

FCC ID:	Test Report No:
VBNFWHD-01	D522886124

	on ANT1/Main					
120.0	-30.0	21.56337	0.008	129	0.05	compliant
120.0	-20.0	35.17779	0.014	129	0.05	compliant
120.0	-10.0	-44.79677	-0.017	129	0.05	compliant
120.0	0.0	-29.78207	-0.011	129	0.05	complian
120.0	10.0	-52.77064	-0.020	129	0.05	complian
120.0	30.0	-64.44873	-0.025	129	0.05	complian
120.0	40.0	-49.14789	-0.019	129	0.05	complian
120.0	50.0	-40.18944	-0.015	129	0.05	complian
64QAM Modulati	on ANT1/Div					
120.0	-30.0	-52.37402	-0.020	129	0.05	complian
120.0	-20.0	-54.17753	-0.021	129	0.05	complian
120.0	-10.0	-34.04153	-0.013	129	0.05	complian
120.0	0.0	-19.17312	-0.007	129	0.05	complian
120.0	10.0	-30.96749	-0.012	129	0.05	complian
120.0	30.0	-32.42463	-0.013	129	0.05	complian
120.0	40.0	28.80579	0.011	129	0.05	complian
120.0	50.0	-32.15665	-0.012	129	0.05	complian
64QAM Modulati	on ANT2/Main			•		
120.0	-30.0	-41.74727	-0.016	129	0.05	complian
120.0	-20.0	-43.69986	-0.017	129	0.05	complian
120.0	-10.0	28.79437	0.011	129	0.05	complian
120.0	0.0	-40.36251	-0.016	129	0.05	complian
120.0	10.0	41.51135	0.016	129	0.05	complian
120.0	30.0	34.15421	0.013	129	0.05	complian
120.0	40.0	-41.73272	-0.016	129	0.05	complian
120.0	50.0	-39.68870	-0.015	129	0.05	complian
64QAM Modulati	on ANT2/Div					
120.0	-30.0	-31.29796	-0.012	129	0.05	complian
120.0	-20.0	26.12074	0.010	129	0.05	complian
120.0	-10.0	-33.46539	-0.013	129	0.05	complian
120.0	0.0	35.97635	0.014	129	0.05	complian
120.0	10.0	-34.47737	-0.013	129	0.05	complian
120.0	30.0	34.41104	0.013	129	0.05	complian
120.0	40.0	-39.16081	-0.015	129	0.05	complian
120.0	50.0	39.45604	0.015	129	0.05	complian

Table 40 Frequency stability with temp. var. (10 MHz Channel BW)

FCC Part 27

11, November 2014 Page 58 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

		Carrier Fi	requency: 2593	Carrier Frequency: 2593.0 MHz							
Supply Voltage (AC) [V]	Ambient Frequency Deviation Temperature			Manufacturer's Specification							
	[°C]	[Hz]	[ppm]	[Hz]	[ppm]	7					
QPSK Modulation	ANT1/Main										
120.0	-30.0	15.72060	0.006	129	0.05	complian					
120.0	-20.0	-14.95322	-0.006	129	0.05	complian					
120.0	-10.0	32.02870	0.012	129	0.05	complian					
120.0	0.0	20.00359	0.008	129	0.05	complian					
120.0	10.0	-15.57637	-0.006	129	0.05	complian					
120.0	30.0	-26.75161	-0.010	129	0.05	complian					
120.0	40.0	-18.53830	-0.007	129	0.05	complian					
120.0	50.0	-40.59745	-0.016	129	0.05	complian					
QPSK Modulation	ANT1/Div					1					
120.0	-30.0	15.96595	0.006	129	0.05	complian					
120.0	-20.0	-23.81948	-0.009	129	0.05	complian					
120.0	-10.0	-26.99355	-0.010	129	0.05	complian					
120.0	0.0	-50.26374	-0.019	129	0.05	complian					
120.0	10.0	-19.02278	-0.007	129	0.05	complian					
120.0	30.0	-31.66948	-0.012	129	0.05	complian					
120.0	40.0	-45.28580	-0.017	129	0.05	complian					
120.0	50.0	-16.78690	-0.006	129	0.05	complian					
QPSK Modulation	ANT2/Main										
120.0	-30.0	-20.26796	-0.008	129	0.05	complian					
120.0	-20.0	-15.83853	-0.006	129	0.05	complian					
120.0	-10.0	-46.47231	-0.018	129	0.05	complian					
120.0	0.0	-25.06187	-0.010	129	0.05	complian					
120.0	10.0	29.27395	0.011	129	0.05	complian					
120.0	30.0	-35.21475	-0.014	129	0.05	complian					
120.0	40.0	-31.39458	-0.012	129	0.05	complian					
120.0	50.0	-33.20260	-0.013	129	0.05	complian					
QPSK Modulation	ANT2/Div					1					
120.0	-30.0	20.47799	0.008	129	0.05	complian					
120.0	-20.0	-18.67415	-0.007	129	0.05	complian					
120.0	-10.0	12.57218	0.005	129	0.05	complian					
120.0	0.0	-38.09868	-0.015	129	0.05	complian					
120.0	10.0	33.86906	0.013	129	0.05	complian					
120.0	30.0	-49.95715	-0.019	129	0.05	complian					
120.0	40.0	-30.97230	-0.012	129	0.05	complian					
120.0	50.0	33.93405	0.013	129	0.05	complian					

