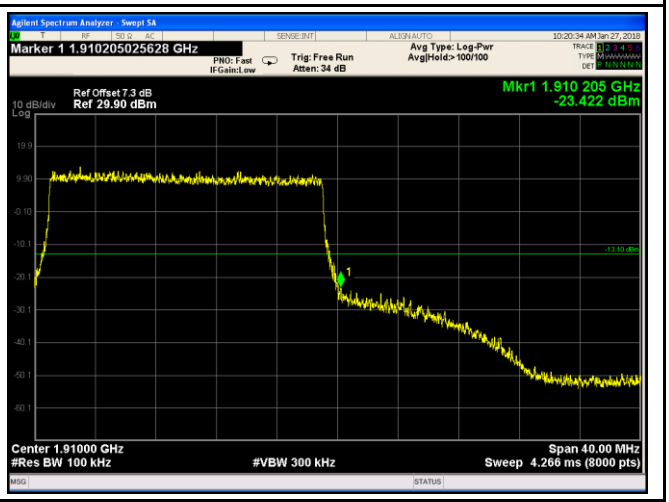
LTE Band II - High Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (194.1/100)=4.5+2.8=7.3 dB



LTE Band II - Low Channel 16QAM-20

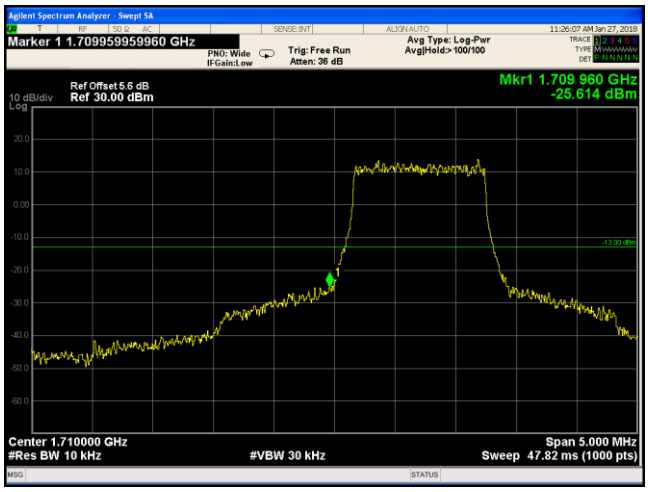
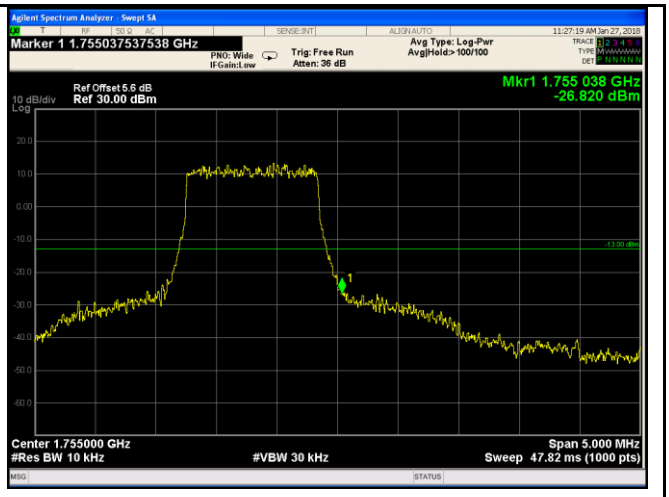
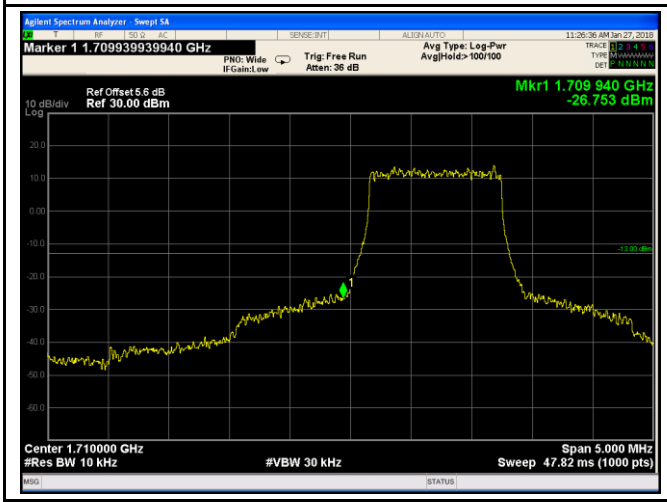
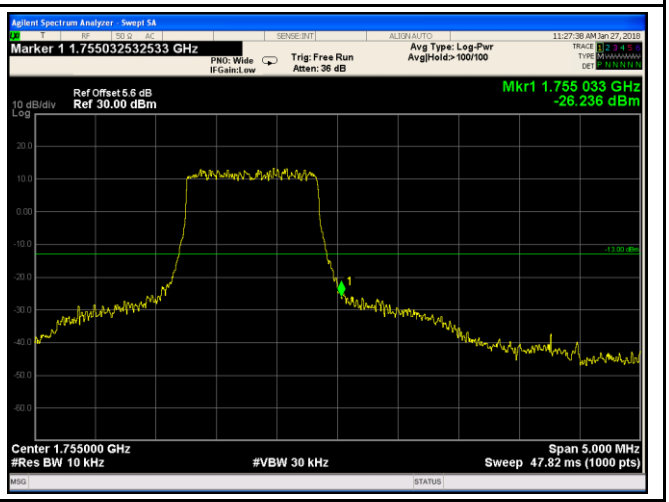
Note: Offset=Cable loss (4.5) + 10log (196.0/100)=4.5+2.8=7.3 dB

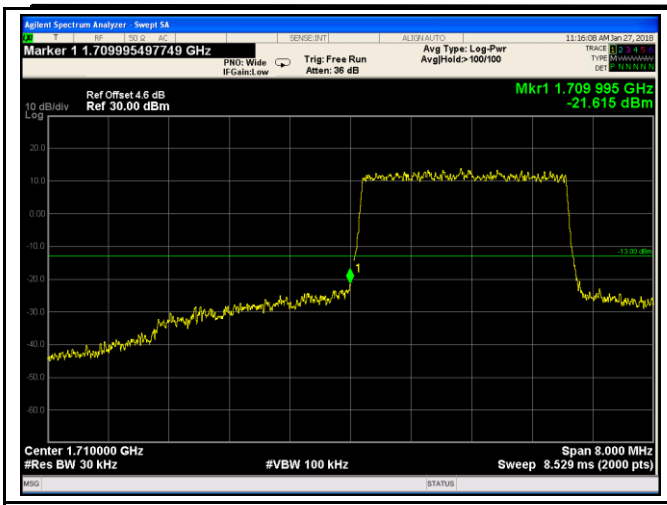


LTE Band II - High Channel 16QAM-20

Note: Offset=Cable loss (4.5) + 10log (196.7/100)=4.5+2.8=7.3 dB

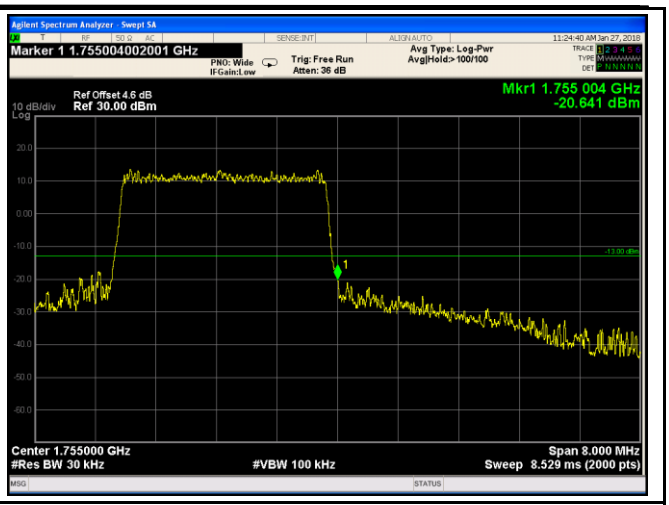
LTE Band IV (Part 27)

	
LTE Band IV - Low Channel QPSK-1.4	LTE Band IV - High Channel QPSK-1.4
Note: Offset=Cable loss (4.5) + 10log (13.27/10)=4.5+1.1=5.6 dB	Note: Offset=Cable loss (4.5) + 10log (13.09/10)=4.5+1.1=5.6 dB
	
LTE Band IV - Low Channel 16QAM-1.4	LTE Band IV - High Channel 16QAM-1.4
Note: Offset=Cable loss (4.5) + 10log (13.28/10)=4.5+1.1=5.6 dB	Note: Offset=Cable loss (4.5) + 10log (13.07/10)=4.5+1.1=5.6dB



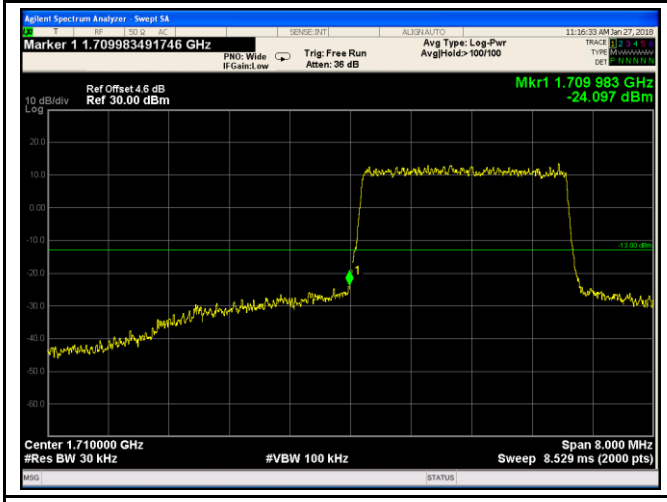
LTE Band IV - Low Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (30.14/30)=4.5+0.1=4.6 dB



