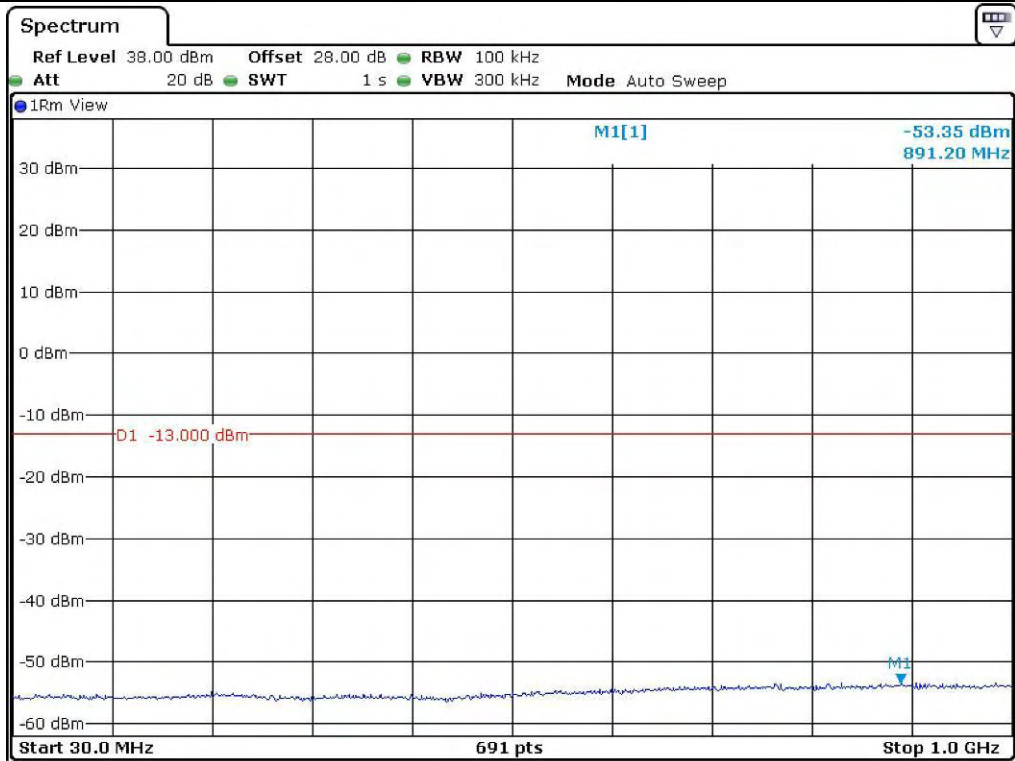
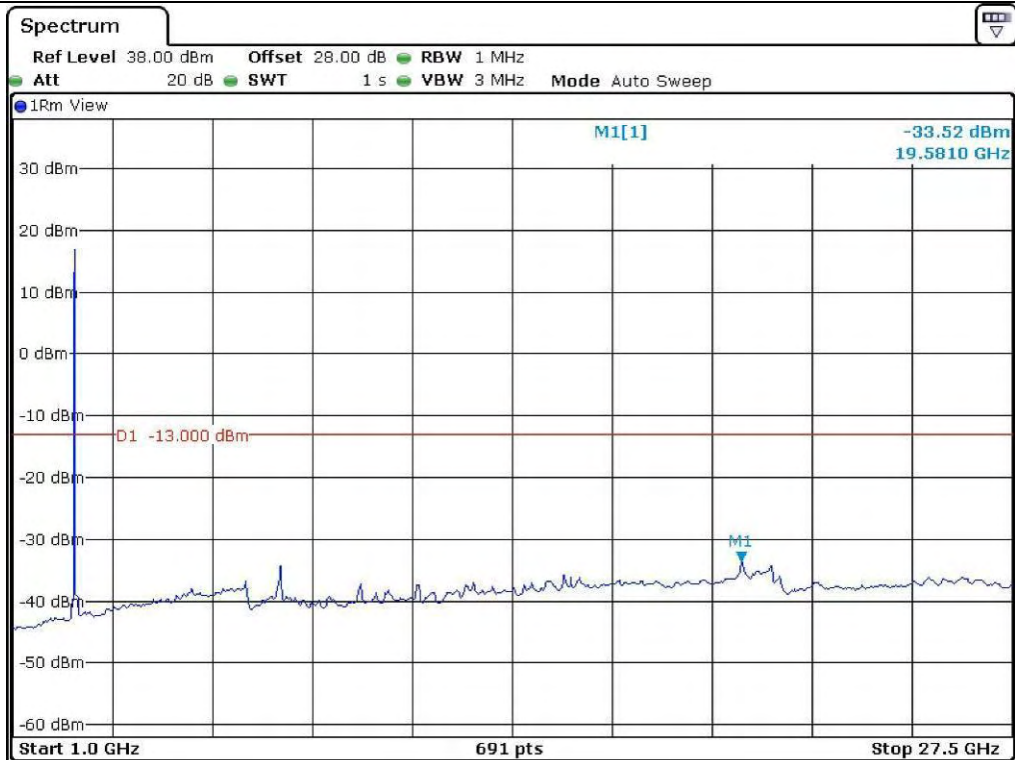
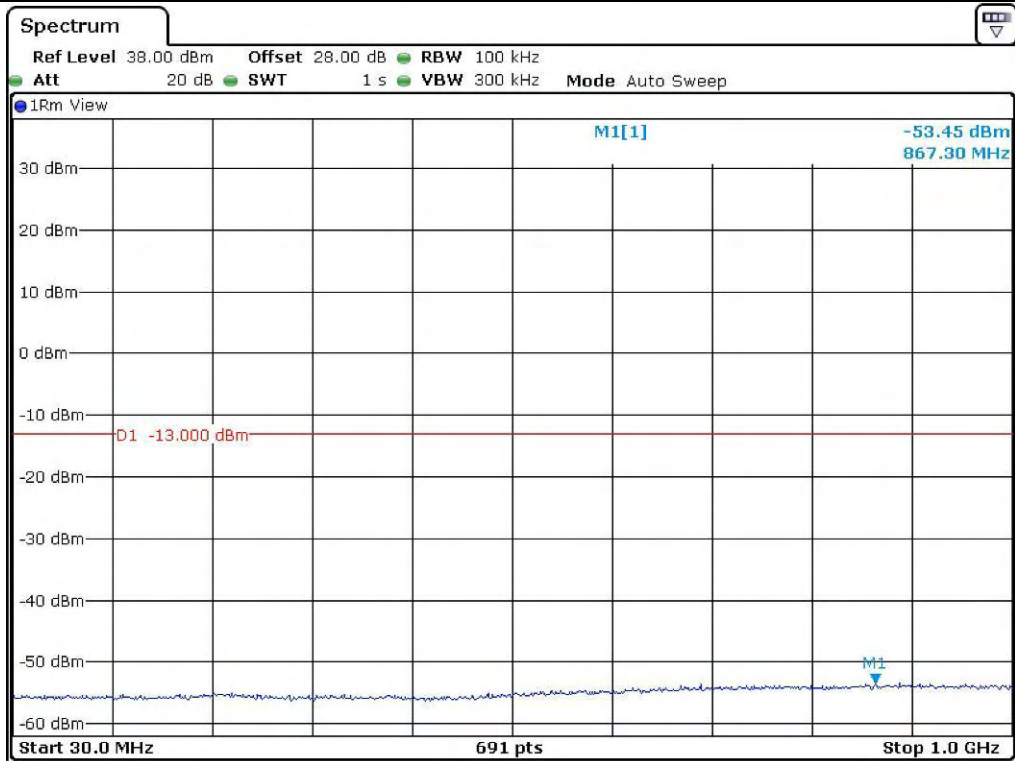




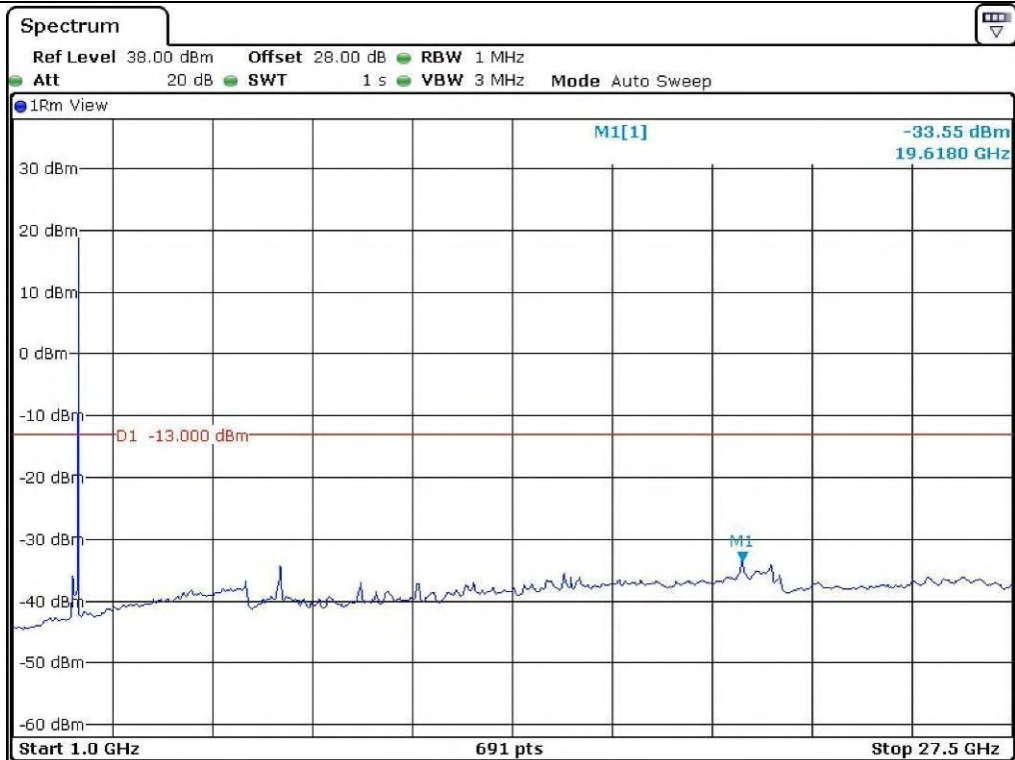
QPSK – Middle Channel



QPSK – Middle Channel



QPSK – High Channel



QPSK – High Channel

7.5.2 Test Result (20 MHz/2 Carrier)

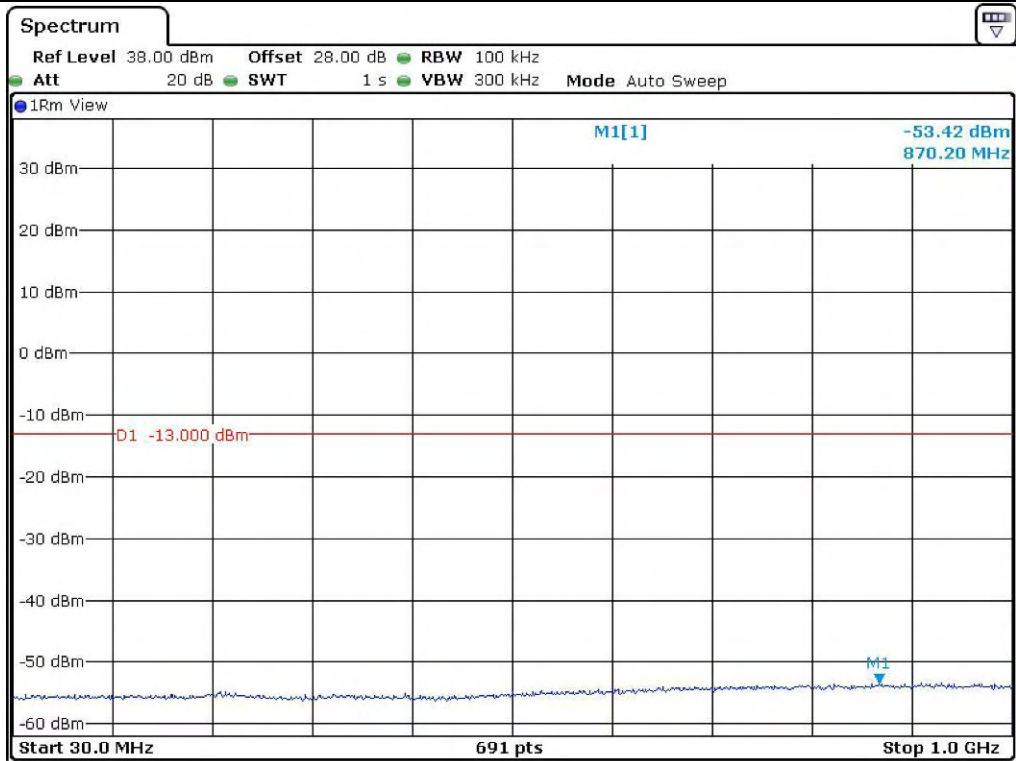
-. Test Date : July 31, 2014
-. Frequency range : 30 MHz ~ 27.5 GHz
-. Result : Pass

Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
16 QAM	Low	870.20	-53.42	0.20	-53.22	-13.00	40.22
		1 9601.00	-33.46	2.80	-30.66		17.66
	Middle	840.70	-53.36	0.20	-53.16		40.16
		1 9601.00	-33.29	2.80	-30.49		17.49
	High	948.80	-53.30	0.30	-53.00		40.00
		1 9581.00	-33.58	2.80	-30.78		17.78
64 QAM	Low	975.40	-53.57	0.30	-53.27	-13.00	40.27
		1 9601.00	-33.40	2.80	-30.60		17.60
	Middle	905.20	-53.53	0.30	-53.23		40.23
		1 9601.00	-33.42	2.80	-30.62		17.62
	High	953.00	-53.41	0.30	-53.11		40.11
		1 9571.00	-33.58	2.80	-30.78		17.78
QPSK	Low	906.60	-53.45	0.30	-53.15	-13.00	40.15
		1 9601.00	-33.38	2.80	-30.58		17.58
	Middle	878.60	-53.31	0.20	-53.11		40.11
		1 9601.00	-33.49	2.80	-30.69		17.69
	High	993.70	-53.33	0.30	-53.03		40.03
		1 9618.00	-33.63	2.80	-30.83		17.83
Other frequencies up to 27.5 GHz have margin more than 20 dB.							