FCC Part 27

11, November 2014 Page 59 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

6QAM Modulatio	1	1			1	-
120.0	-30.0	34.37475	0.013	129	0.05	compliant
120.0	-20.0	14.21667	0.005	129	0.05	complian
120.0	-10.0	-29.66810	-0.011	129	0.05	compliant
120.0	0.0	-25.26622	-0.010	129	0.05	compliant
120.0	10.0	-19.72591	-0.008	129	0.05	complian
120.0	30.0	-20.00041	-0.008	129	0.05	complian
120.0	40.0	23.51974	0.009	129	0.05	complian
120.0	50.0	-36.38697	-0.014	129	0.05	complian
6QAM Modulatio	on ANT1/Div					
120.0	-30.0	-26.76614	-0.010	129	0.05	complian
120.0	-20.0	-27.22547	-0.010	129	0.05	compliant
120.0	-10.0	32.91798	0.013	129	0.05	complian
120.0	0.0	-65.39568	-0.025	129	0.05	complian
120.0	10.0	-25.37460	-0.010	129	0.05	complian
120.0	30.0	-42.23637	-0.016	129	0.05	complian
120.0	40.0	-25.71982	-0.010	129	0.05	complian
120.0	50.0	-38.68184	-0.015	129	0.05	complian
6QAM Modulatio	n ANT2/Main					
120.0	-30.0	-21.64964	-0.008	129	0.05	complian
120.0	-20.0	36.05088	0.014	129	0.05	complian
120.0	-10.0	-46.80588	-0.018	129	0.05	complian
120.0	0.0	32.87438	0.013	129	0.05	complian
120.0	10.0	34.93848	0.013	129	0.05	complian
120.0	30.0	-37.58647	-0.014	129	0.05	complian
120.0	40.0	15.77016	0.006	129	0.05	complian
120.0	50.0	28.56566	0.011	129	0.05	complian
6QAM Modulatio	n ANT2/Div				1	
120.0	-30.0	-23.53054	-0.009	129	0.05	complian
120.0	-20.0	-23.20562	-0.009	129	0.05	complian
120.0	-10.0	-35.70705	-0.014	129	0.05	complian
120.0	0.0	-22.01083	-0.008	129	0.05	complian
120.0	10.0	33.86906	0.013	129	0.05	complian
120.0	30.0	-56.08499	-0.022	129	0.05	complian
120.0	40.0	-41.44379	-0.016	129	0.05	complian
120.0	50.0	-31.81313	-0.012	129	0.05	complian
4QAM Modulatio	n ANT1/Main					
120.0	-30.0	-23.51544	-0.009	129	0.05	compliant
120.0	-20.0	-17.37830	-0.007	129	0.05	complian
120.0	-10.0	-18.58692	-0.007	129	0.05	complian
120.0	0.0	-16.07104	-0.006	129	0.05	complian
120.0	10.0	-36.69412	-0.014	129	0.05	compliant