LTE Band IV - High Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (30.04/30)=4.5+0.1=4.6 dB

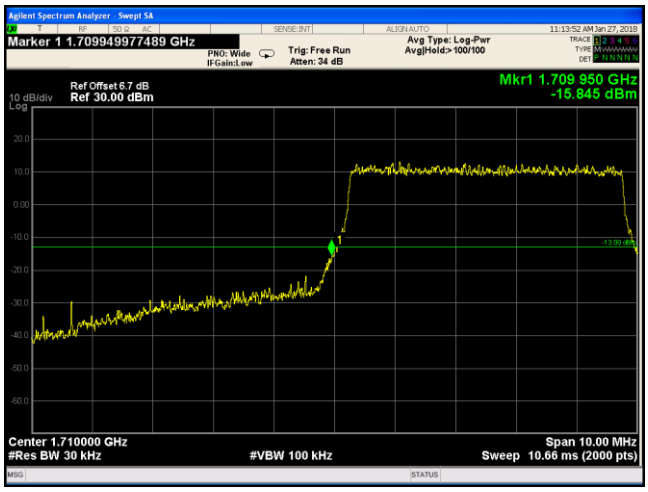


LTE Band IV - Low Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (29.96/30)=4.5+0.1=4.6 dB

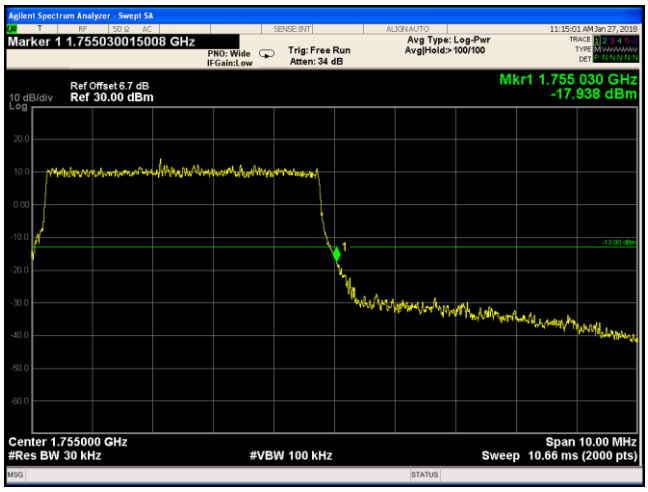
LTE Band IV - High Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (30.10/30)=4.5+0.1=4.6 dB



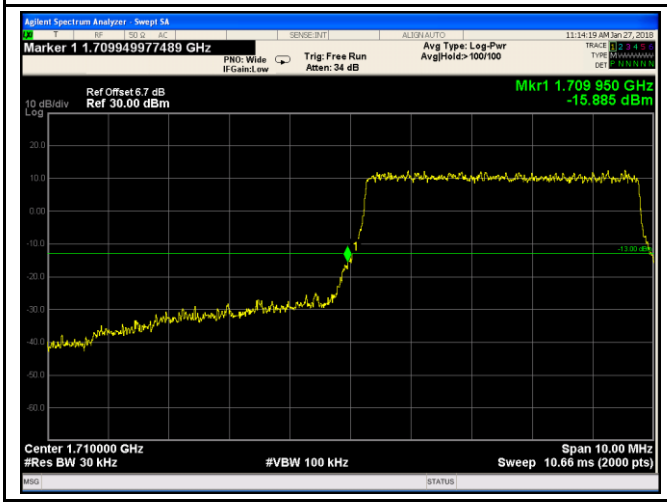
LTE Band IV - Low Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (50.54/30)=4.5+2.2=6.7 dB



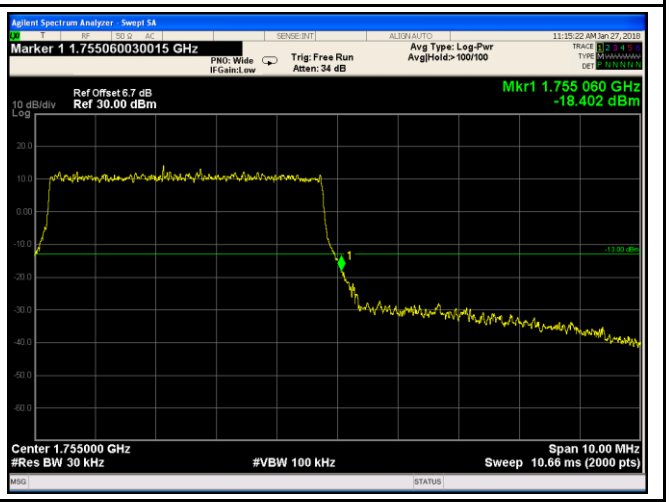
LTE Band IV - High Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (52.05/30)=4.5+2.2=6.7 dB



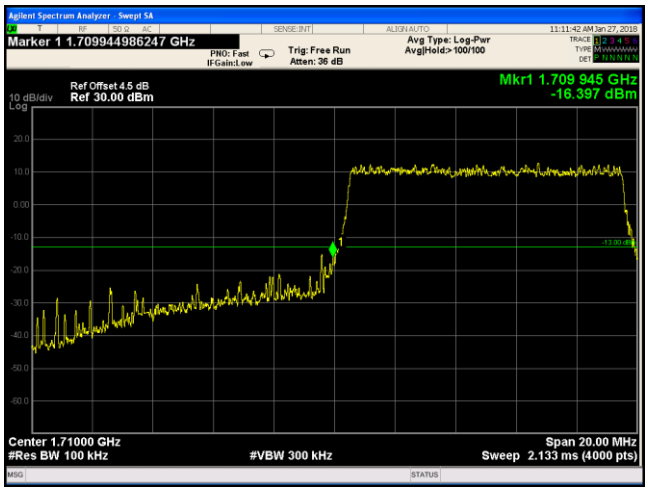
LTE Band IV - Low Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log (52.16/30)=4.5+2.2=6.7 dB

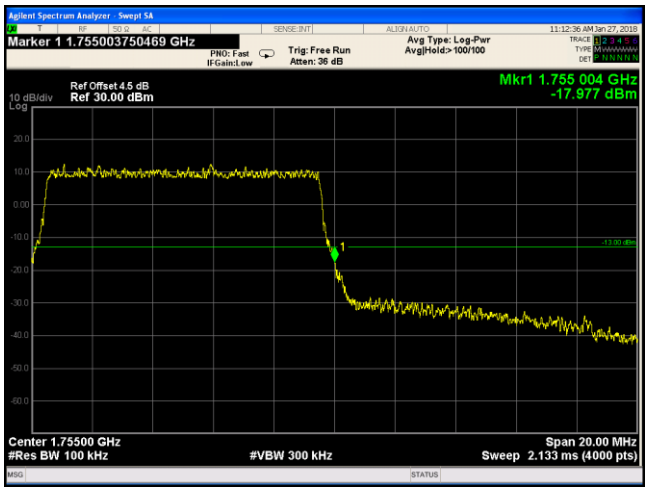


LTE Band IV - High Channel 16QAM-5

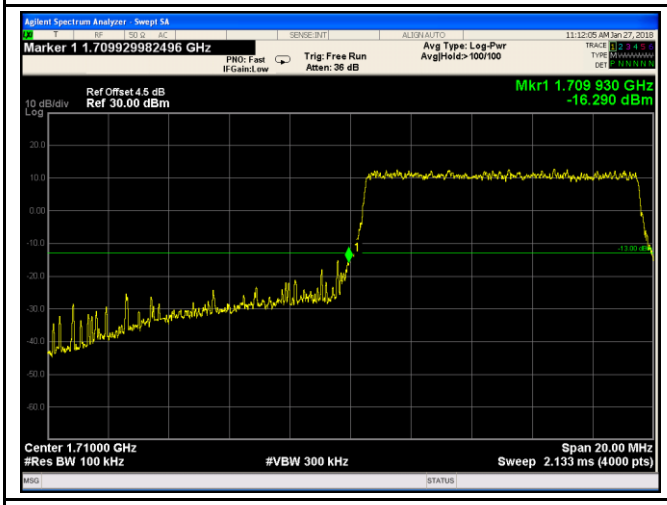
Note: Offset=Cable loss (4.5) + 10log (51.66/30)=4.5+2.2=6.7 dB