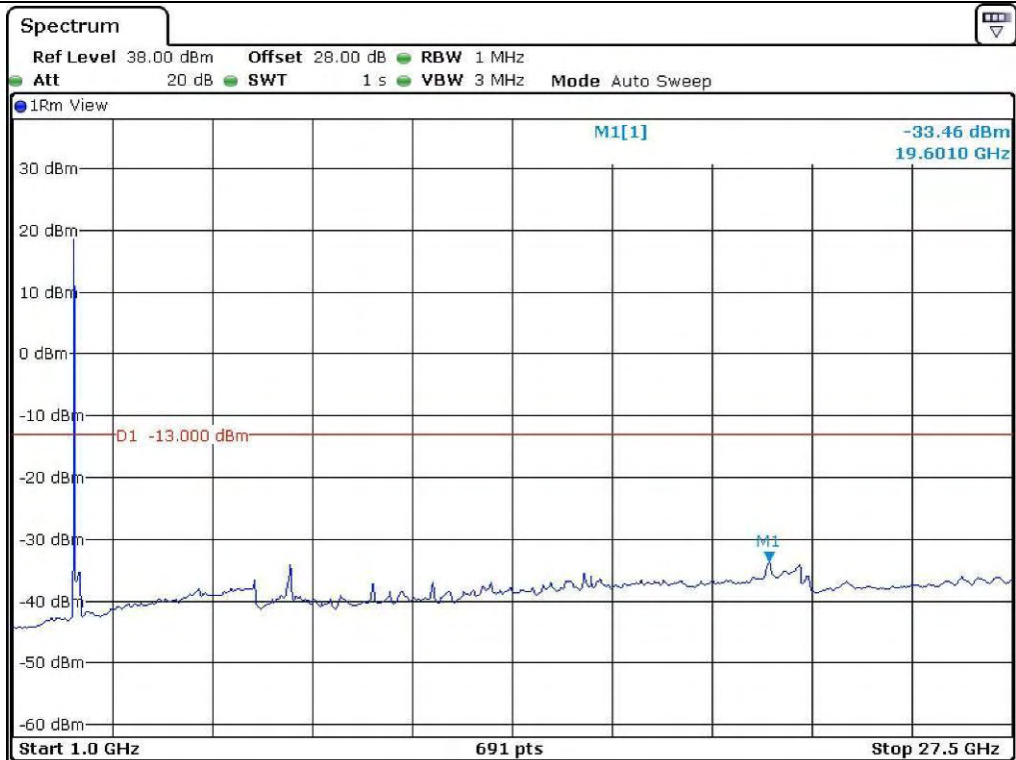
According to Part 27C, out of band emission shall be attenuated by $43 + 10 \log (P)$ dBc, equates to -13.0 dBm.



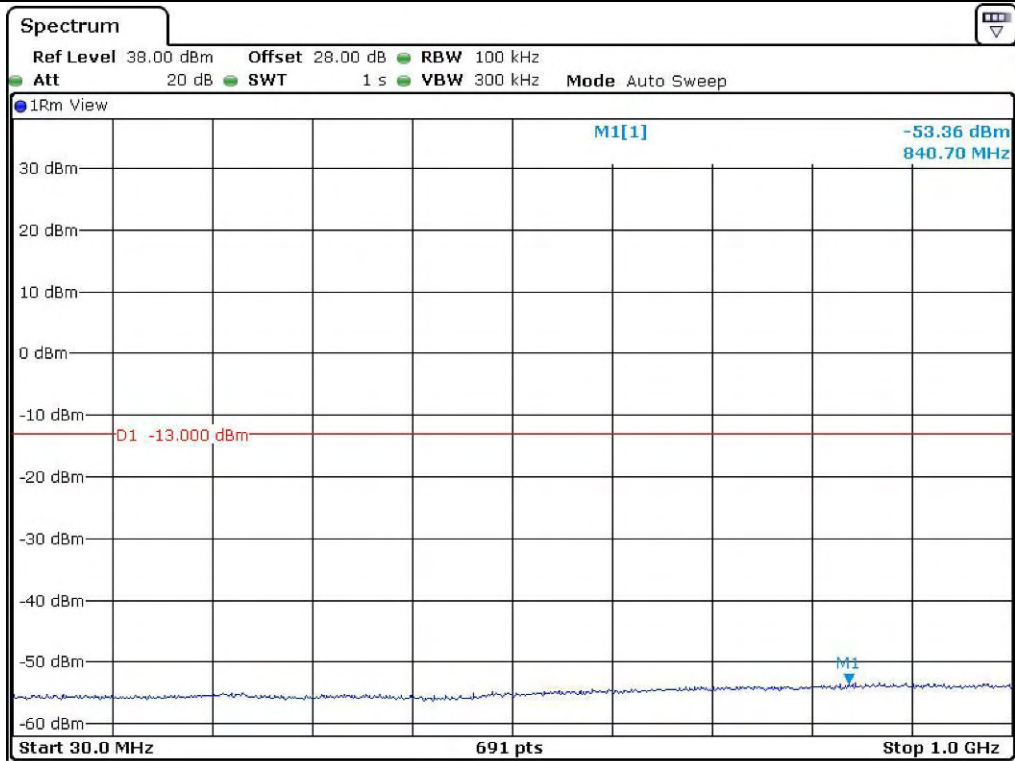
Tested by: Tae-Ho, Kim / Project Engineer