FCC Part 27

11, November 2014 Page 60 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

120.0	30.0	25.97242	0.010	129	0.05	compliant
120.0	40.0	-21.47911	-0.008	129	0.05	compliant
120.0	50.0	-22.76858	-0.009	129	0.05	compliant
64QAM Modulatio	on ANT1/Div	·	•		•	
120.0	-30.0	23.84001	0.009	129	0.05	compliant
120.0	-20.0	18.85531	0.007	129	0.05	compliant
120.0	-10.0	-25.12514	-0.010	129	0.05	compliant
120.0	0.0	-62.30960	-0.024	129	0.05	compliant
120.0	10.0	-38.57600	-0.015	129	0.05	compliant
120.0	30.0	-49.30834	-0.019	129	0.05	compliant
120.0	40.0	-24.95899	-0.010	129	0.05	compliant
120.0	50.0	20.69850	0.008	129	0.05	compliant
64QAM Modulatio	on ANT2/Main		I			
120.0	-30.0	-27.11153	-0.010	129	0.05	compliant
120.0	-20.0	-22.66605	-0.009	129	0.05	compliant
120.0	-10.0	-27.52079	-0.011	129	0.05	compliant
120.0	0.0	-19.29344	-0.007	129	0.05	compliant
120.0	10.0	40.89274	0.016	129	0.05	compliant
120.0	30.0	22.33433	0.009	129	0.05	compliant
120.0	40.0	-38.90724	-0.015	129	0.05	compliant
120.0	50.0	-24.66879	-0.010	129	0.05	compliant
64QAM Modulatio	on ANT2/Div	•				
120.0	-30.0	-13.73317	-0.005	129	0.05	compliant
120.0	-20.0	-12.77885	-0.005	129	0.05	compliant
120.0	-10.0	-13.57230	-0.005	129	0.05	compliant
120.0	0.0	-24.33117	-0.009	129	0.05	compliant
120.0	10.0	23.02162	0.009	129	0.05	compliant
120.0	30.0	-17.47269	-0.007	129	0.05	compliant
120.0	40.0	-24.81141	-0.010	129	0.05	compliant
120.0	50.0	-21.09316	-0.008	129	0.05	compliant
Measurement Un	certainty:				±1.(	) Hz

Table 41 Frequency stability with temp. var. (15 MHz Channel BW)



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Carrier Frequency: 2593.0 MHz							
Supply Voltage (AC) [V]	Ambient Temperature	Frequency	Frequency Deviation		Manufacturer's Specification		
	[°C]	[Hz]	[ppm]	[Hz]	[ppm]	1	
QPSK Modulation	ANT1/Main						
120.0	-30.0	36.01429	0.014	129	0.05	complian	
120.0	-20.0	-33.32621	-0.013	129	0.05	complian	
120.0	-10.0	-41.58862	-0.016	129	0.05	complian	
120.0	0.0	34.00355	0.013	129	0.05	complian	
120.0	10.0	-44.24359	-0.017	129	0.05	complian	
120.0	30.0	-27.28770	-0.011	129	0.05	complian	
120.0	40.0	-30.19642	-0.012	129	0.05	complian	
120.0	50.0	-69.91019	-0.027	129	0.05	complian	
QPSK Modulation	ANT1/Div						
120.0	-30.0	-37.66715	-0.015	129	0.05	complian	
120.0	-20.0	33.83816	0.013	129	0.05	complian	
120.0	-10.0	-29.60012	-0.011	129	0.05	complian	
120.0	0.0	34.83017	0.013	129	0.05	complian	
120.0	10.0	-28.60516	-0.011	129	0.05	complian	
120.0	30.0	-29.84990	-0.012	129	0.05	complian	
120.0	40.0	26.37931	0.010	129	0.05	complian	
120.0	50.0	-76.66847	-0.030	129	0.05	complian	
QPSK Modulation	ANT2/Main			•		•	
120.0	-30.0	26.36648	0.010	129	0.05	complian	
120.0	-20.0	35.05859	0.014	129	0.05	complian	
120.0	-10.0	-26.58961	-0.010	129	0.05	complian	
120.0	0.0	-17.65807	-0.007	129	0.05	complian	
120.0	10.0	-20.51122	-0.008	129	0.05	complian	
120.0	30.0	-50.56669	-0.020	129	0.05	complian	
120.0	40.0	-24.42797	-0.009	129	0.05	complian	
120.0	50.0	-43.01971	-0.017	129	0.05	complian	
QPSK Modulation	ANT2/Div						
120.0	-30.0	41.35973	0.016	129	0.05	complian	
120.0	-20.0	-52.11365	-0.020	129	0.05	complian	
120.0	-10.0	-29.93879	-0.012	129	0.05	complian	
120.0	0.0	-34.30574	-0.013	129	0.05	complian	
120.0	10.0	-20.38552	-0.008	129	0.05	complian	
120.0	30.0	-59.19621	-0.023	129	0.05	complian	
120.0	40.0	-42.49923	-0.016	129	0.05	complian	
120.0	50.0	-43.36970	-0.017	129	0.05	complian	