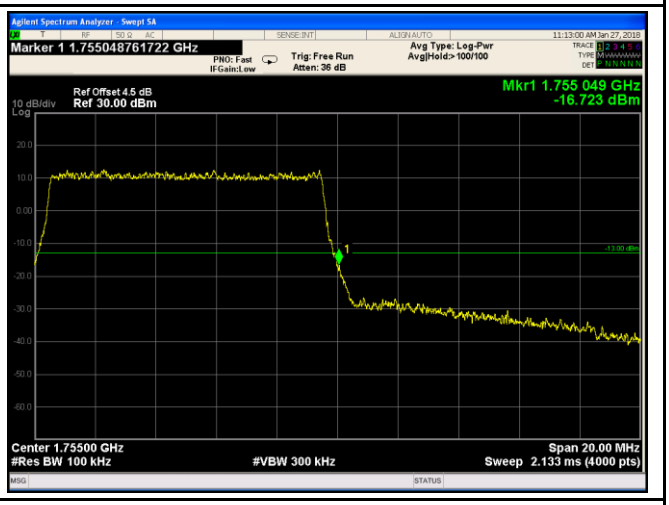
LTE Band IV - Low Channel QPSK-10



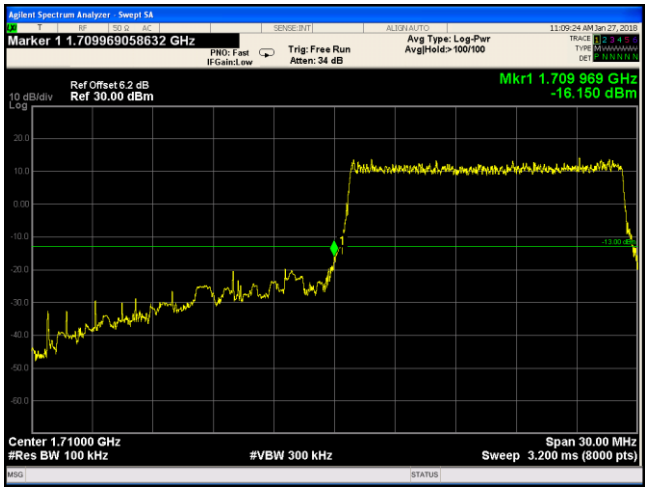
LTE Band IV - High Channel QPSK-10



LTE Band IV - Low Channel 16QAM-10



LTE Band IV - High Channel 16QAM-10

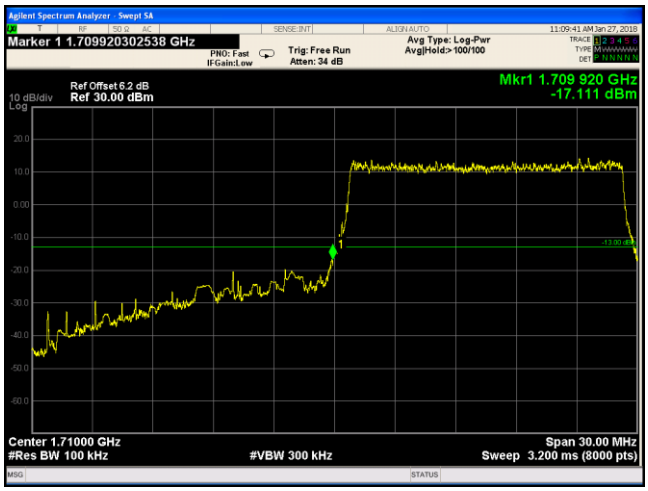


LTE Band IV - Low Channel QPSK-15

LTE Band IV - High Channel QPSK-15

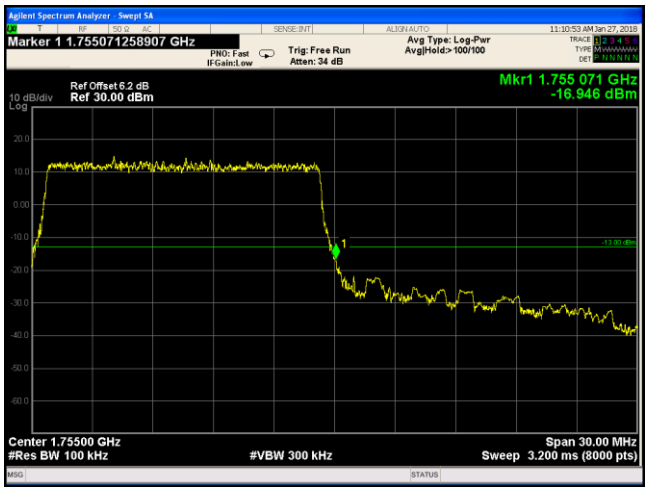
Note: Offset=Cable loss (4.5) + 10log (150.3/100)=4.5+1.7=6.2 dB

Note: Offset=Cable loss (4.5) + 10log (152.0/100)=4.5+1.7=6.2 dB



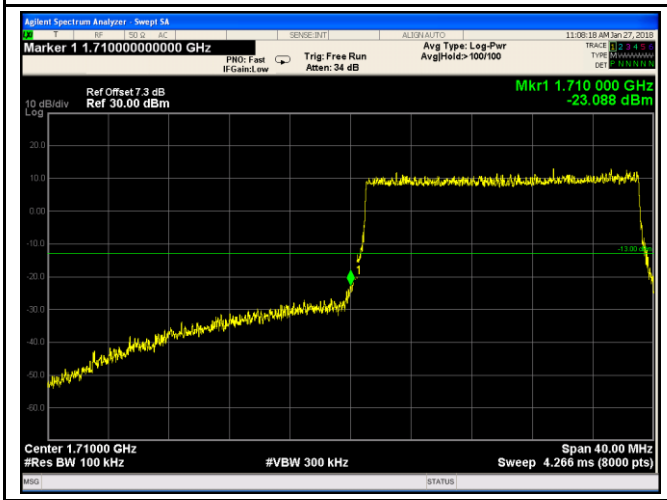
LTE Band IV - Low Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (150.3/100)=4.5+1.7=6.2 dB



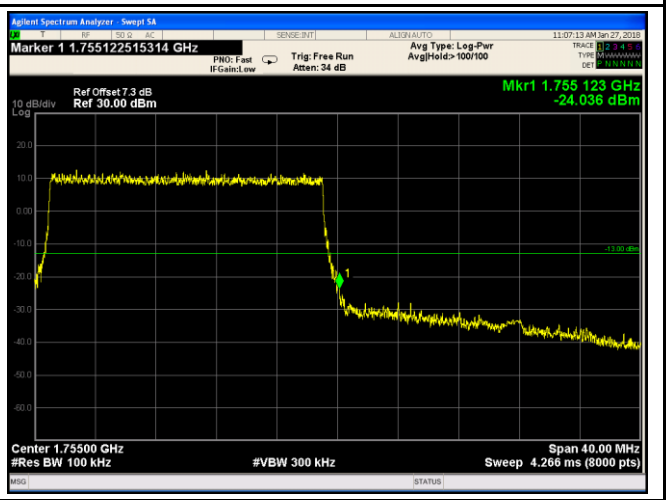
LTE Band IV - High Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (151.1/100)=4.5+1.7=6.2 dB



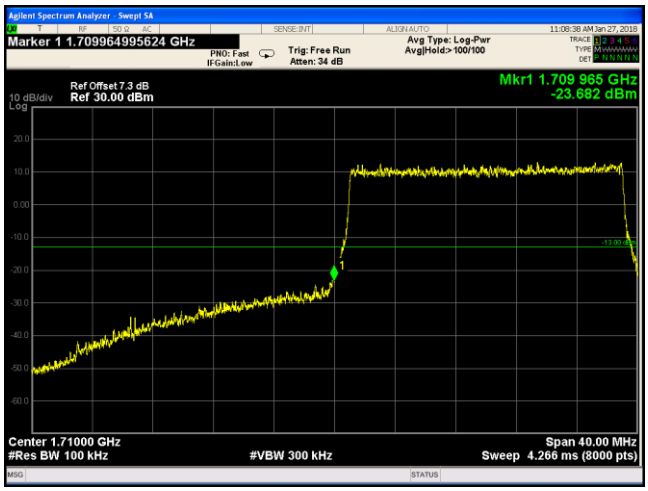
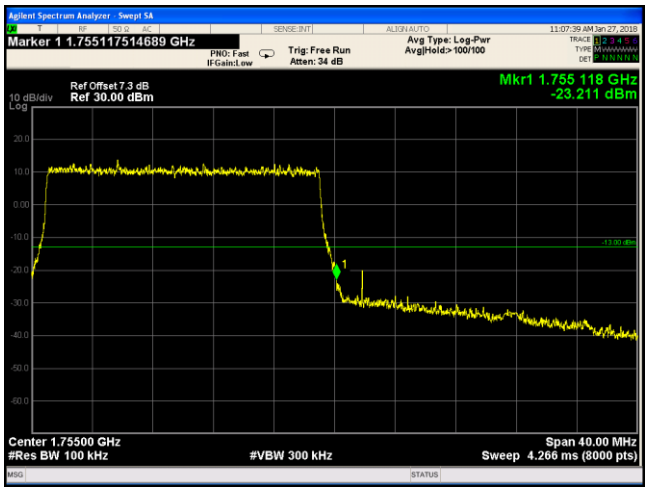
LTE Band IV - Low Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (195.9/100)=4.5+2.8=7.3 dB