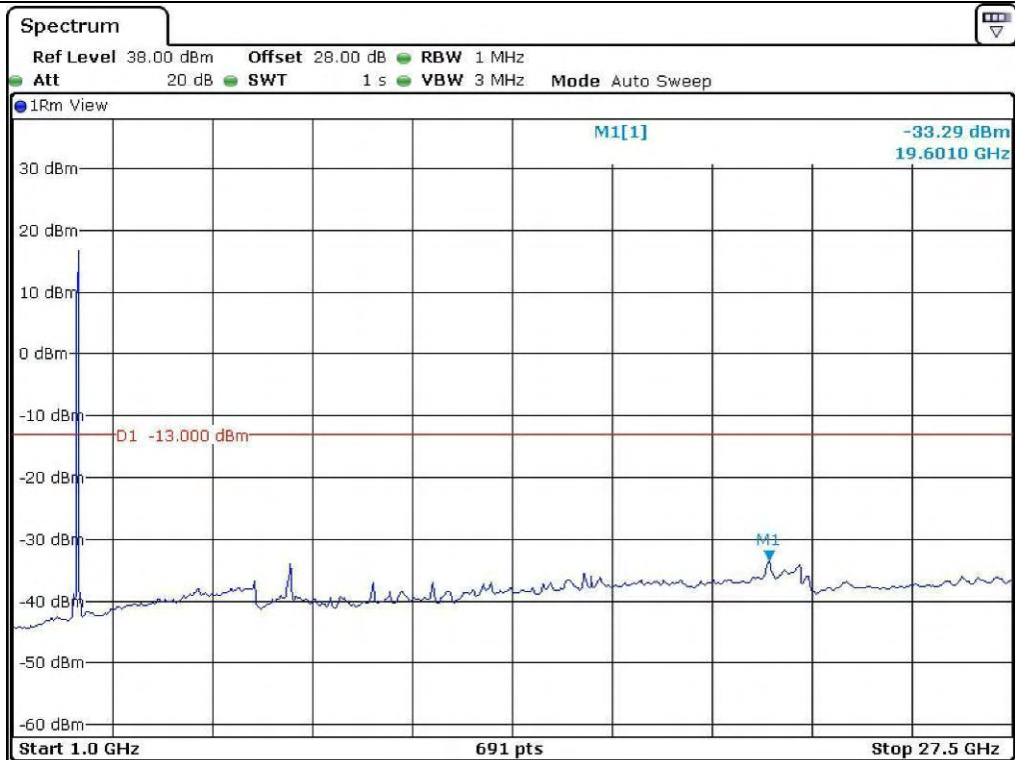
16 QAM – Low Channel



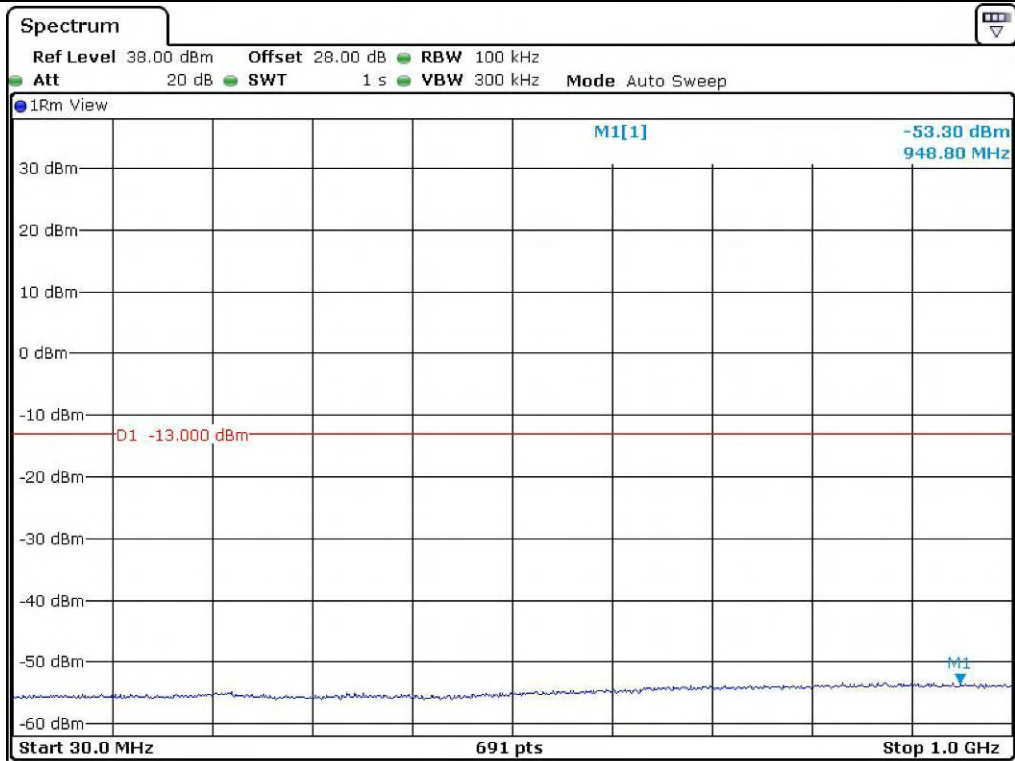
16 QAM – Low Channel



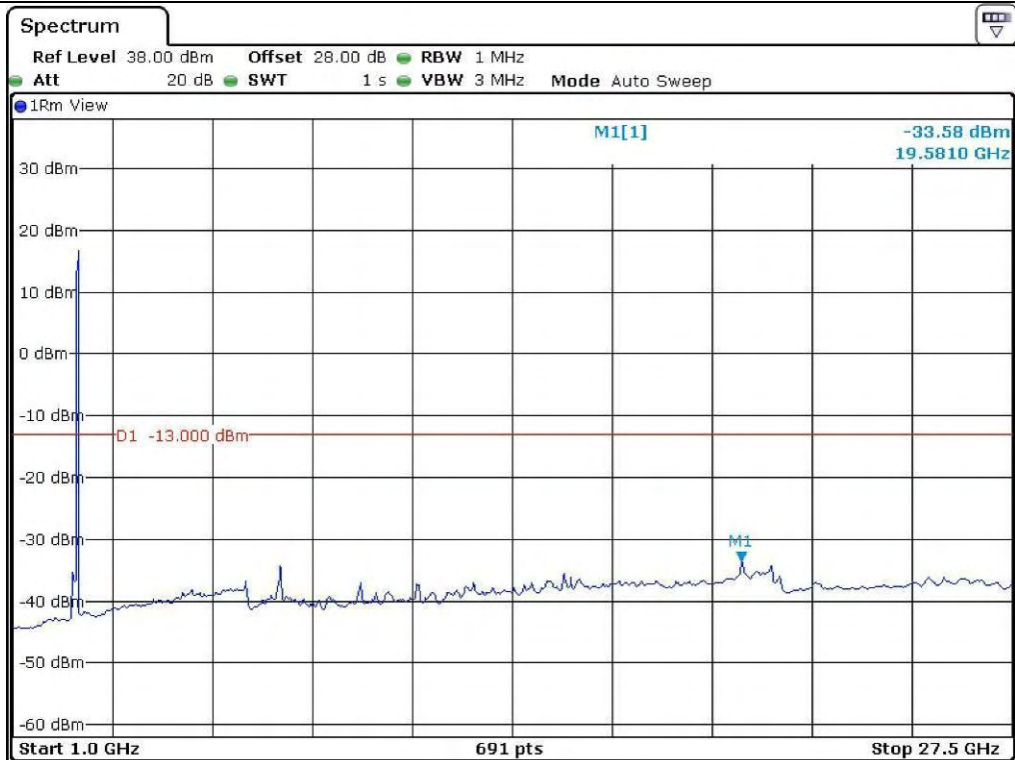
16 QAM – Middle Channel



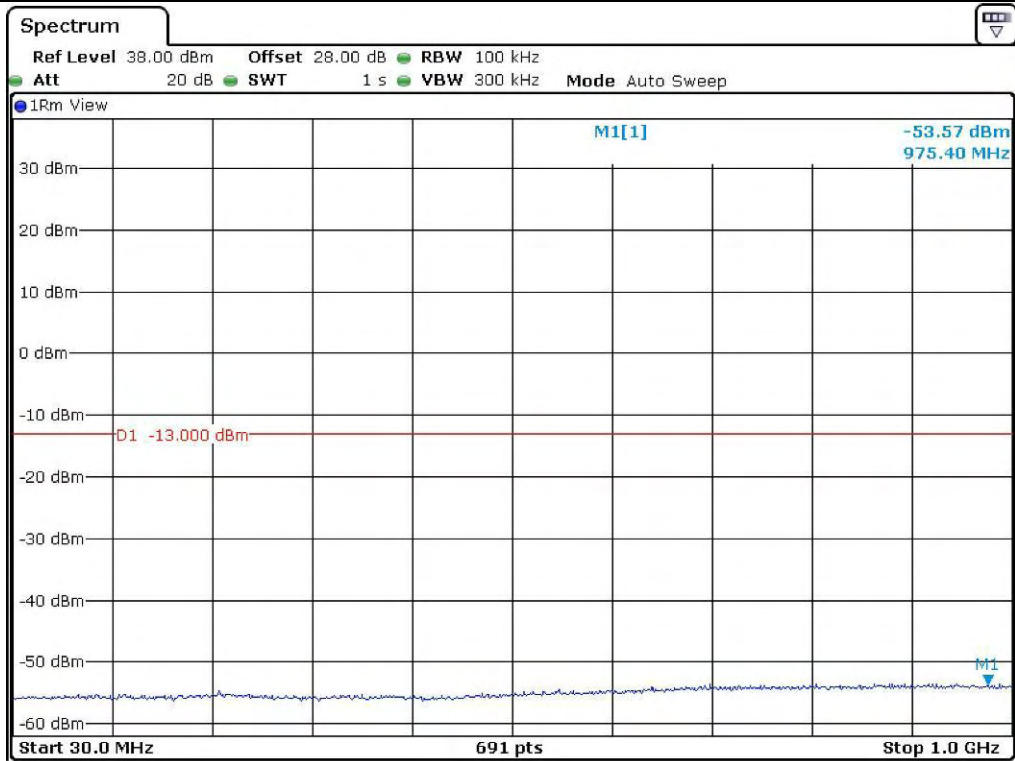
16 QAM – Middle Channel



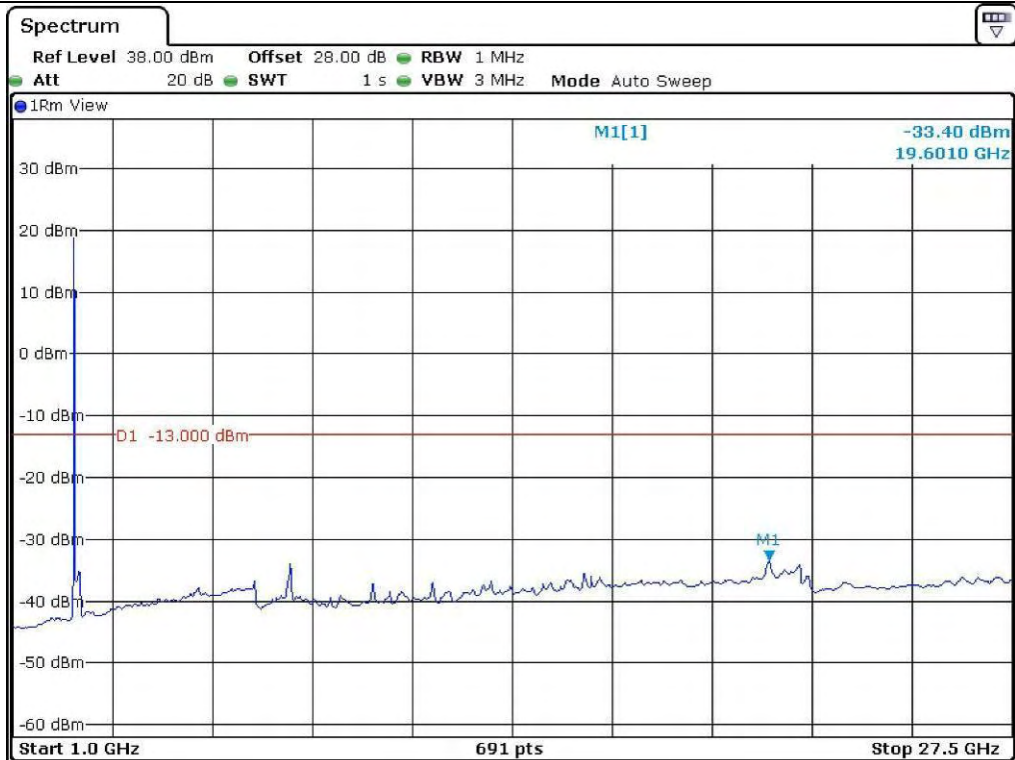
16 QAM – High Channel



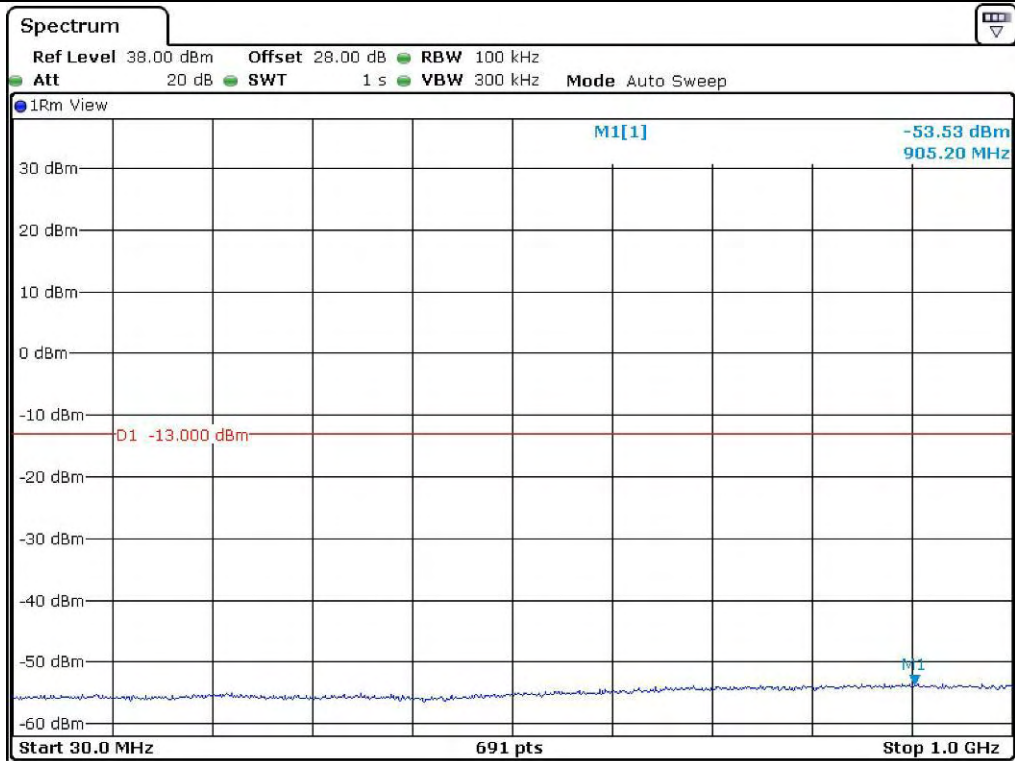
16 QAM – High Channel



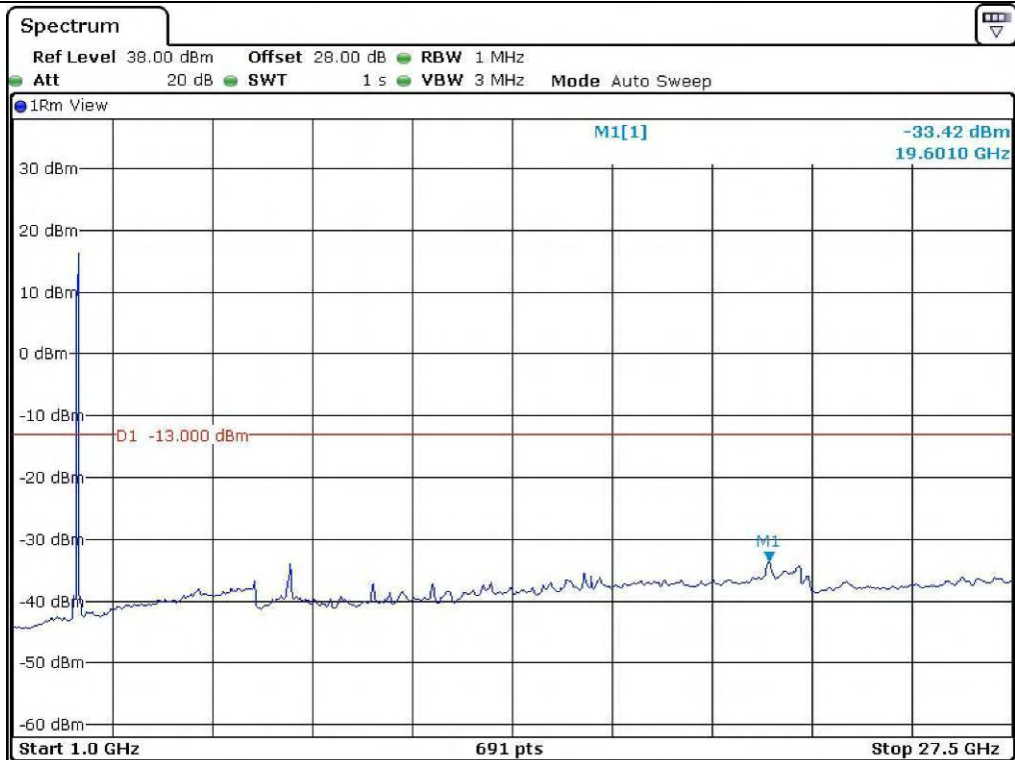
64 QAM – Low Channel



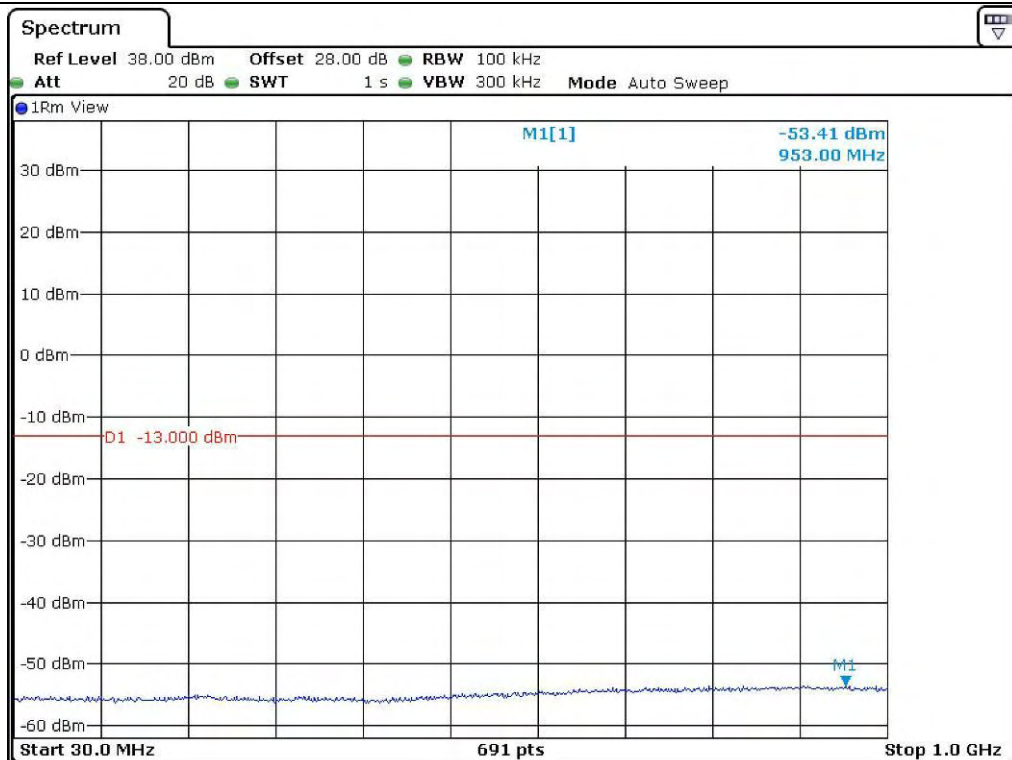
64 QAM – Low Channel



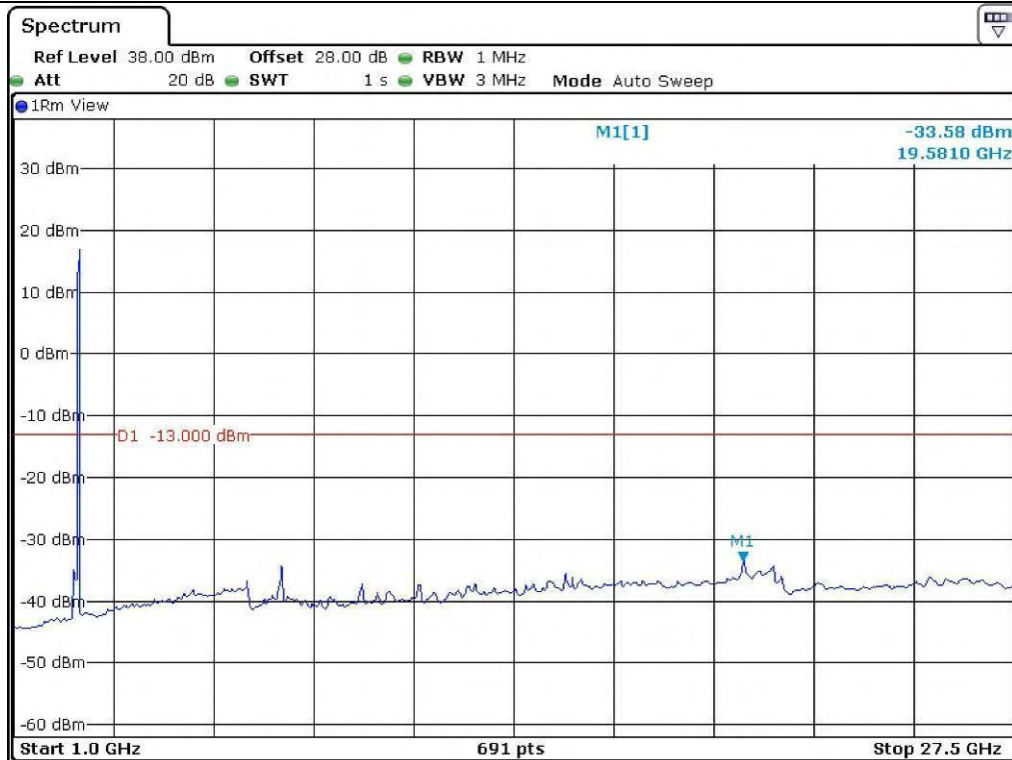
64 QAM – Middle Channel



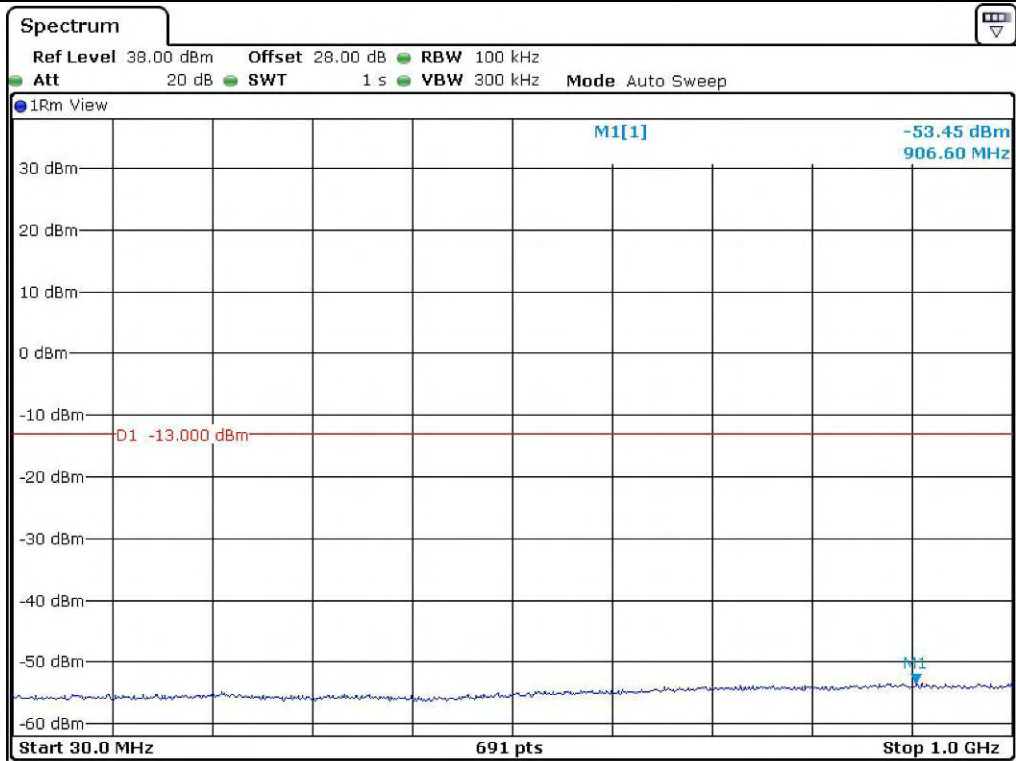
64 QAM – Middle Channel



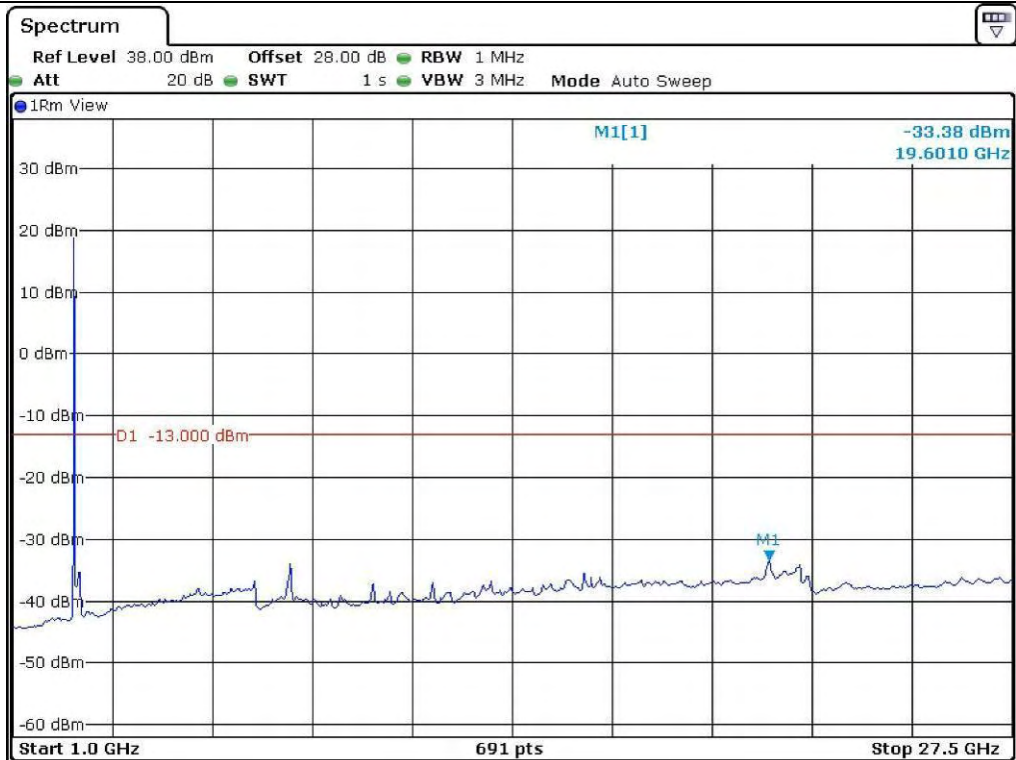
64 QAM – High Channel



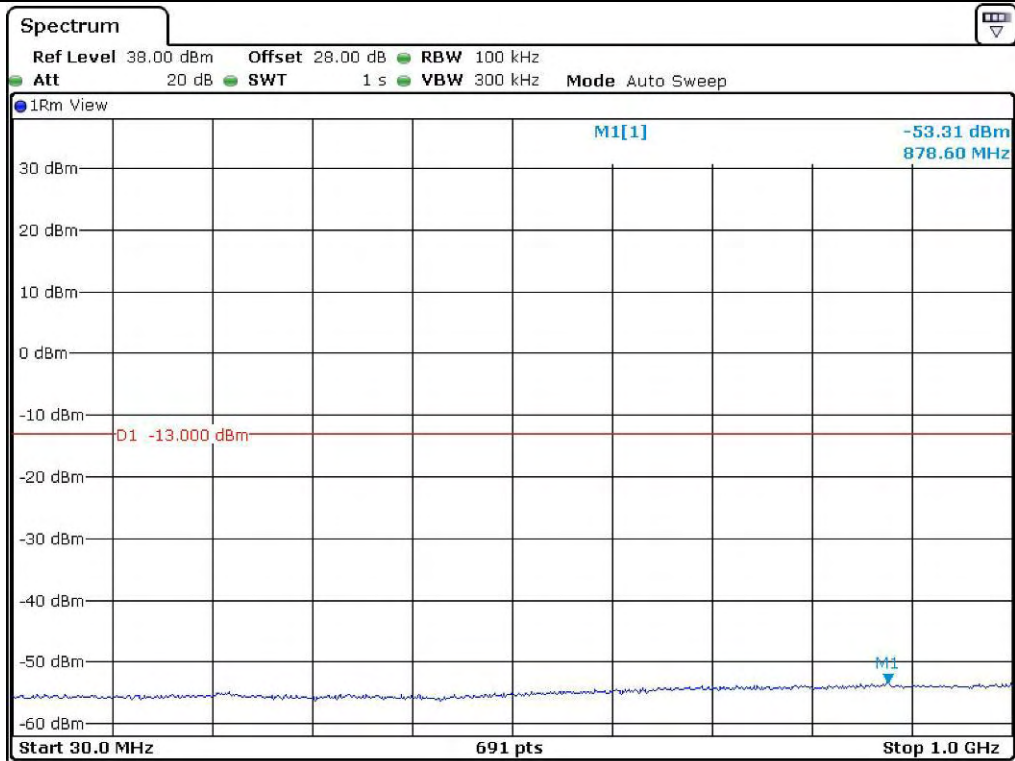
64 QAM – High Channel