#### FCC Part 27

11, November 2014 Page 62 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

6QAM Modulatio	n ANT1/Main				1	
120.0	-30.0	-46.57282	-0.018	129	0.05	compliant
120.0	-20.0	-63.85722	-0.025	129	0.05	complian
120.0	-10.0	-42.84063	-0.017	129	0.05	complian
120.0	0.0	26.84739	0.010	129	0.05	complian
120.0	10.0	-32.07901	-0.012	129	0.05	complian
120.0	30.0	-41.75015	-0.016	129	0.05	complian
120.0	40.0	29.08609	0.011	129	0.05	complian
120.0	50.0	-46.47495	-0.018	129	0.05	complian
6QAM Modulatio	on ANT1/Div					
120.0	-30.0	-28.71114	-0.011	129	0.05	complian
120.0	-20.0	-23.08899	-0.009	129	0.05	complian
120.0	-10.0	-47.53419	-0.018	129	0.05	complian
120.0	0.0	-32.32048	-0.012	129	0.05	complian
120.0	10.0	29.76086	0.011	129	0.05	complian
120.0	30.0	-30.40689	-0.012	129	0.05	complian
120.0	40.0	-45.75562	-0.018	129	0.05	complian
120.0	50.0	-40.96479	-0.016	129	0.05	complian
6QAM Modulatio	n ANT2/Main			•		
120.0	-30.0	-24.79735	-0.010	129	0.05	complian
120.0	-20.0	-33.68000	-0.013	129	0.05	complian
120.0	-10.0	-31.73231	-0.012	129	0.05	complian
120.0	0.0	35.02243	0.014	129	0.05	complian
120.0	10.0	19.31558	0.007	129	0.05	complian
120.0	30.0	-40.72766	-0.016	129	0.05	complian
120.0	40.0	29.24045	0.011	129	0.05	complian
120.0	50.0	-68.46717	-0.026	129	0.05	complian
6QAM Modulatio	on ANT2/Div				1	1
120.0	-30.0	23.77972	0.009	129	0.05	complian
120.0	-20.0	-32.28816	-0.012	129	0.05	complian
120.0	-10.0	32.61474	0.013	129	0.05	complian
120.0	0.0	46.81619	0.018	129	0.05	complian
120.0	10.0	34.93046	0.013	129	0.05	complian
120.0	30.0	-67.15754	-0.026	129	0.05	complian
120.0	40.0	-49.64670	-0.019	129	0.05	complian
120.0	50.0	-52.28935	-0.020	129	0.05	complian
4QAM Modulatio	n ANT1/Main					
120.0	-30.0	-45.27745	-0.017	129	0.05	complian
120.0	-20.0	-46.18167	-0.018	129	0.05	complian
120.0	-10.0	-45.77291	-0.018	129	0.05	complian
120.0	0.0	-25.86438	-0.010	129	0.05	complian
120.0	10.0	-45.17162	-0.017	129	0.05	complian

FCC Part 27

11, November 2014 Page 63 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

120.0	30.0	-37.52190	-0.014	129	0.05	compliant
120.0	40.0	28.60783	0.011	129	0.05	compliant
120.0	50.0	-48.86482	-0.019	129	0.05	compliant
64QAM Modulati	on ANT1/Div					
120.0	-30.0	-18.06047	-0.007	129	0.05	compliant
120.0	-20.0	-27.71610	-0.011	129	0.05	compliant
120.0	-10.0	-41.29380	-0.016	129	0.05	compliant
120.0	0.0	-26.24019	-0.010	129	0.05	compliant
120.0	10.0	-34.50488	-0.013	129	0.05	compliant
120.0	30.0	-39.07103	-0.015	129	0.05	compliant
120.0	40.0	-39.03801	-0.015	129	0.05	compliant
120.0	50.0	-45.37436	-0.017	129	0.05	compliant
64QAM Modulati	on ANT2/Main					
120.0	-30.0	44.17337	0.017	129	0.05	compliant
120.0	-20.0	-21.69234	-0.008	129	0.05	compliant
120.0	-10.0	-23.10179	-0.009	129	0.05	compliant
120.0	0.0	-27.86270	-0.011	129	0.05	compliant
120.0	10.0	-20.88268	-0.008	129	0.05	compliant
120.0	30.0	-52.52474	-0.020	129	0.05	compliant
120.0	40.0	-29.03809	-0.011	129	0.05	compliant
120.0	50.0	-48.23101	-0.019	129	0.05	compliant
64QAM Modulati	on ANT2/Div		•			
120.0	-30.0	38.66632	0.015	129	0.05	compliant
120.0	-20.0	-41.73258	-0.016	129	0.05	compliant
120.0	-10.0	-35.74450	-0.014	129	0.05	compliant
120.0	0.0	-35.75179	-0.014	129	0.05	compliant
120.0	10.0	-34.53804	-0.013	129	0.05	compliant
120.0	30.0	-36.50703	-0.014	129	0.05	compliant
120.0	40.0	-32.38187	-0.012	129	0.05	compliant
120.0	50.0	-52.50231	-0.020	129	0.05	compliant
Measurement Un	certainty:			•	±1.	0 Hz