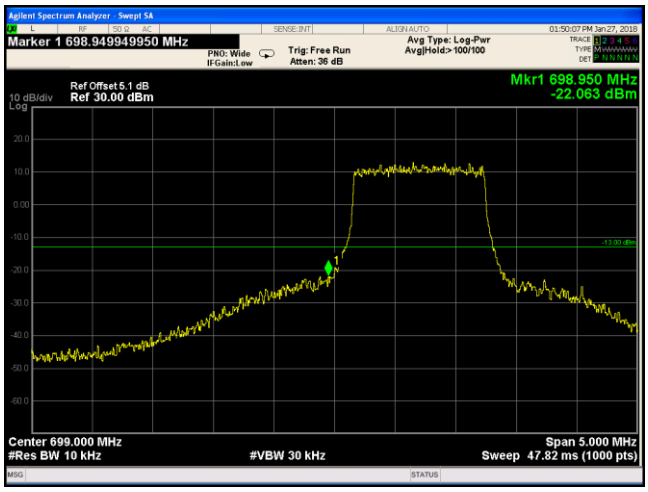
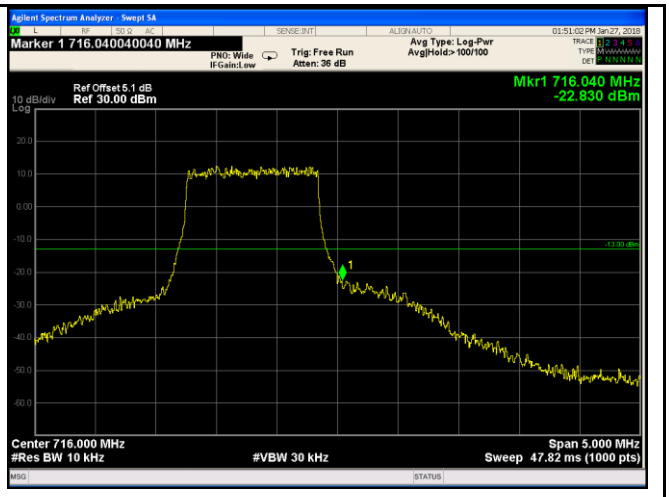
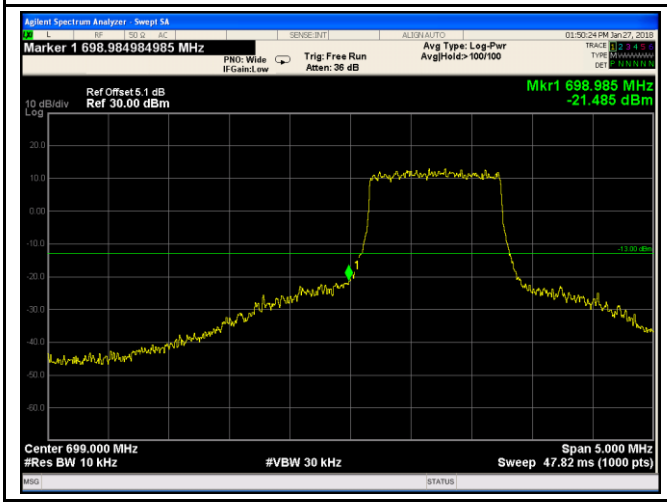
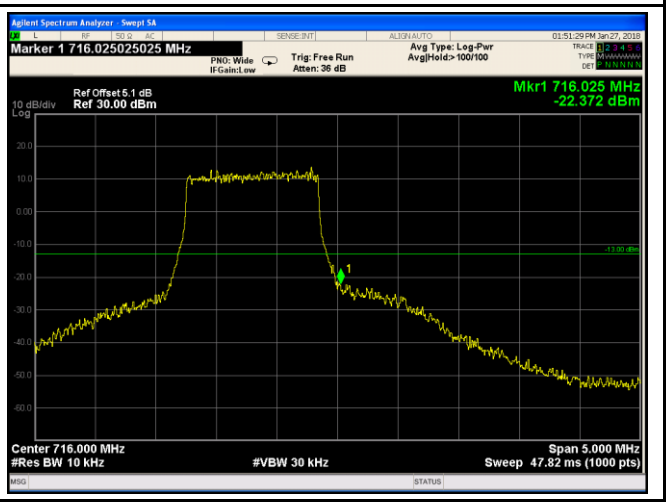


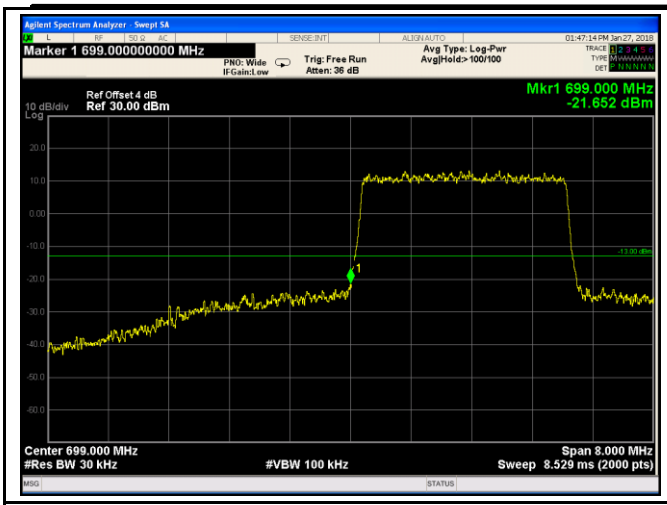
LTE Band IV - High Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (196.8/100)=4.5+2.8=7.3 dB

	
LTE Band IV - Low Channel 16QAM-20	LTE Band IV - High Channel 16QAM-20
Note: Offset=Cable loss (4.5) + 10log (198.9/100)=4.5+2.8=7.3dB	Note: Offset=Cable loss (4.5) + 10log (196.2/100)=4.5+2.8=7.3 dB

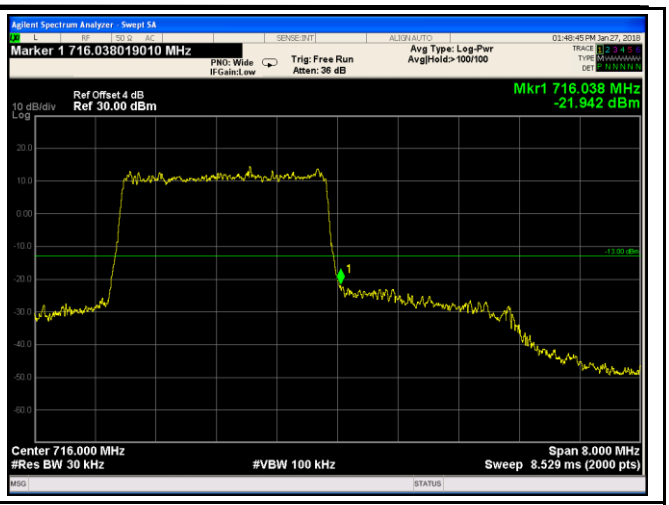
LTE Band XII (Part 27)

	
LTE Band XII - Low Channel QPSK-1.4	LTE Band XII - High Channel QPSK-1.4
Note: Offset=Cable loss (4.5) + 10log (13.14/10)=4.0+1.1=5.1 dB	Note: Offset=Cable loss (4.5) + 10log (13.02/10)=4.0+1.1=5.1 dB
	
LTE Band XII - Low Channel 16QAM-1.4	LTE Band XII - High Channel 16QAM-1.4
Note: Offset=Cable loss (4.5) + 10log (13.30/10)=4.0+1.1=5.1 dB	Note: Offset=Cable loss (4.5) + 10log (13.05/10)=4.0+1.1=5.1 dB



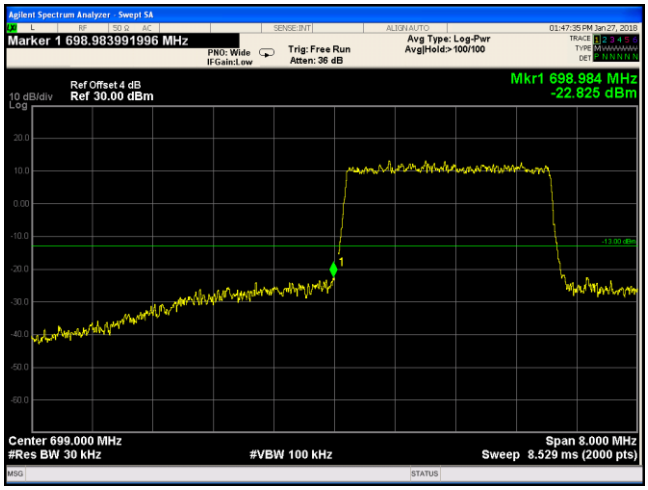
LTE Band XII - Low Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (29.87/30)=4.0+0.0=4.0 dB