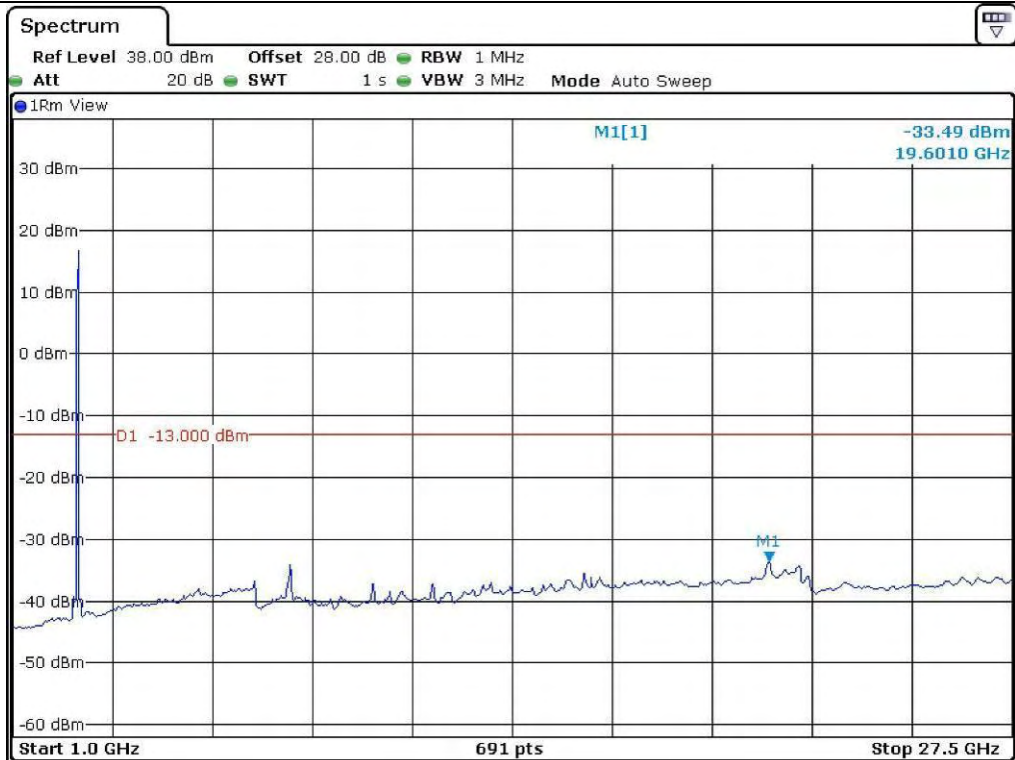
QPSK – Low Channel



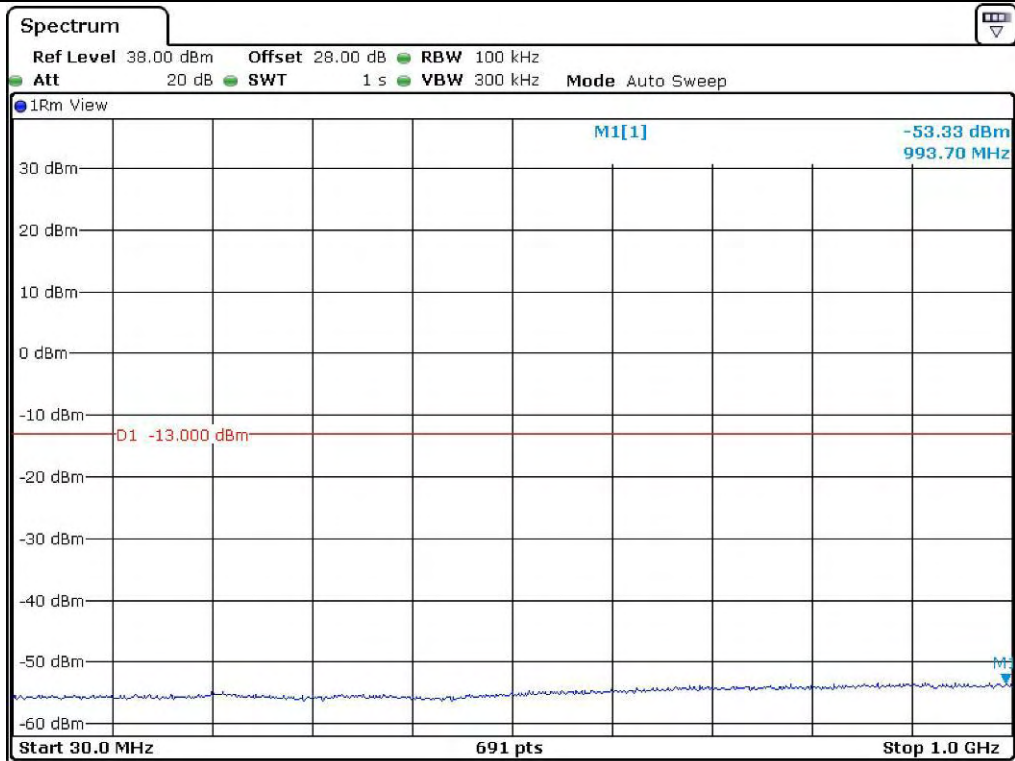
QPSK – Low Channel



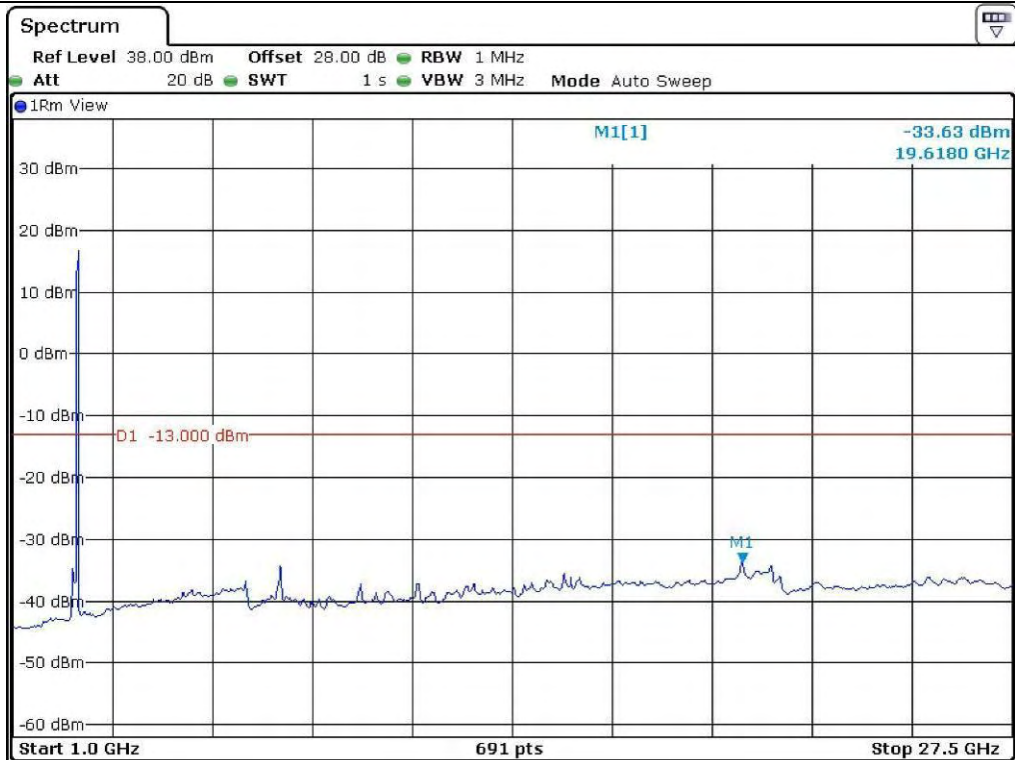
QPSK – Middle Channel



QPSK – Middle Channel



QPSK – High Channel



QPSK – High Channel

7.5.3 Test Result (20 MHz/3 Carrier)

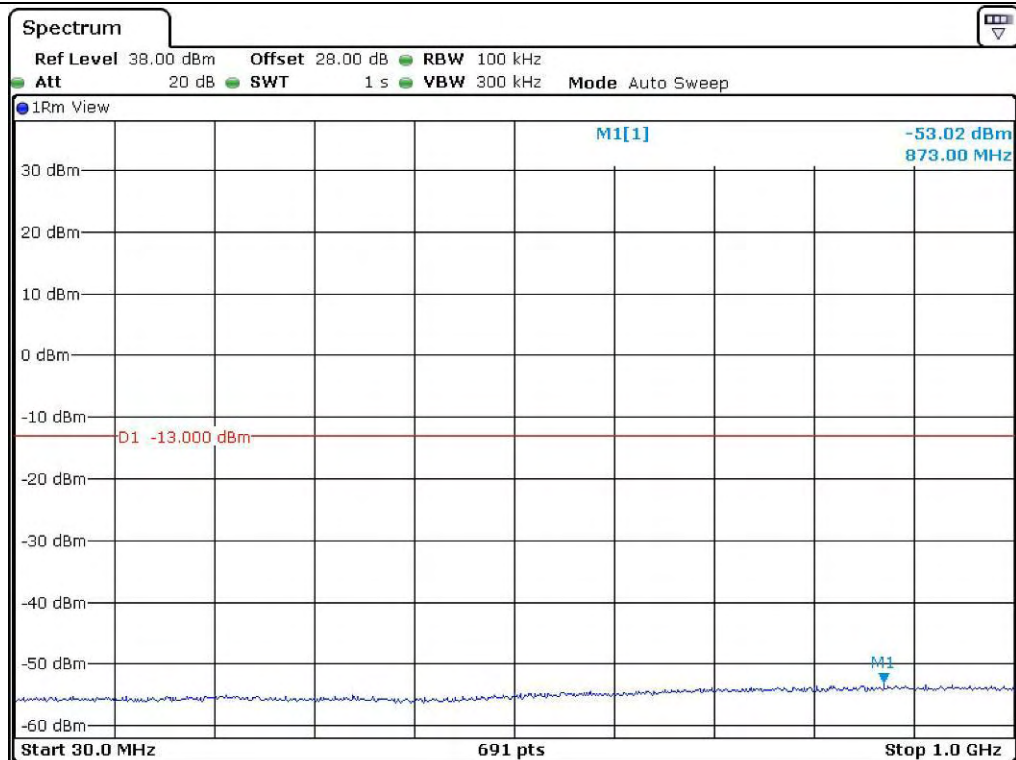
-. Test Date : July 31, 2014
-. Frequency range : 30 MHz ~ 27.5 GHz
-. Result : Pass

Modulation	Harmonic Frequency (MHz)		Measured Value (dBm)	Cable Loss (dB)	Total (dBm)	Limit (dBm)	Margin (dB)
16 QAM	Low	873.00	-53.02	0.20	-52.82	-13.00	39.82
		1 9601.00	-33.49	2.80	-30.69		17.69
	Middle	896.80	-53.19	0.20	-52.99		39.99
		1 9601.00	-33.42	2.80	-30.62		17.62
	High	882.80	-53.52	0.20	-53.32		40.32
		1 9581.00	-33.59	2.80	-30.79		17.79