Table 42 Frequency stability with temp. var. (20 MHz Channel BW)

FCC Part 27

11, November 2014 Page 64 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Frequency Stability with Voltage Variation:

The EUT was placed in a climatic chamber and allowed to stabilize at +20 degrees Celsius for at least 60 minutes. With the supply voltage of the EUT set to 85% of the nominal value, the frequency error was measure. This procedure was repeated at 100% and 115% of the nominal supply voltage value.

Config A:						
Carrier Frequency: 2593.0 MHz						
Supply Voltage (AC) [V]	Ambient Temperature	Frequenc	Frequency Deviation		Manufacturer's Specification	
	[°C]	[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation	ANT1/Main					
102.0	20.0	-35.42535	-0.014	129	0.05	compliant
120.0	20.0	-26.78226	-0.010	129	0.05	compliant
138.0	20.0	-38.72450	-0.015	129	0.05	compliant
QPSK Modulation	ANT1/Div					
102.0	20.0	22.86310	0.009	129	0.05	compliant
120.0	20.0	40.40382	0.016	129	0.05	compliant
138.0	20.0	39.39455	0.015	129	0.05	compliant
QPSK Modulation	ANT2/Main					
102.0	20.0	-25.41519	-0.010	129	0.05	compliant
120.0	20.0	-26.83433	-0.010	129	0.05	compliant
138.0	20.0	33.86392	0.013	129	0.05	compliant
QPSK Modulation	ANT2/Div					
102.0	20.0	-35.40470	-0.014	129	0.05	compliant
120.0	20.0	-33.34683	-0.013	129	0.05	compliant
138.0	20.0	-38.49479	-0.015	129	0.05	compliant
16QAM Modulatio	n ANT1/Main					
102.0	20.0	-16.39700	-0.006	129	0.05	compliant
120.0	20.0	-18.54926	-0.007	129	0.05	compliant
138.0	20.0	-42.11890	-0.016	129	0.05	compliant
16QAM Modulatio	n ANT1/Div					
102.0	20.0	-20.65954	-0.008	129	0.05	compliant
120.0	20.0	24.46419	0.009	129	0.05	compliant
138.0	20.0	29.14325	0.011	129	0.05	compliant
16QAM Modulatio	n ANT2/Main					
102.0	20.0	28.37883	0.011	129	0.05	compliant
120.0	20.0	-30.34253	-0.012	129	0.05	compliant
138.0	20.0	46.47205	0.018	129	0.05	compliant
16QAM Modulatio	n ANT2/Di∨					
102.0	20.0	-23.58762	-0.009	129	0.05	compliant

FCC Part 27

11, November 2014 Page 65 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

120.0	20.0	40.29325	0.016	129	0.05	compliant
138.0	20.0	-28.15136	-0.011	129	0.05	compliant
64QAM Modulatio	n ANT1/Main					
102.0	20.0	-39.67578	-0.015	129	0.05	compliant
120.0	20.0	22.74002	0.009	129	0.05	compliant
138.0	20.0	-30.99016	-0.012	129	0.05	compliant
64QAM Modulatio	n ANT1/Div					
102.0	20.0	-20.08309	-0.008	129	0.05	compliant
120.0	20.0	-37.98987	-0.015	129	0.05	compliant
138.0	20.0	20.87723	0.008	129	0.05	compliant
64QAM Modulatio	n ANT2/Main					
102.0	20.0	-29.05627	-0.011	129	0.05	compliant
120.0	20.0	28.39658	0.011	129	0.05	compliant
138.0	20.0	-24.43089	-0.009	129	0.05	compliant
64QAM Modulatio	n ANT2/Div					
102.0	20.0	40.09055	0.015	129	0.05	compliant
120.0	20.0	-29.09799	-0.011	129	0.05	compliant
138.0	20.0	29.76290	0.011	129	0.05	compliant
Measurement Und	ertainty:				±1.0	) Hz