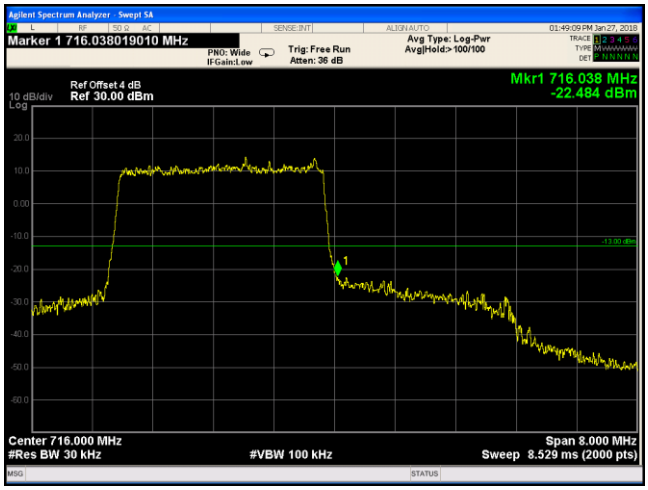
LTE Band XII - High Channel QPSK-3

Note: Offset=Cable loss (4.5) + 10log (30.02/30)=4.0+0.0=4.0 dB



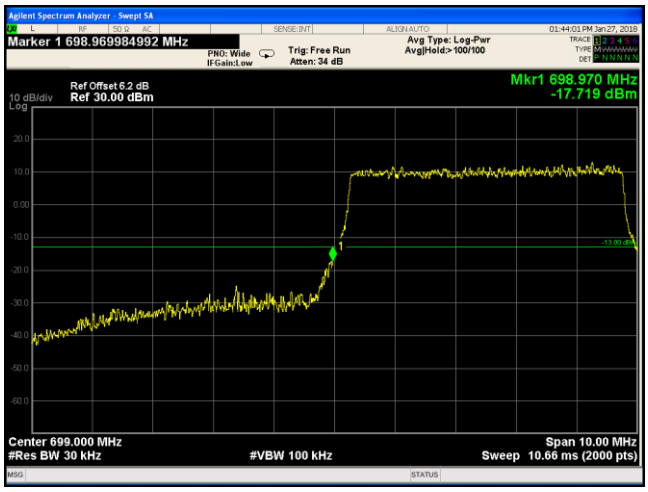
LTE Band XII - Low Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (30.29/30)=4.0+0.0=4.0 dB



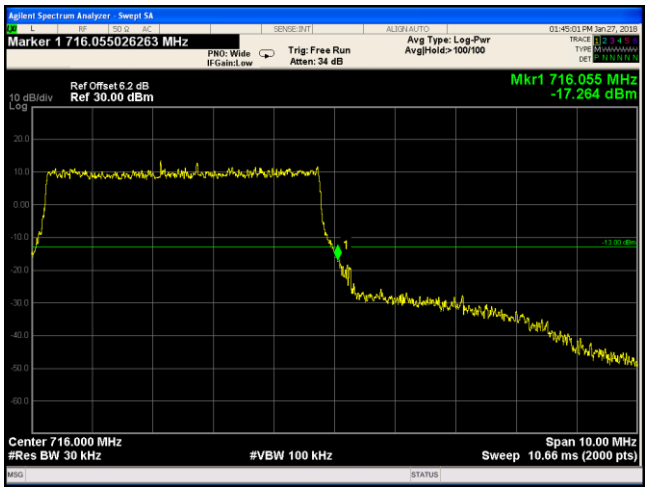
LTE Band XII - High Channel 16QAM-3

Note: Offset=Cable loss (4.5) + 10log (30.24/30)=4.0+0.0=4.0 dB



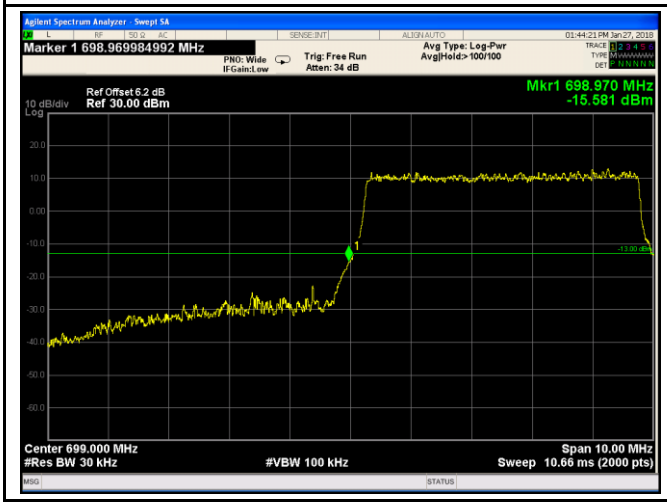
LTE Band XII - Low Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (51.56/30)=4.0+2.2=6.2 dB



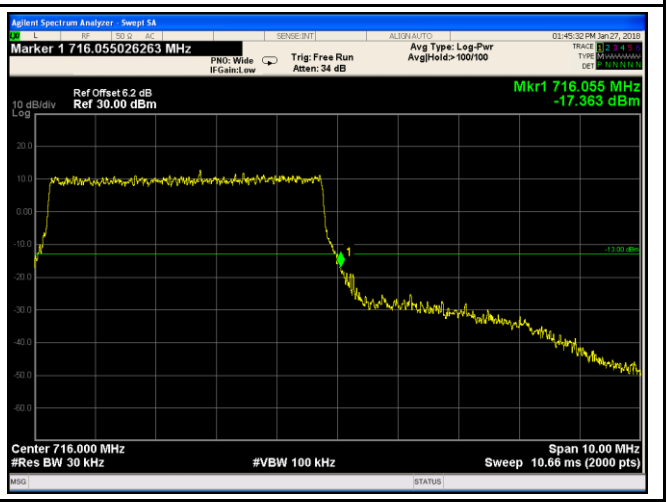
LTE Band XII - High Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (52.02/30)=4.0+2.2=6.2dB



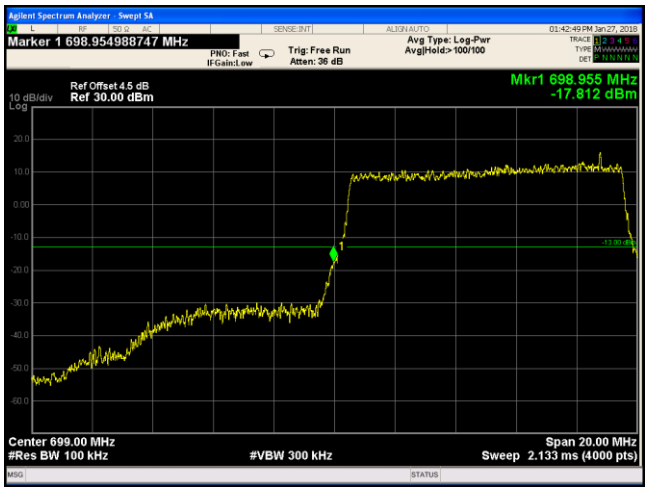
LTE Band XII - Low Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log (52.24/30)=4.0+2.2=6.2 dB

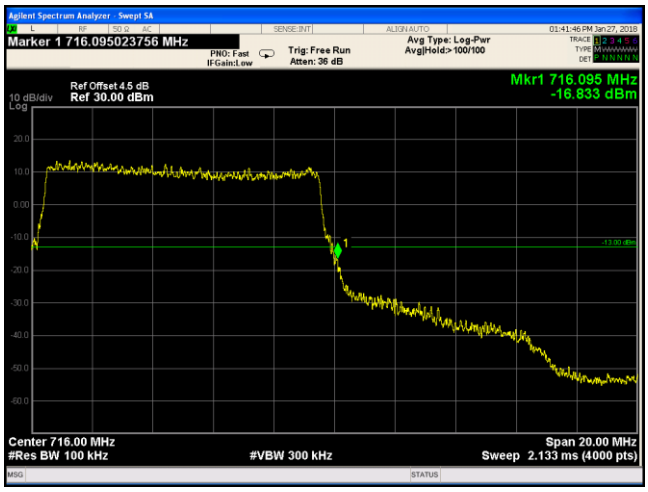


LTE Band XII - High Channel 16QAM-5

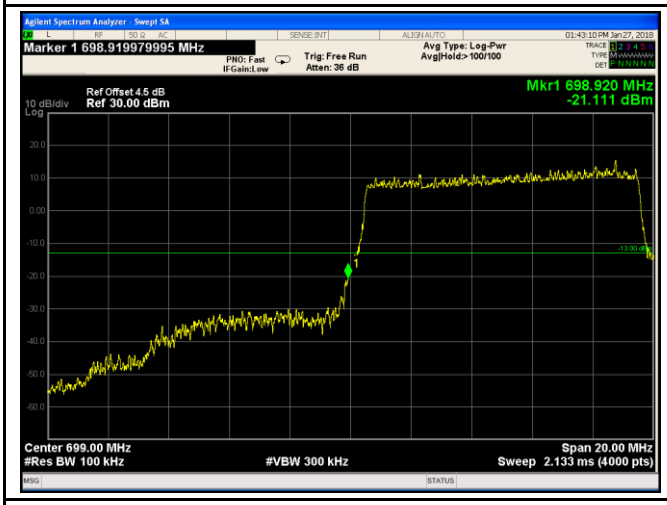
Note: Offset=Cable loss (4.5) + 10log (52.97/30)=4.0+2.2=6.2 dB