64 QAM	Low	887.00	-53.28	0.20	-53.08	-13.00	40.08
		1 9601.00	-33.55	2.80	-30.75		17.75
	Middle	915.10	-53.42	0.30	-53.12		40.12
		1 9601.00	-33.47	2.80	-30.67		17.67
	High	894.00	-53.38	0.20	-53.18		40.18
		1 9581.00	-33.63	2.80	-30.83		17.83
QPSK	Low	964.20	-53.47	0.30	-53.17	-13.00	40.17
		1 9601.00	-33.36	2.80	-30.56		17.56
	Middle	880.00	-53.46	0.20	-53.26		40.26
		1 9601.00	-33.46	2.80	-30.66		17.66
	High	884.20	-53.20	0.20	-53.00		40.00
		1 9581.00	-33.51	2.80	-30.71		17.71
Other frequencies up to 27.5 GHz have margin more than 20 dB.							

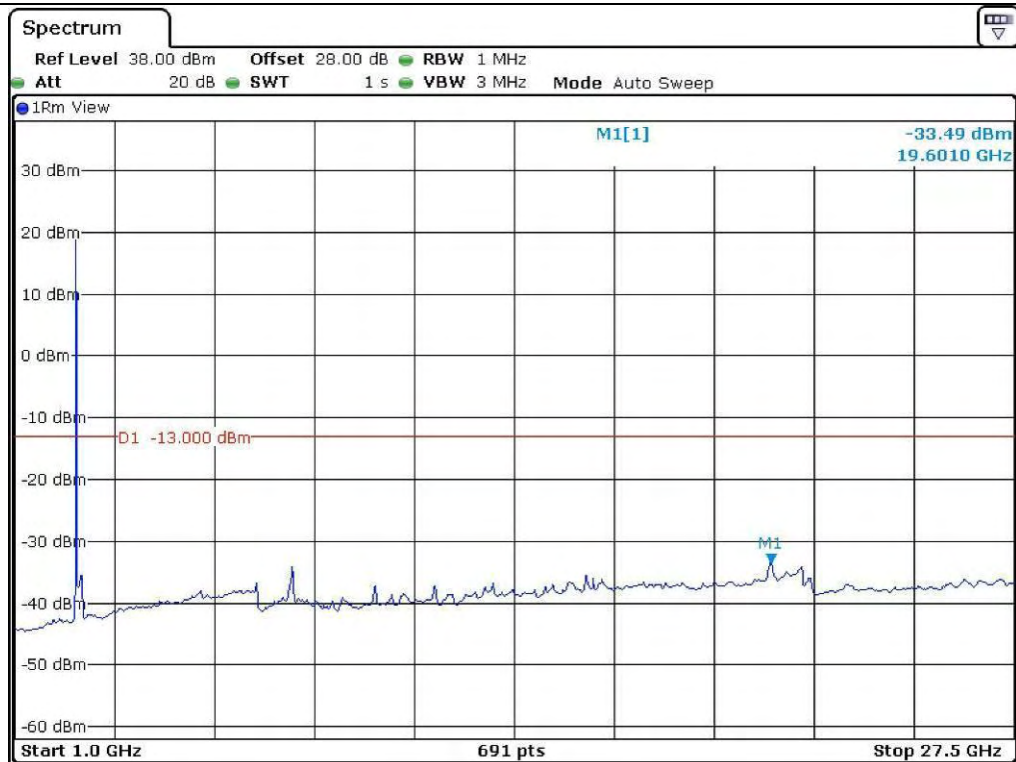
According to Part 27C, out of band emission shall be attenuated by $43 + 10 \log (P)$ dBc, equates to -13.0 dBm.



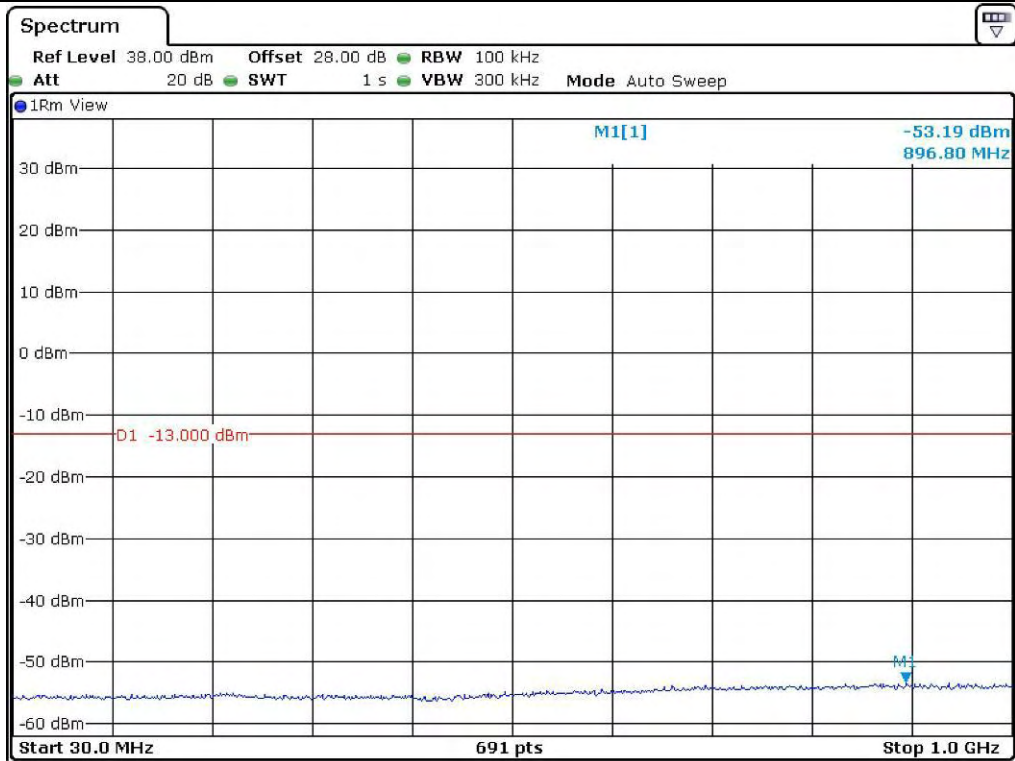
Tested by: Tae-Ho, Kim / Project Engineer