Table 43 Frequency stability with voltage var. (10 MHz Channel BW)

		Carrier F	requency: 2593.0	) MHz		
Supply Voltage (DC) [V]	Ambient Temperature	Frequency Deviation		Manufacturer's Specification		Result
	[°C]	[Hz]	[ppm]	[Hz]	[ppm]	1
QPSK Modulation	ANT1/Main				•	
102.0	20.0	-28.15360	-0.011	129	0.05	complian
120.0	20.0	-30.40760	-0.012	129	0.05	complian
138.0	20.0	-39.15521	-0.015	129	0.05	complian
QPSK Modulation	ANT1/Div					
102.0	20.0	-24.95811	-0.010	129	0.05	complian
120.0	20.0	-27.07261	-0.010	129	0.05	complian
138.0	20.0	-30.84857	-0.012	129	0.05	complian
QPSK Modulation	ANT2/Main					
102.0	20.0	-29.94483	-0.012	129	0.05	complian
120.0	20.0	46.14010	0.018	129	0.05	complian
138.0	20.0	-11.09130	-0.004	129	0.05	complian
QPSK Modulation	ANT2/Div				•	-
102.0	20.0	-32.69082	-0.013	129	0.05	complian
120.0	20.0	-44.43791	-0.017	129	0.05	complian

FCC Part 27

11, November 2014 Page 66 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

138.0	20.0	-47.30063	-0.018	129	0.05	compliant
16QAM Modulatio	n ANT1/Main					
102.0	20.0	-42.02937	-0.016	129	0.05	compliant
120.0	20.0	-38.02777	-0.015	129	0.05	compliant
138.0	20.0	-16.68298	-0.006	129	0.05	compliant
16QAM Modulatio	n ANT1/Div					·
102.0	20.0	-18.77266	-0.007	129	0.05	compliant
120.0	20.0	-21.51234	-0.008	129	0.05	compliant
138.0	20.0	-26.64549	-0.010	129	0.05	compliant
16QAM Modulatio	n ANT2/Main					
102.0	20.0	31.17328	0.012	129	0.05	compliant
120.0	20.0	-23.23511	-0.009	129	0.05	compliant
138.0	20.0	-36.49310	-0.014	129	0.05	compliant
16QAM Modulatio	n ANT2/Div					
102.0	20.0	-45.69382	-0.018	129	0.05	compliant
120.0	20.0	35.94634	0.014	129	0.05	compliant
138.0	20.0	-37.42972	-0.014	129	0.05	compliant
64QAM Modulatio	n ANT1/Main					
102.0	20.0	-33.40341	-0.013	129	0.05	compliant
120.0	20.0	-31.84763	-0.012	129	0.05	compliant
138.0	20.0	-28.62201	-0.011	129	0.05	compliant
64QAM Modulatio	n ANT1/Div					
102.0	20.0	-55.26673	-0.021	129	0.05	compliant
120.0	20.0	-33.61673	-0.013	129	0.05	compliant
138.0	20.0	-32.53179	-0.013	129	0.05	compliant
64QAM Modulatio	n ANT2/Main					
102.0	20.0	-41.26994	-0.016	129	0.05	compliant
120.0	20.0	23.88595	0.009	129	0.05	compliant
138.0	20.0	-14.25285	-0.005	129	0.05	compliant
64QAM Modulatio	n ANT2/Div					
102.0	20.0	-58.71842	-0.023	129	0.05	compliant
120.0	20.0	-39.70623	-0.015	129	0.05	compliant
138.0	20.0	-27.54616	-0.011	129	0.05	compliant
Measurement Und	ertainty:				±1.0	) Hz

Table 44 Frequency stability with voltage var. (15 MHz Channel BW)