LTE Band XII - Low Channel QPSK-10



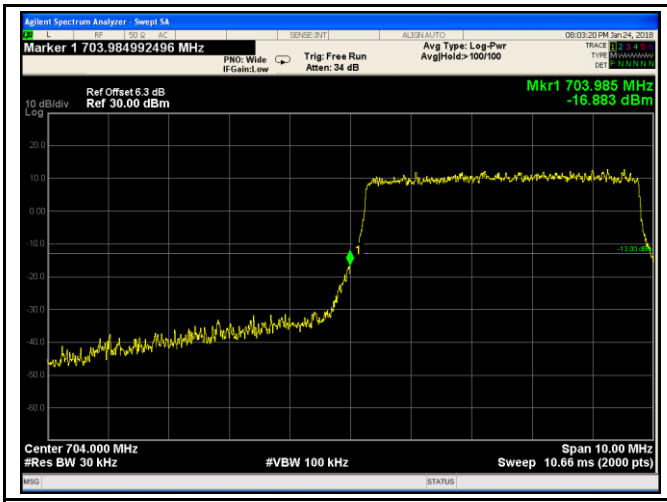
LTE Band XII - High Channel QPSK-10



LTE Band XII - Low Channel 16QAM-10

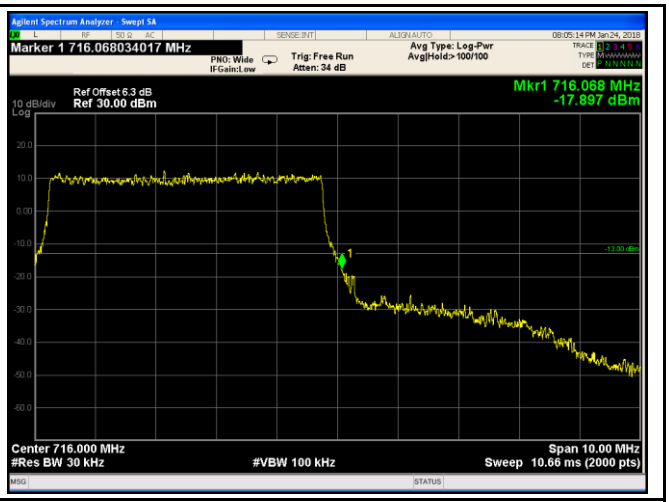
LTE Band XII - High Channel 16QAM-10

LTE Band XVII (Part 27)



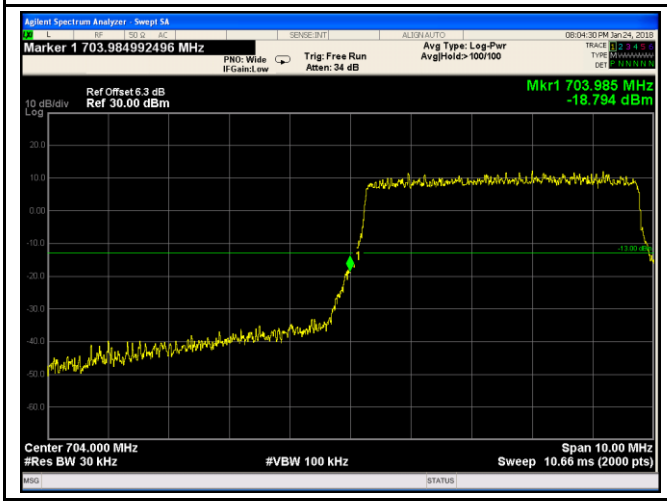
LTE Band XVII - Low Channel QPSK-5

Note: Offset=Cable loss (4.0) + 10log (51.73/30)=4.0+2.3=6.3 dB



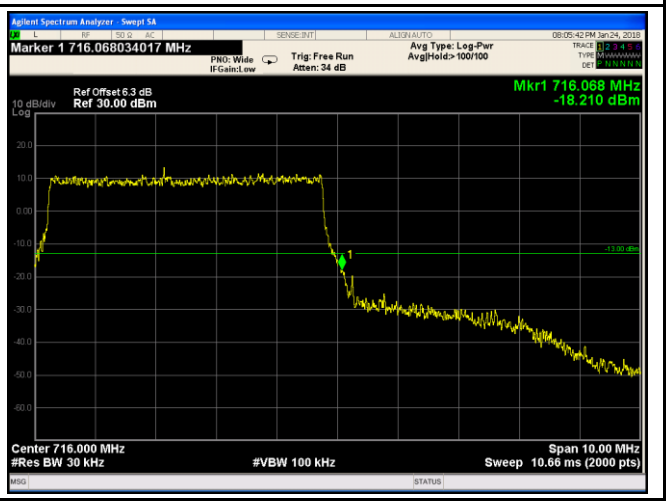
LTE Band XVII - High Channel QPSK-5

Note: Offset=Cable loss (4.0) + 10log (51.96/30)=4.0+2.3=6.3 dB



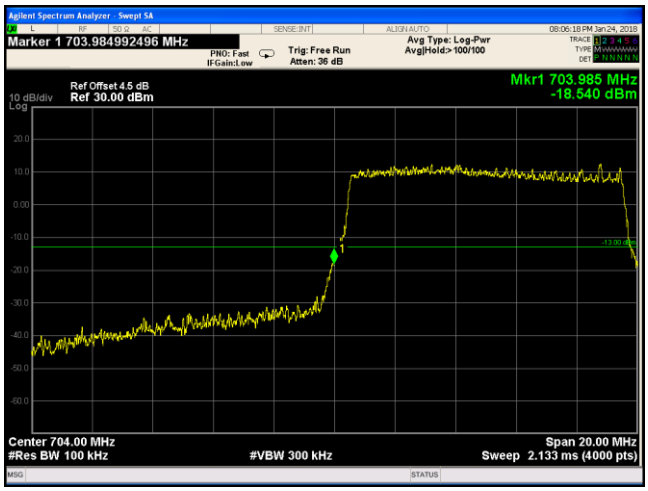
LTE Band XVII - Low Channel 16QAM-5

Note: Offset=Cable loss (4.0) + 10log (51.79/30)=4.0+2.3=6.3 dB

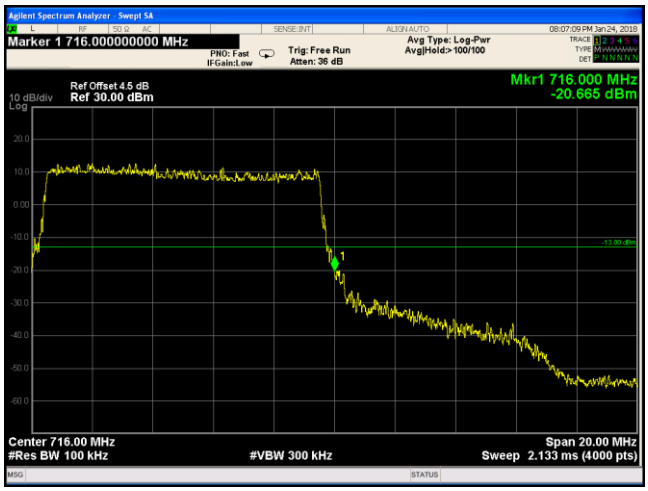


LTE Band XVII - High Channel 16QAM-5

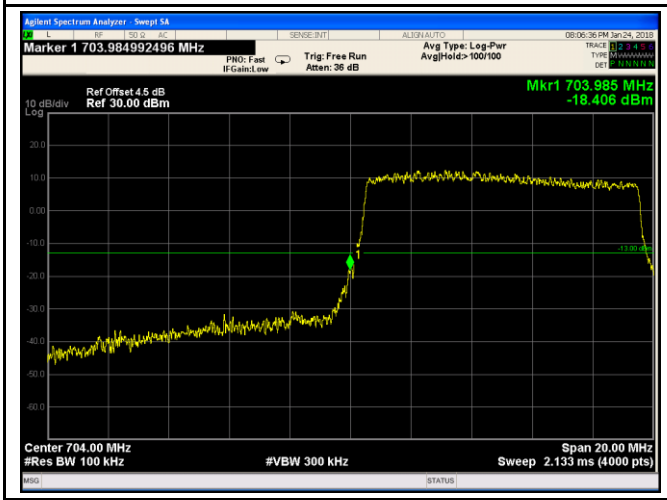
Note: Offset=Cable loss (4.0) + 10log (51.91/30)=4.0+2.3=6.3 dB



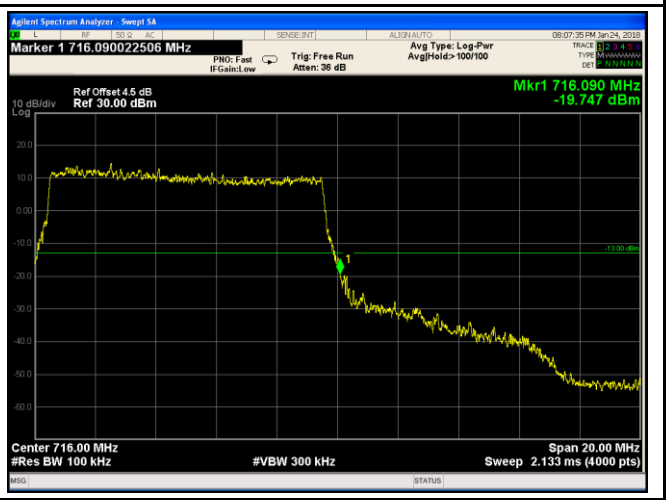
LTE Band XVII - Low Channel QPSK-10



LTE Band XVII - High Channel QPSK-10



LTE Band XVII - Low Channel 16QAM-10

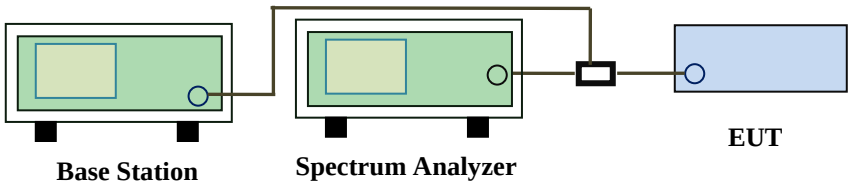


LTE Band XVII - High Channel 16QAM-10

6.8 Band Edge 27.53(m)

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	January 24, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Requirement	Applicable
§27.53(m)	According to FCC 27.53(m)(4) specified that power of any emmission ouutside of the channel edge must be attenuated below the transmitting power(P) by a factor shall be not less than 43+10log (P)dB at the channel edge, the limit of emission equal to -13dBm. And 55+10log (P)dB at 5.5MHz from the channel edges, the limit of emission equal to -25dBm. In the 1MHz bands immediately outside and adjacent to the frenqency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.	☑
Test Setup		
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.	
Remark		
Result	☑ Pass ☐ Fail	