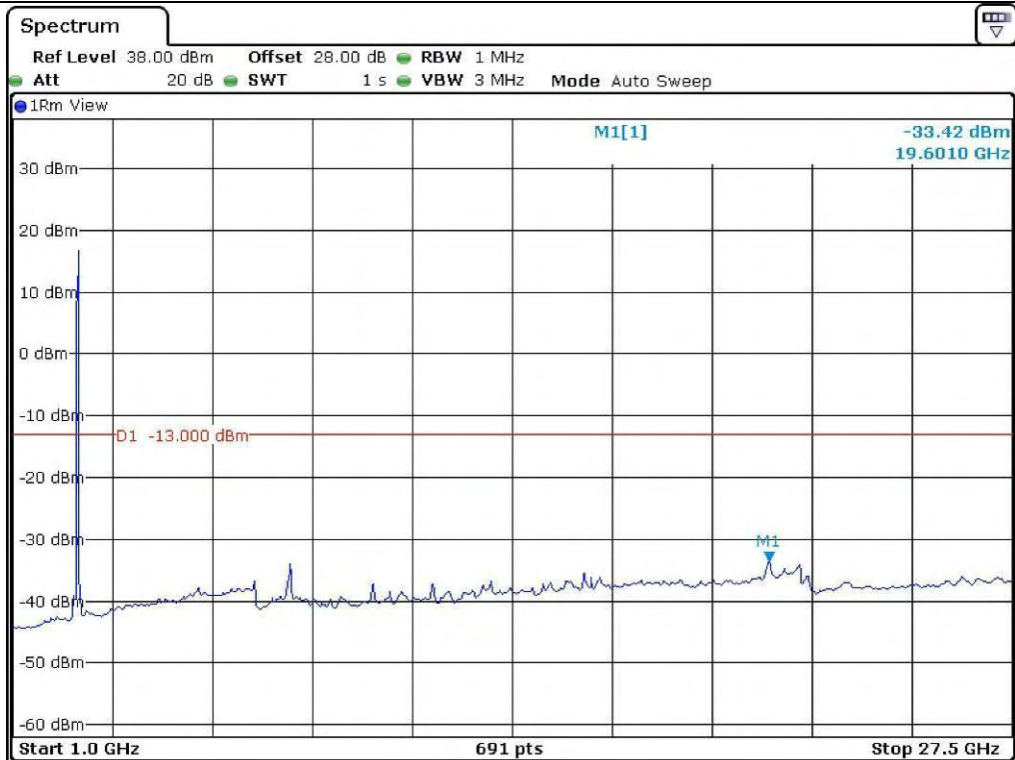
16 QAM – Low Channel



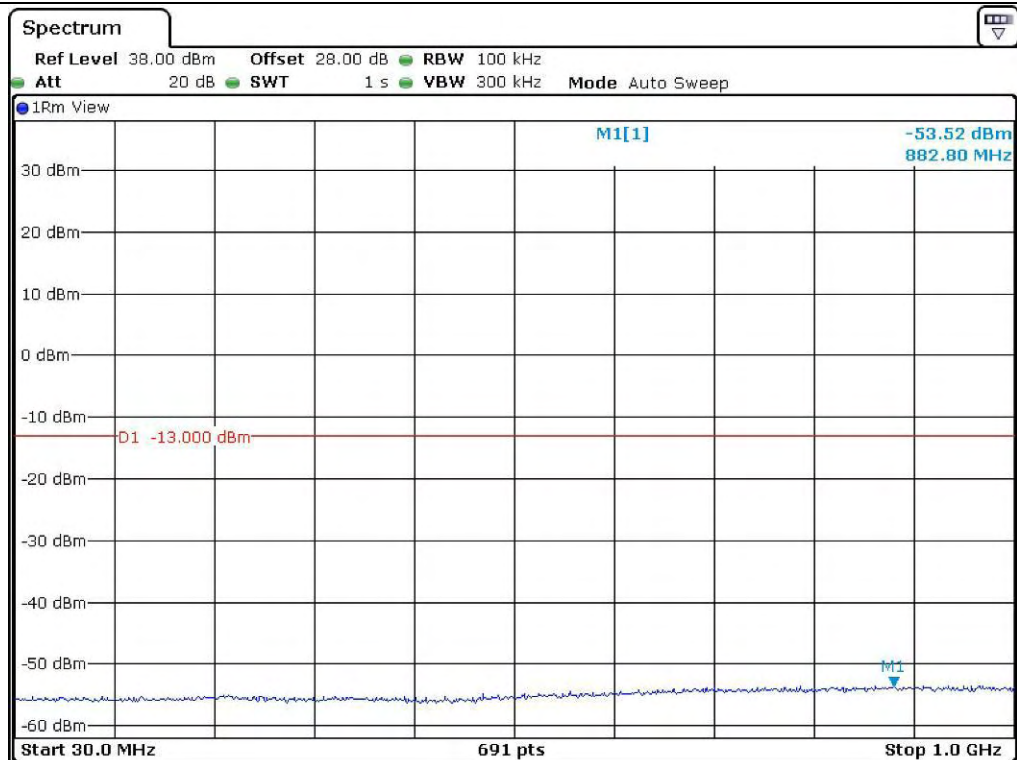
16 QAM – Low Channel



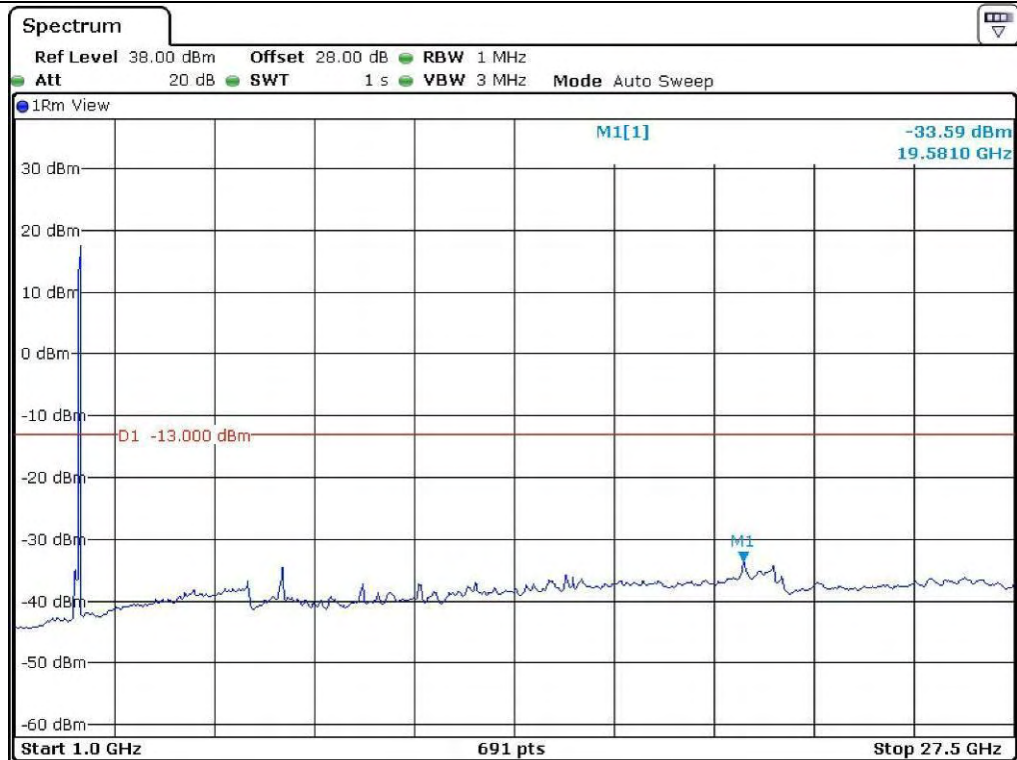
16 QAM – Middle Channel



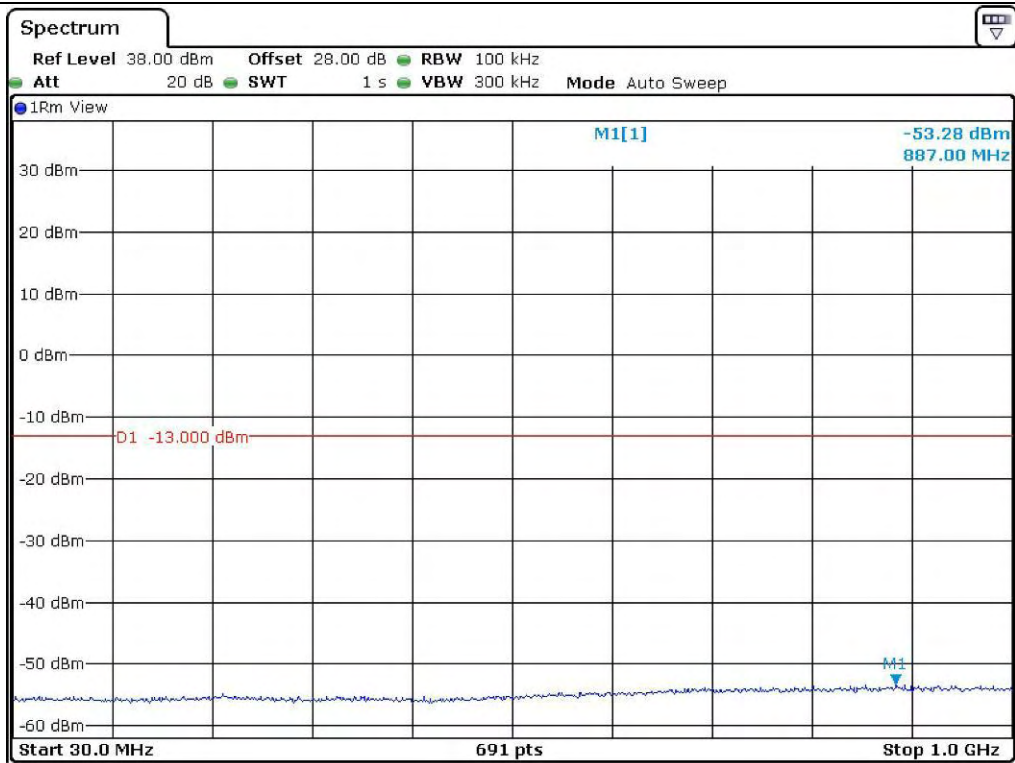
16 QAM – Middle Channel



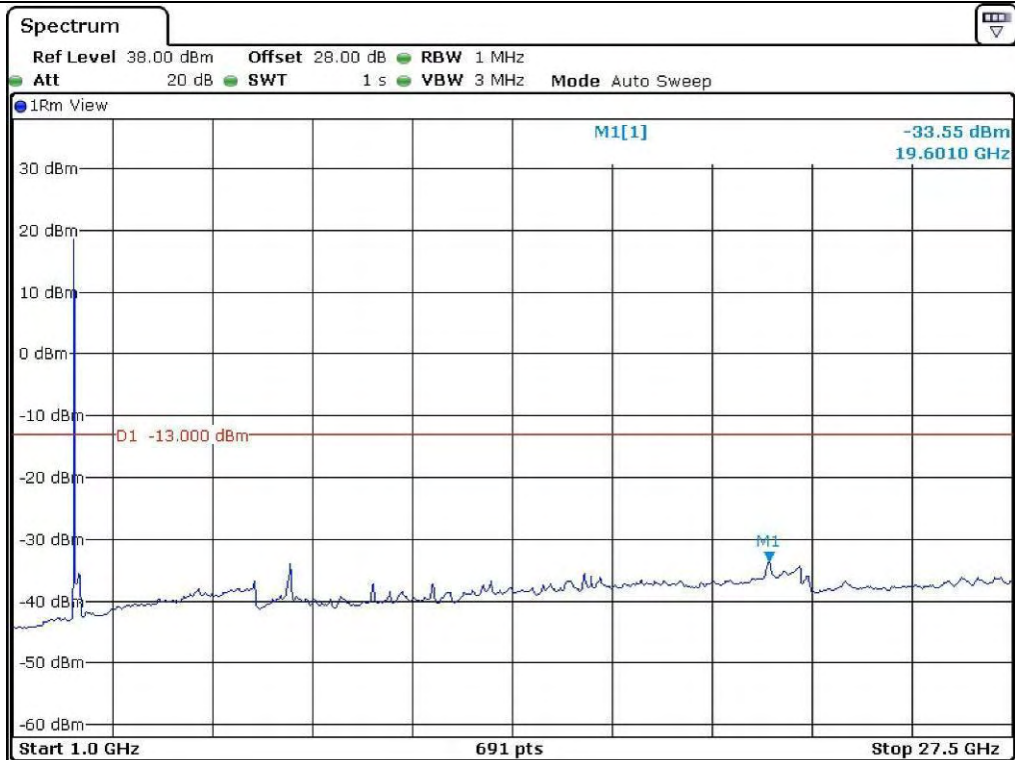
16 QAM – High Channel



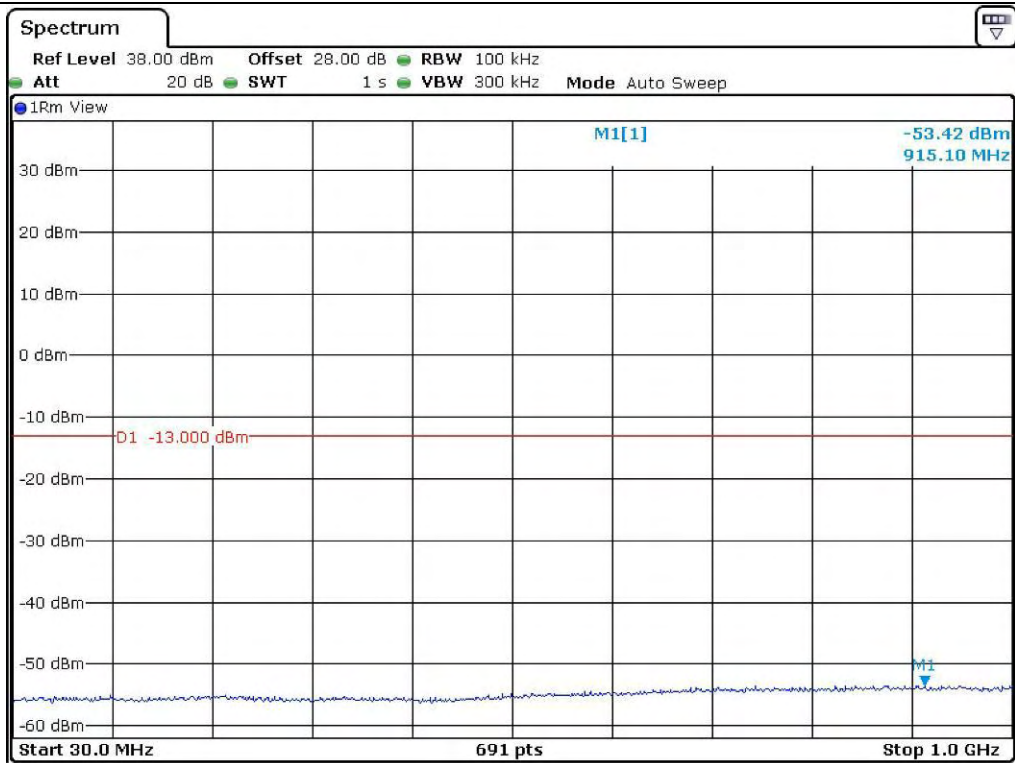
16 QAM – High Channel



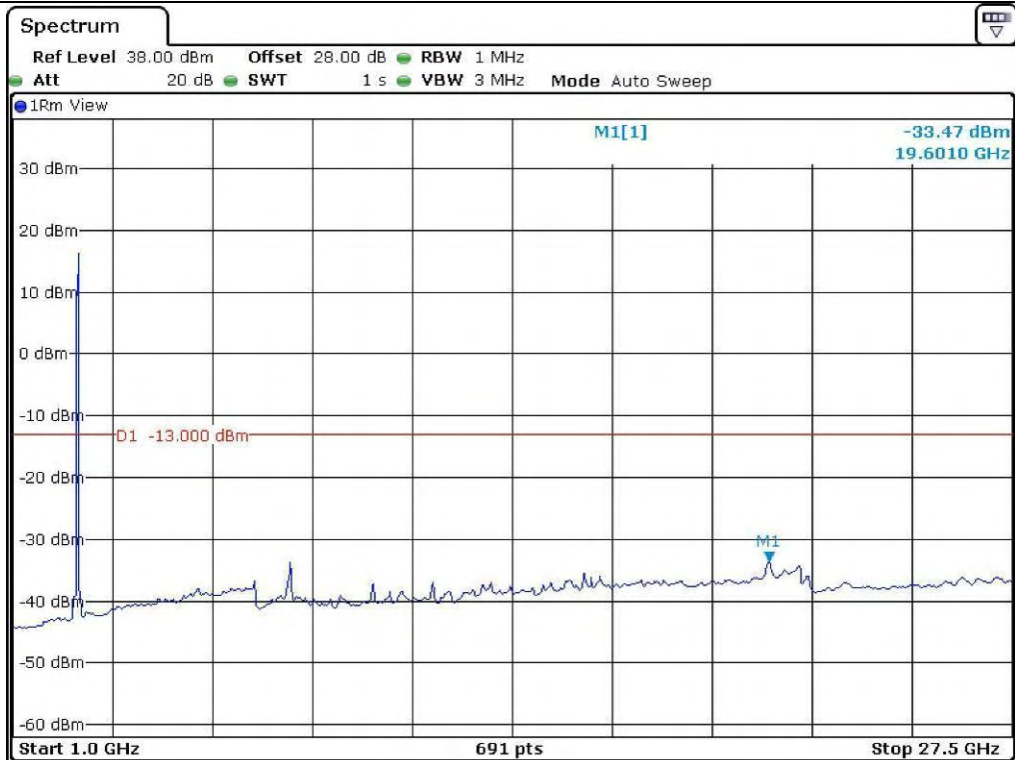
64 QAM – Low Channel



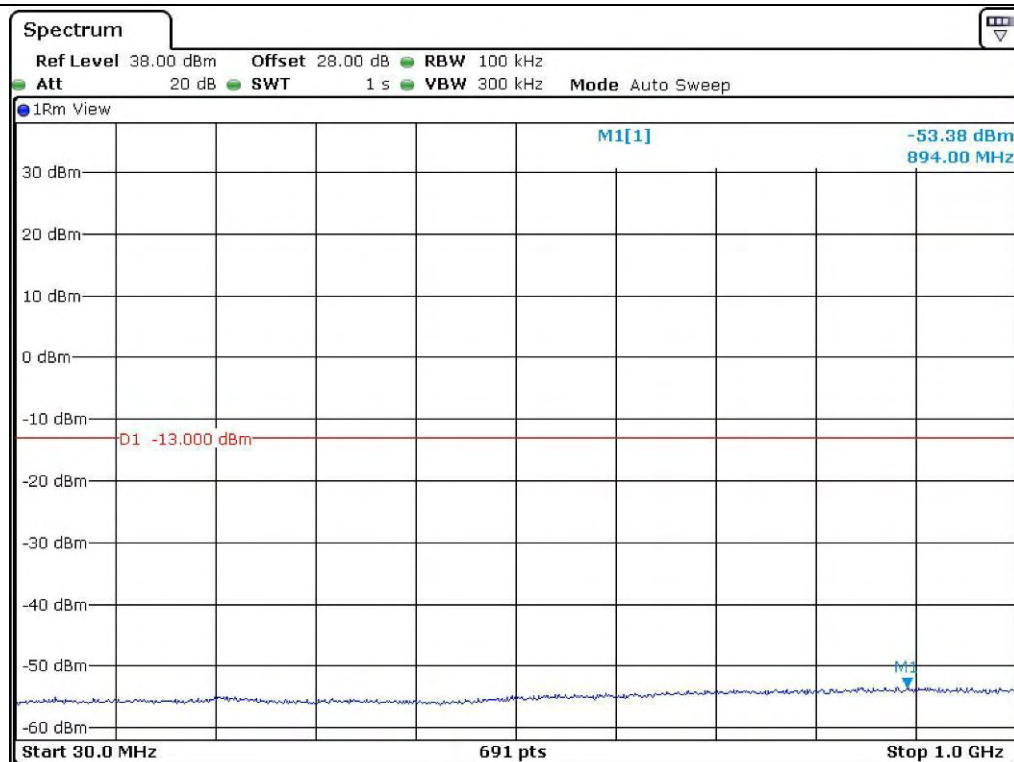
64 QAM – Low Channel



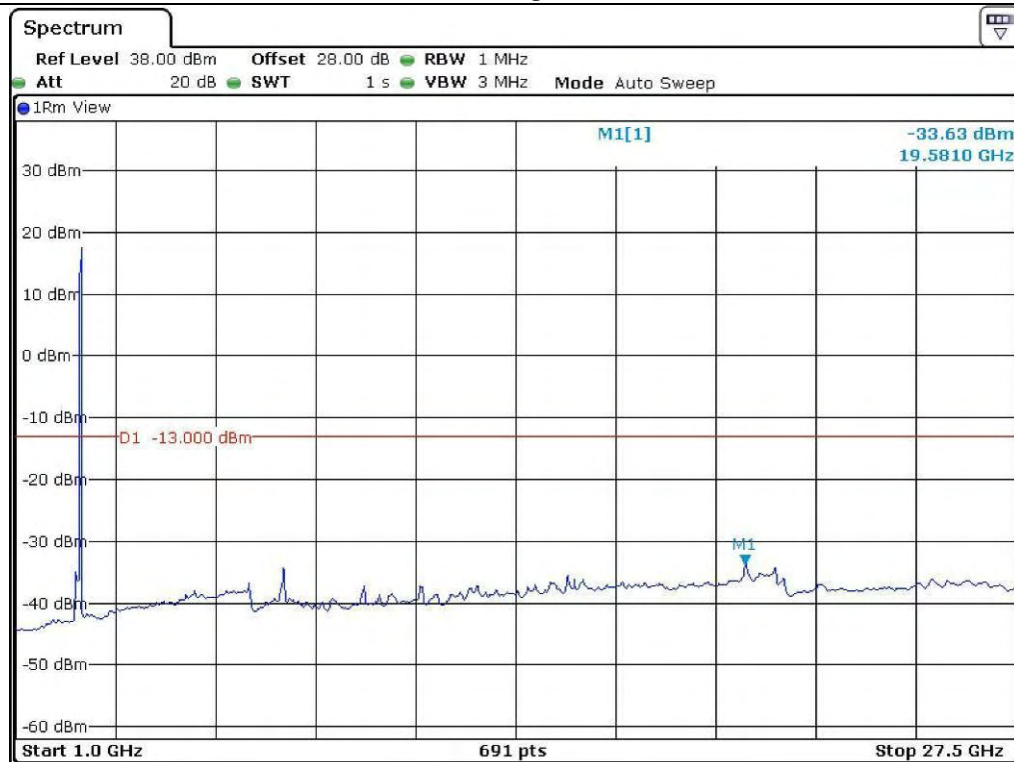
64 QAM – Middle Channel



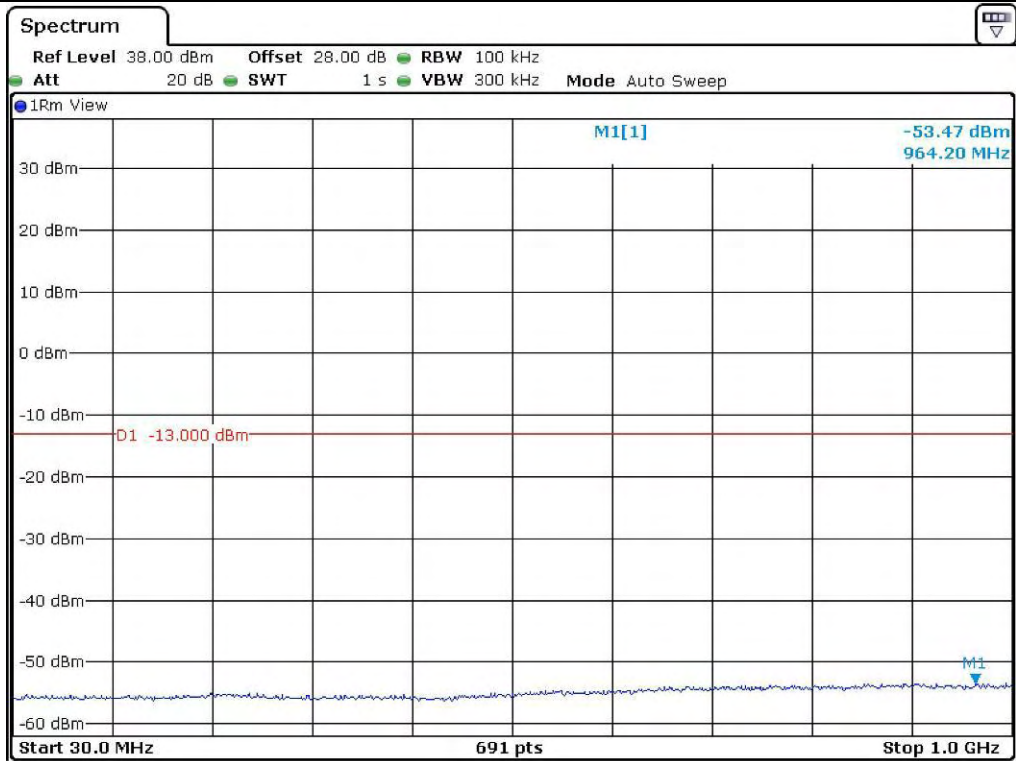
64 QAM – Middle Channel



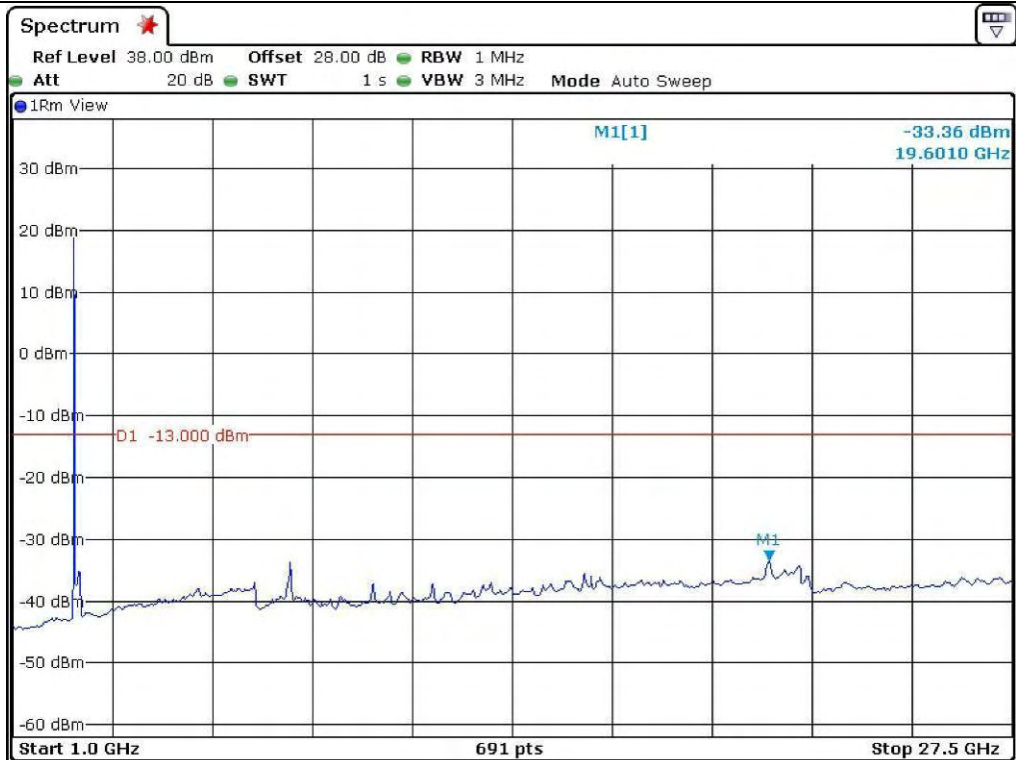
64 QAM – High Channel



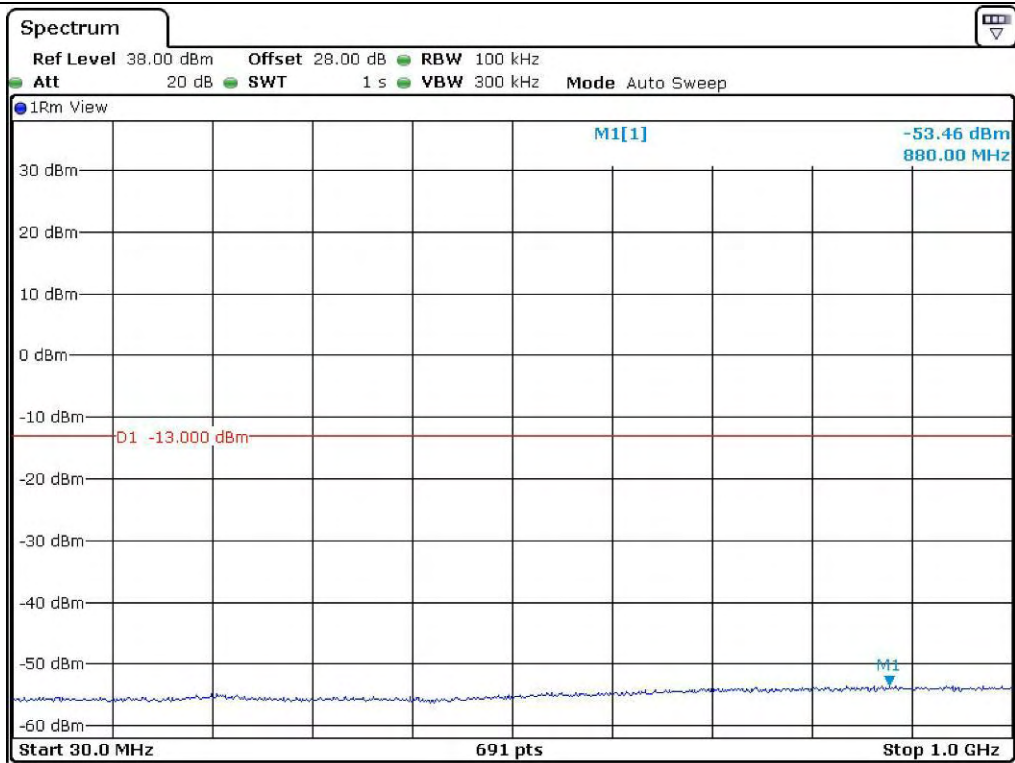
64 QAM – High Channel



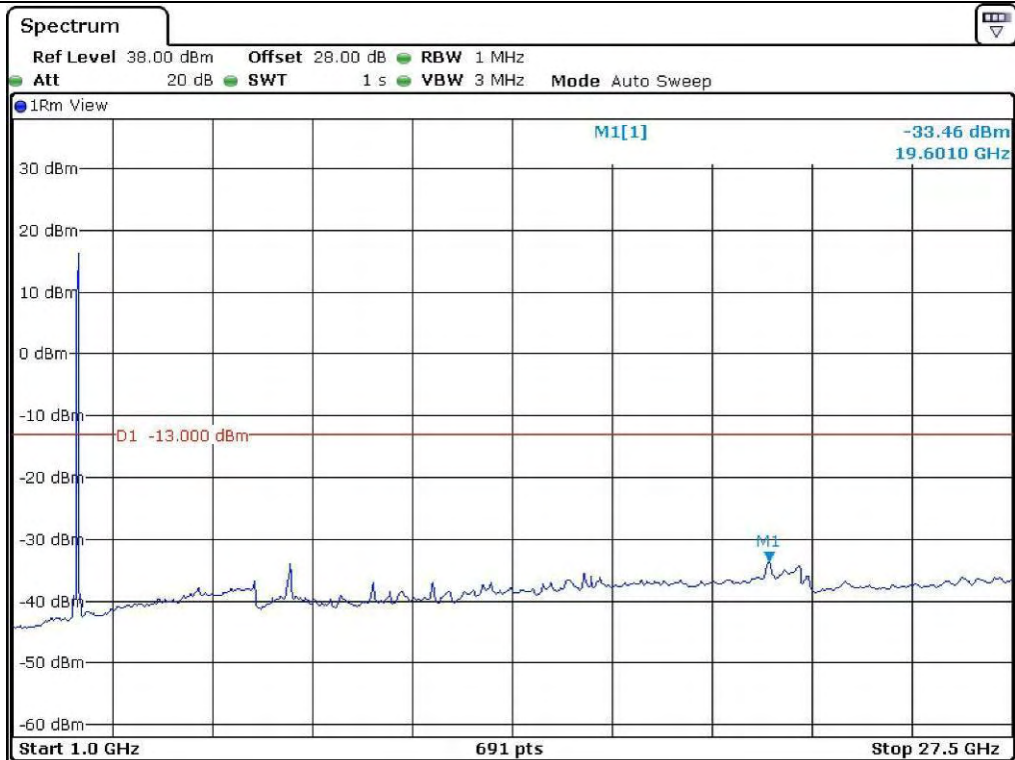
QPSK – Low Channel