FCC Part 27

11, November 2014 Page 67 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Carrier Frequency: 2593.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature	Frequency Deviation		Manufacturer's Specification		Result
	[°C]	[Hz]	[ppm]	[Hz]	[ppm]	1
QPSK Modulation	ANT1/Main			<b></b>	1	- <b>-</b>
102.0	20.0	-45.24205	-0.017	129	0.05	complian
120.0	20.0	-38.06831	-0.015	129	0.05	complian
138.0	20.0	-47.56262	-0.018	129	0.05	complian
QPSK Modulation	ANT1/Div					•
102.0	20.0	-47.97084	-0.019	129	0.05	complian
120.0	20.0	-31.75413	-0.012	129	0.05	complian
138.0	20.0	-42.98462	-0.017	129	0.05	complian
QPSK Modulation	ANT2/Main					
102.0	20.0	42.85150	0.017	129	0.05	complian
120.0	20.0	-15.42356	-0.006	129	0.05	complian
138.0	20.0	-35.42064	-0.014	129	0.05	complian
QPSK Modulation	ANT2/Div					
102.0	20.0	-25.09552	-0.010	129	0.05	complian
120.0	20.0	24.02904	0.009	129	0.05	complian
138.0	20.0	31.24782	0.012	129	0.05	complian
16QAM Modulatio	on ANT1/Main					
102.0	20.0	-46.13613	-0.018	129	0.05	compliar
120.0	20.0	-41.94247	-0.016	129	0.05	complian
138.0	20.0	-24.89333	-0.010	129	0.05	complian
16QAM Modulatio	n ANT1/Di∨			•	•	
102.0	20.0	-30.33525	-0.012	129	0.05	complian
120.0	20.0	-56.71012	-0.022	129	0.05	complian
138.0	20.0	-34.24242	-0.013	129	0.05	complian
16QAM Modulatio	n ANT2/Main					•
102.0	20.0	-33.77154	-0.013	129	0.05	complian
120.0	20.0	28.09684	0.011	129	0.05	complian
138.0	20.0	-31.27309	-0.012	129	0.05	complian
16QAM Modulatio	n ANT2/Di∨				•	•
102.0	20.0	34.52983	0.013	129	0.05	complian
120.0	20.0	37.00935	0.014	129	0.05	complian
138.0	20.0	-23.81096	-0.009	129	0.05	complian
64QAM Modulatic	n ANT1/Main					
102.0	20.0	-52.51935	-0.020	129	0.05	complian
120.0	20.0	-45.64625	-0.018	129	0.05	complian
138.0	20.0	-51.70594	-0.020	129	0.05	complian

FCC Part 27

11, November 2014 Page 68 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

64QAM Modulatio	n ANT1/Div					
102.0	20.0	-48.01058	-0.019	129	0.05	compliant
120.0	20.0	-46.25485	-0.018	129	0.05	compliant
138.0	20.0	-34.41338	-0.013	129	0.05	compliant
64QAM Modulatio	n ANT2/Main					
102.0	20.0	-30.42504	-0.012	129	0.05	compliant
120.0	20.0	-29.62819	-0.011	129	0.05	compliant
138.0	20.0	-31.58789	-0.012	129	0.05	compliant
64QAM Modulatio	n ANT2/Div					
102.0	20.0	36.37471	0.014	129	0.05	compliant
120.0	20.0	38.49355	0.015	129	0.05	compliant
138.0	20.0	-27.72850	-0.011	129	0.05	compliant
Measurement Und	ertainty:				±1.0	) Hz

Table 45 Frequency stability with voltage var. (20 MHz Channel BW)

The measured frequency stability was found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

### 5. TEST DATA AND SCREENSHOTS

#### 5.1 Part List of the RF Measurement Test Equipment

No.	Test Equipment	Manufacturer & Type	Serial Number	Calibration date	Calibration due	Test No.
1	Signal Analyzer	Rohde & Schwarz: FSV 30	100781	07/2014	07/2015	1, 2, 3, 4, 6
2	Signal Analyzer	Rohde & Schwarz: FSW43	100747	07/2014	07/2015	1
2	Vector Network Analyzer	Rohde & Schwarz: ZVA40	100146	01/2014	01/2015	1, 2, 3, 4, 6
3	Vector Network Analyzer	Rohde & Schwarz: ZVL13	101177	07/2014	07/2015	1, 2, 3, 4, 6
4	Frequency Standard	Datum 8040	0030007339	01/2014	07/2015	6
5	Multimeter	Fluke 83	65870302	01/2014	01/2015	1, 2, 3, 4, 6
6	Humidity and Temperature Indicator	Vaisala: HMI 31	P3730008	12/2013	12/2014	1, 2, 3, 4, 6
7	AC Power Supply	Hewlett Packard 6843A	3531A00208	cnn	-	1, 2, 3, 4, 6
8	Temperature Chamber	Espec ARS-0608	410000357	08/1014	08/2015	6
9	Attenuator	Aeroflex/Weinschel: 66-20-33	CF0630	cnn	-	1, 2, 3, 4, 6
10	EMI Test Receiver	R&S ESU40	100262	05/2014	05/2015	5
11	Horn Antenna	Emco 3115	0102A06346	11/2013	11/2014	5
12	Bilog Antenna	Chase CBL6112B	2694	07/2014	07/2015	5
13	Log Periodic Antenna	R&S 1-26.5GHz	356749/012	09/2014	09/2015	5
14	Amplifier	Miteq AFSX4	902638	cnn	-	5
15	Antenna Mast	Deisel HD240	2401323194	cnn	-	5
16	Mast Controller	Deisel HD100	1001331	cnn	-	5