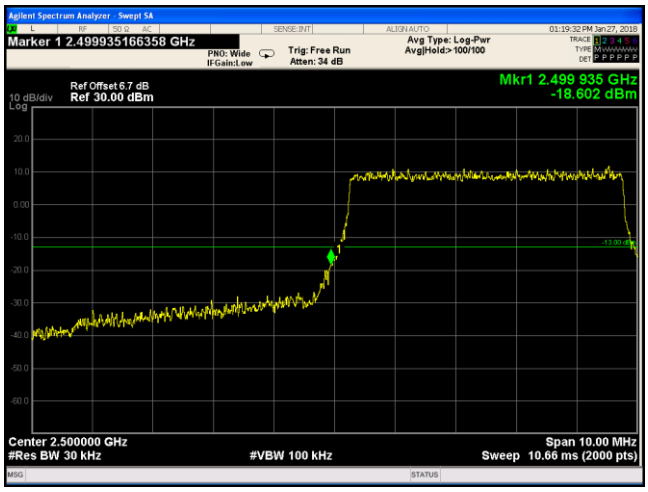
Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

LTE Band VII (Part 27) result

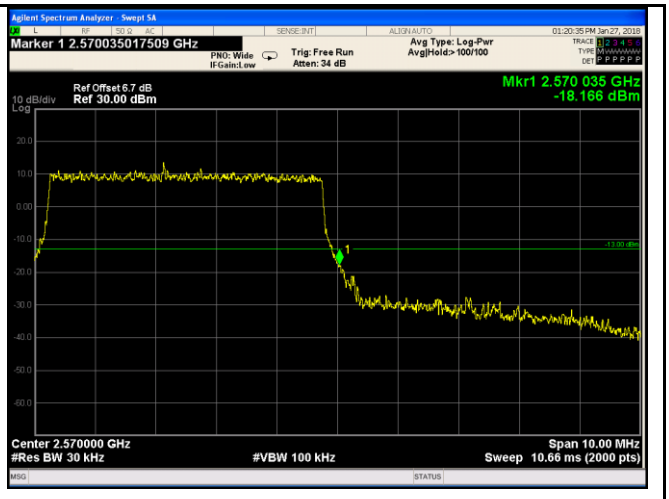
BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
5	20775	2500	16QAM	-21.485	-13
			QPSK	-22.063	-13
5	21425	2570	16QAM	-22.372	-13
			QPSK	-22.83	-13
10	20800	2500	16QAM	-22.825	-13
			QPSK	-21.652	-13
10	21400	2570	16QAM	-22.484	-13
			QPSK	-21.942	-13
15	20825	2500	16QAM	-15.581	-13
			QPSK	-17.719	-13
15	21400	2570	16QAM	-17.363	-13
			QPSK	-17.264	-13
20	20850	2500	16QAM	-21.111	-13
			QPSK	-17.812	-13
20	21350	2571	16QAM	-17.759	-13
			QPSK	-16.833	-13

LTE Band VII (Part 27)



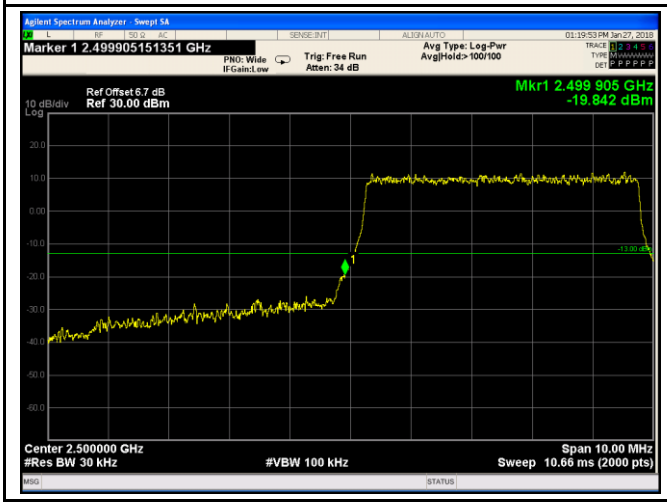
LTE Band VII - Low Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (51.50/30)=4.5+2.2=6.7 dB



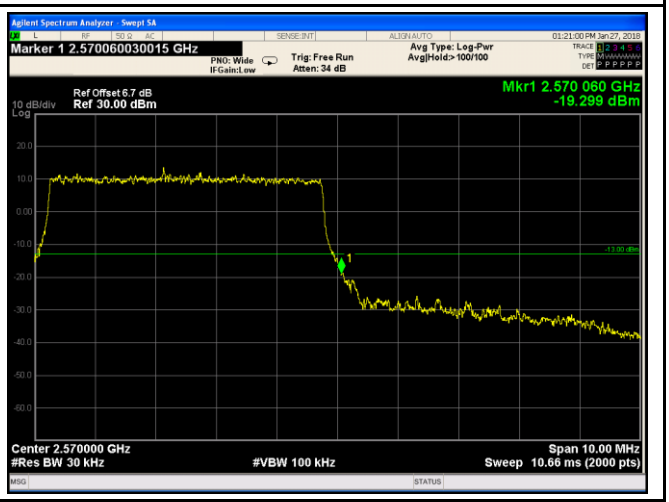
LTE Band VII - High Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log (50.36/30)=4.5+2.2=6.7 dB



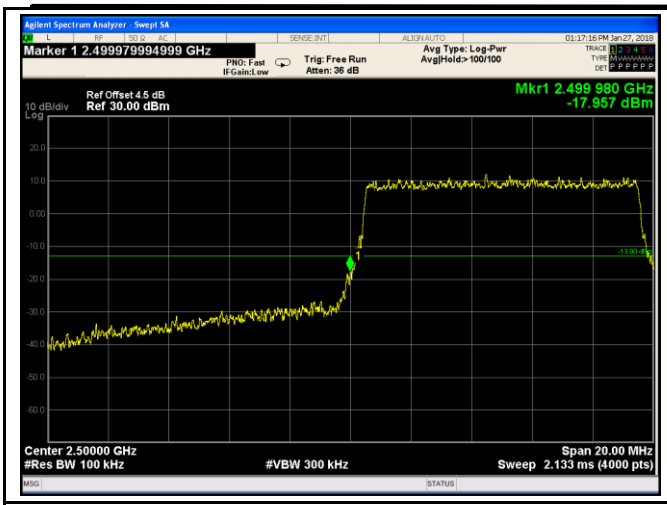
LTE Band VII - Low Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log (51.49/30)=4.5+2.2=6.7 dB

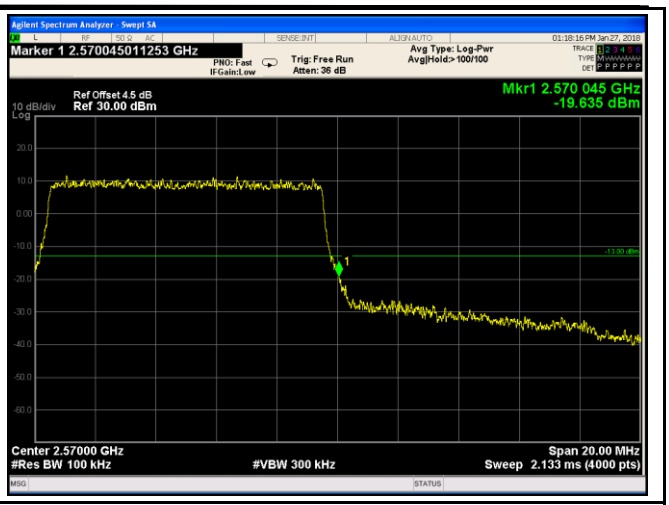


LTE Band VII - High Channel 16QAM-5

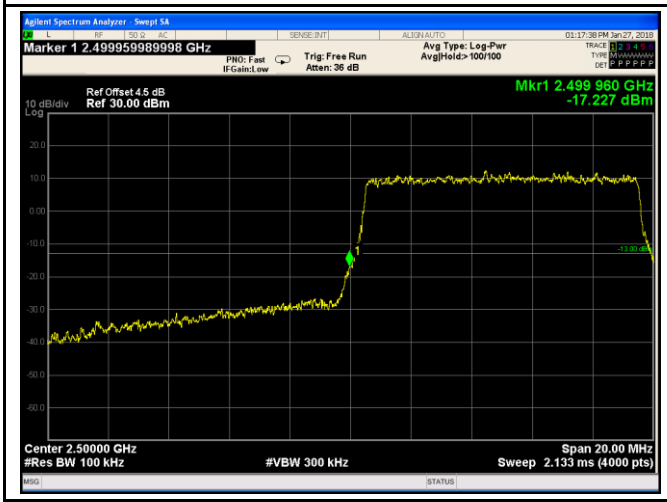
Note: Offset=Cable loss (4.5) + 10log (51.96/30)=4.5+2.2=6.7 dB