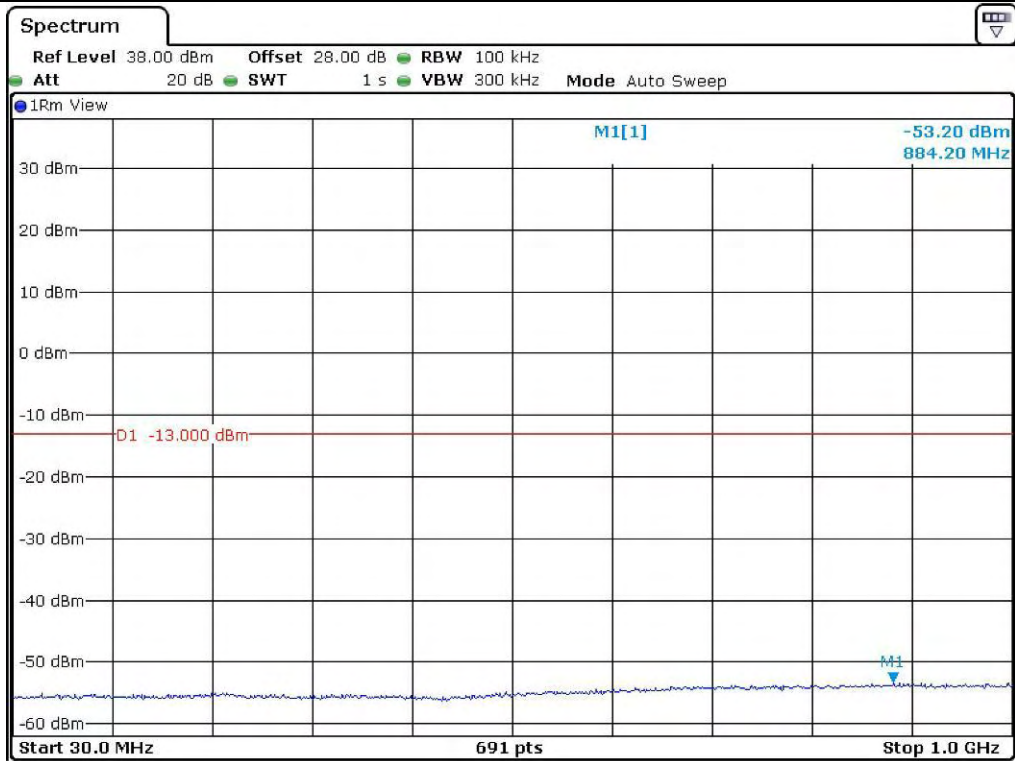
QPSK – Low Channel



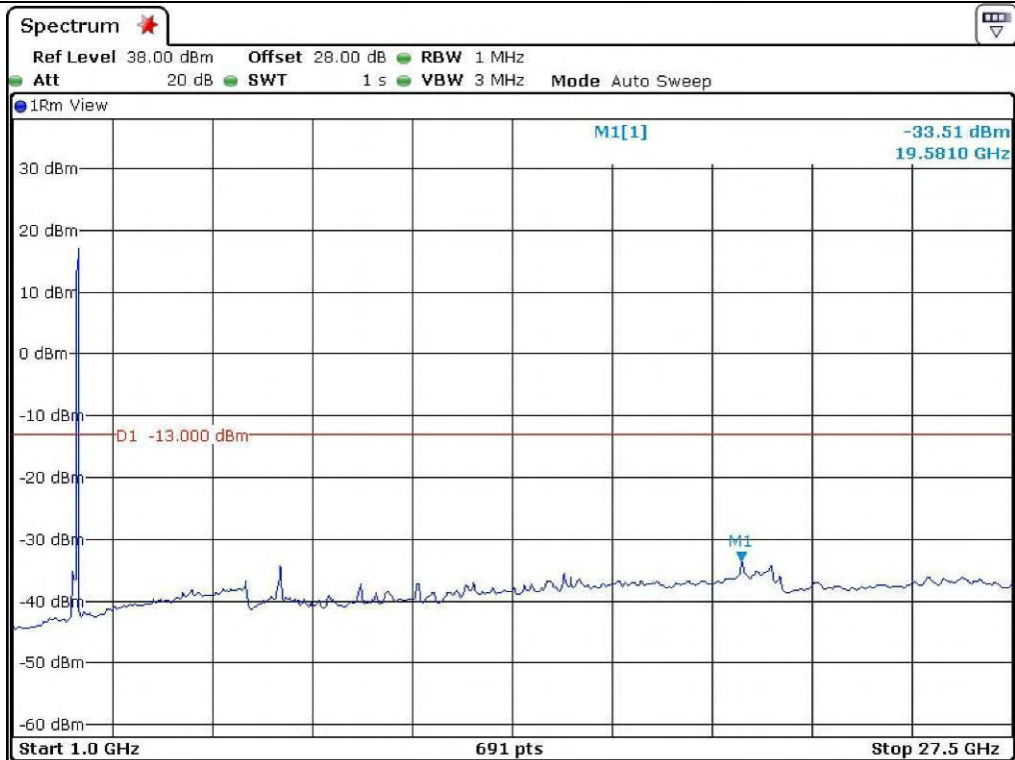
QPSK – Middle Channel



QPSK – Middle Channel



QPSK – High Channel



QPSK – High Channel

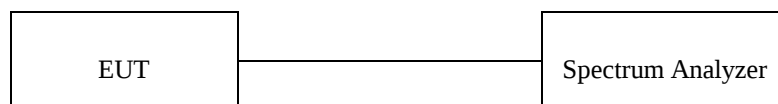
8. BAND EDGE MEASUREMENT

8.1 Operating environment

Temperature : 24 °C
Relative humidity : 47 % R.H.

8.2 Test set-up for conducted measurement

The test was performed at three frequencies (low, middle, and high channels) at each band using all applicable modulation. The resolution bandwidth and video bandwidth of the spectrum analyzer was set according to the regulation and sufficient scans were taken to show any out of band emissions.



8.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV30	R/S	FSV30 Signal Analyzer	101372	Apr. 28, 2014 (1Y)
■ -	67-30-43	Aeroflex/Weinschel, Inc.,	Attenuator	CA5760	Nov. 05, 2013 (1Y)
■ -	WA49-20-43	Weinschel Associates	Attenuator	A192	Apr. 04, 2014 (1Y)
■ -	DH-60	Dea Kwang Elec.	Slidacs	N/A	Sep. 03, 2013 (1Y)

All test equipment used is calibrated on a regular basis.

8.4 Test data for Port 0

8.4.1 Test Result (20 MHz/1 Carrier)

-. Test Date : July 31, 2014

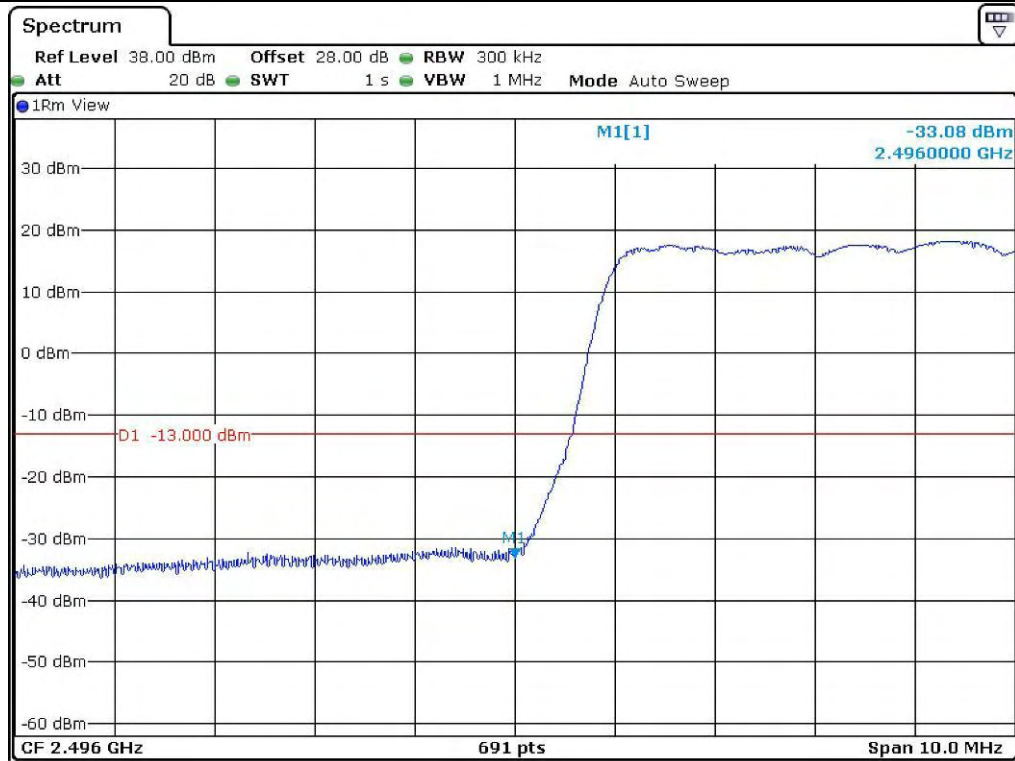
-. Result : Pass

Modulation	Channel	Measured Frequency (MHz)	Max. Measured Value (dBm)	Limit (dBm)	Margin (dB)
16 QAM	Low	2 496.000	-33.08	-13.00	20.08
	High	2 690.000	-34.11		21.11
64 QAM	Low	2 496.000	-33.91		20.91
	High	2 690.000	-35.53		22.53
QPSK	Low	2 496.000	-32.14		19.14
	High	2 690.000	-35.61		22.61

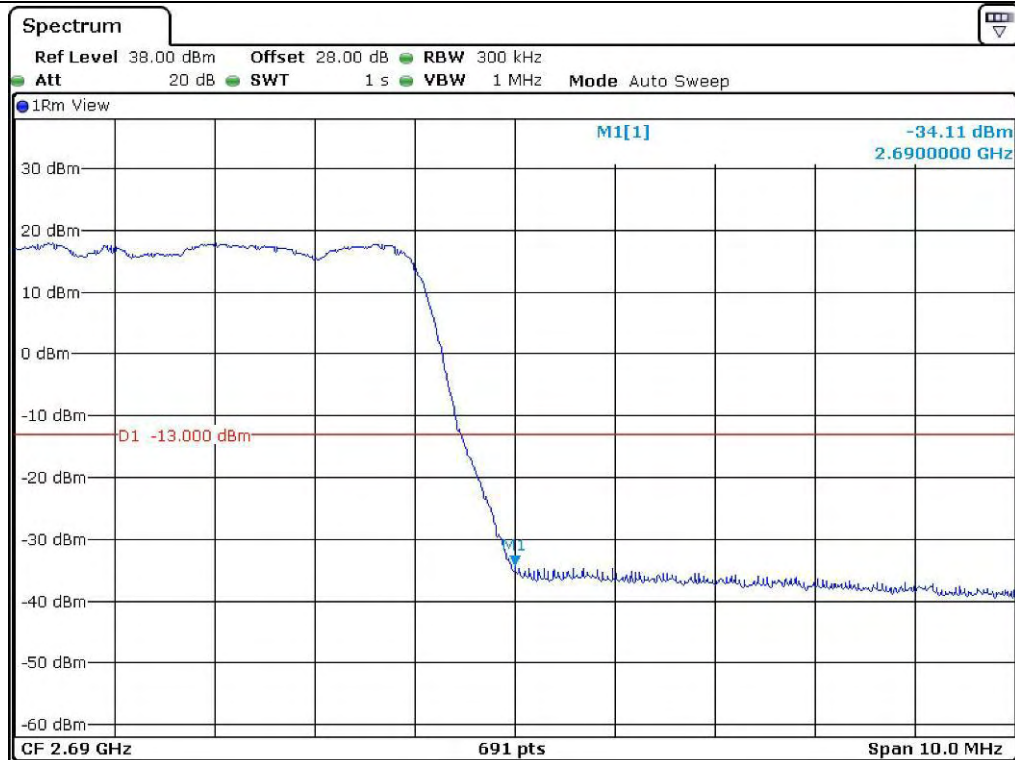
According to Part 27C, out of band emission shall be attenuated by $43 + 10 \log (P)$ dBc, equates to -13.0dBm.



Tested by: Tae-Ho, Kim / Project Engineer



16 QAM – Band Edge (Low Channel)



16 QAM – Band Edge (High Channel)