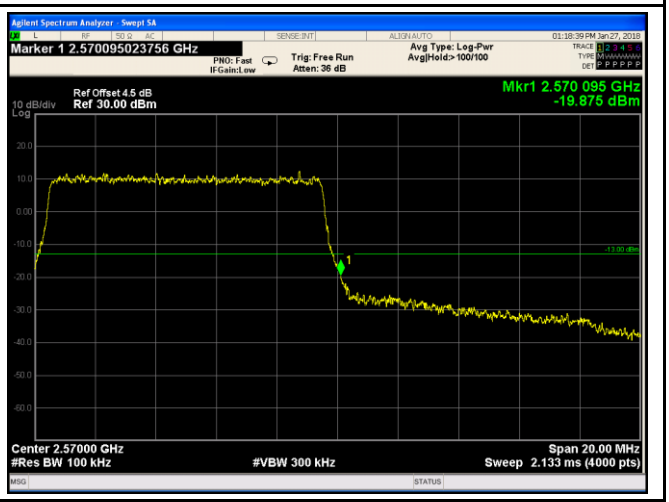
LTE Band VII - Low Channel QPSK-10



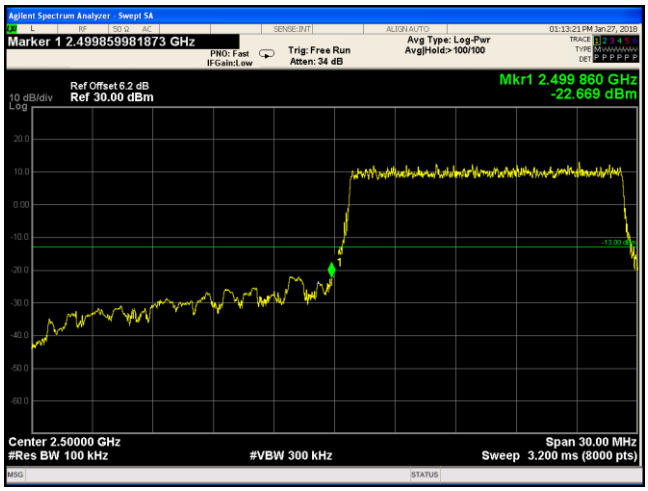
LTE Band VII - High Channel QPSK-10



LTE Band VII - Low Channel 16QAM-10

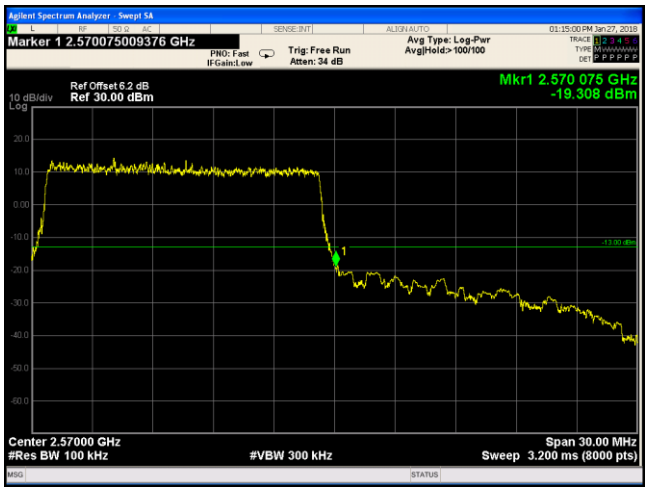


LTE Band VII - High Channel 16QAM-10



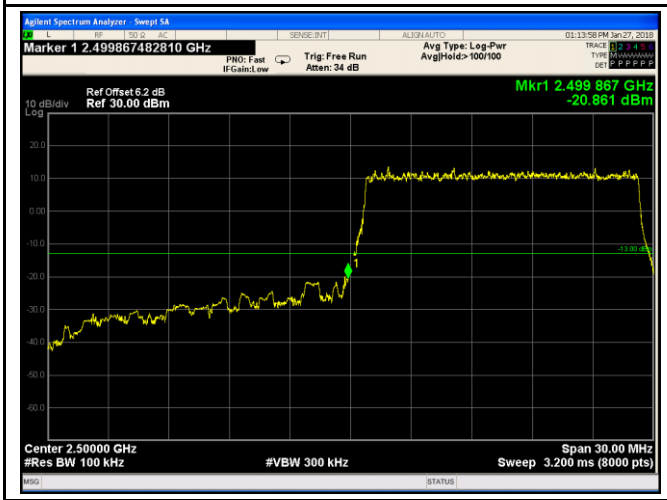
LTE Band VII - Low Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log (150.2/100)=4.5+1.7=6.2 dB



LTE Band VII - High Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log (151.5/100)=4.5+1.7=6.2 dB

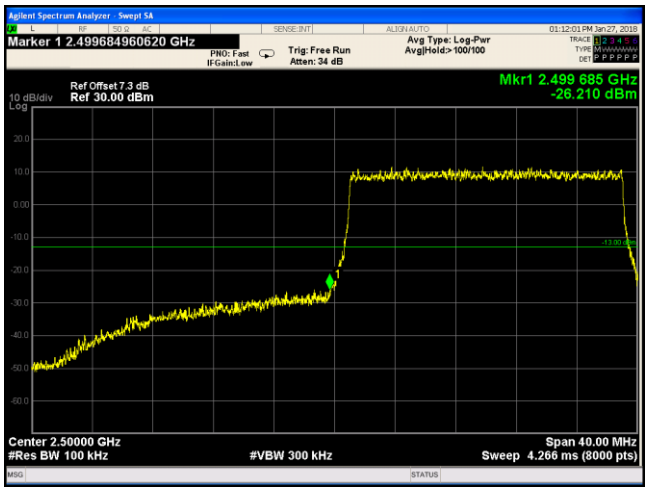


LTE Band VII - Low Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (151.8/100)=4.5+1.7=6.2 dB

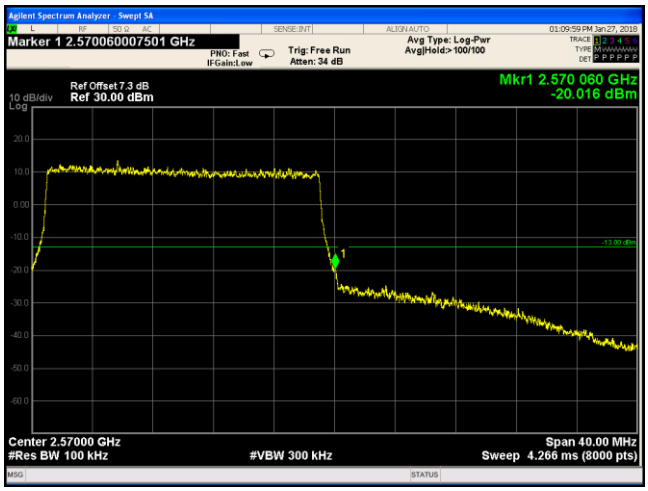
LTE Band VII - High Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log (152.2/100)=4.5+1.7=6.2 dB



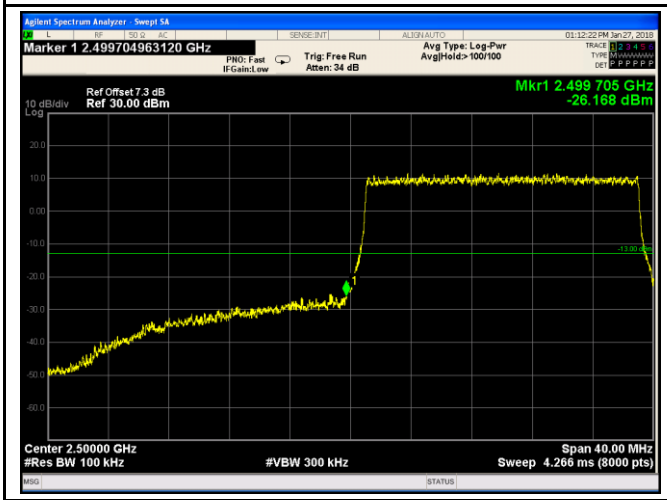
LTE Band VII - Low Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (196.4/100)=4.5+2.8=7.3dB



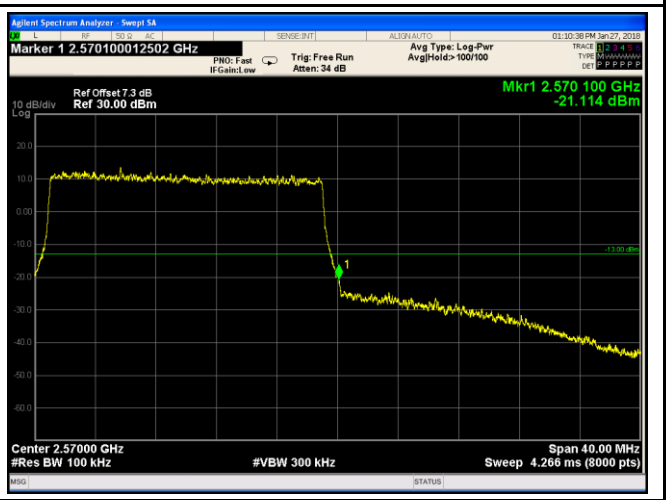
LTE Band VII - High Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log (195.2/100)=4.5+2.8=7.3dB



LTE Band VII - Low Channel 16QAM-20

Note: Offset=Cable loss (4.5) + 10log (195.5/100)=4.5+2.8=7.3 dB



LTE Band VII - High Channel 16QAM-20

Note: Offset=Cable loss (4.5) + 10log (193.2/100)=4.5+2.8=7.3 dB