Table 46 Part List of the RF Measurement Test Equipment



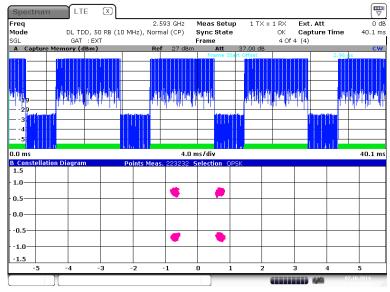
FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### 5.2 Spectral Plots

#### 5.2.1. Test No. 2: Modulation Characteristics

No additional measurements are required for the modulation characteristics. Please refer to test no. 3, occupied bandwidth on page 18.

Screenshots below shows information about the modulations  $\rm I/Q$  constellation form and modulation information table, displaying error to ideal modulation symbols.



Date: 7.0CT.2014 12:00:05

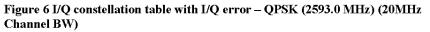
Figure 5 I/Q constellation diagram with capture buffer – QPSK (2593.0 MHz) (20MHz Channel BW)

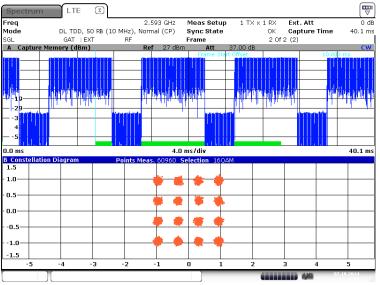


FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Freq Mode DL TDD SGL GAT :	, 50 RB (10 MHz), Nor		ns Setup c State ne	1 TX x 1 RX OK 4 Of	Ext. A Captu 4 (4)	tt re Time	40.
		Result Summ	ary				
Frame Result 4/4	Min	Mean	Limit	Max	Limit	Unit	
EVM PDSCH QPSK	3.65	3.66		3.66	18.50	%	
EVM PDSCH 16QAM					13.50	%	
EVM PDSCH 64QAM					9.00	%	
Time Alignment Error 2,1						ns	
Time Alignment Error 3,1						ns	
Time Alignment Error 4,1						ns	
Results for Selection	Subframe(s) ALL	Selection	Antenna	1 Frame F	Result 4/4	ŧ	
EVM All	3.18	4.15		6.13		%	
EVM Phys. Channel	3.16	4.15		6.24		%	
EVM Phys. Signal	3.08	4.03		6.29		%	
Frequency Error	- 24.23	- 2.93		24.32		Hz	
Sampling Error	- 0.30	0.03		U.46		pom	
IQ Offset	- 38.80	- 38.02		- 37.53		dB	
IQ Gain Imbalance	- 0.02	0.00		0.02		dB	
IQ Quadrature Error	0.29	0.37		0.44		•	
RGTP	11.90	11.57		11.40		d3m	
OSTP	15.90	16.22		16.31		d3m	
Power	15.22	16.08		16.28		d3m	
Crest Factor		7.66				dB	

Date: 7.0CT.2014 12:04:26





Date: 7.0CT.2014 12:16:37

Figure 7 I/Q constellation diagram with capture buffer – 16QAM (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

11, November 2014 Page 72 of 212

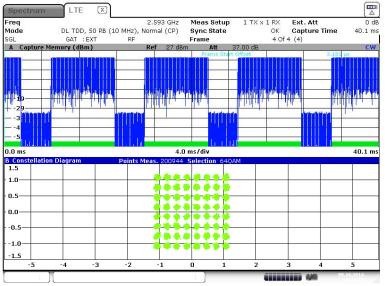


FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Freq Mode DL TDD, 3 SGL GAT : 1	100 RB (20 MHz), Nor		ns Setup c State ne	1 TX x 1 RX OK 2 Of	Ext. A Captu 2 (2)	tt re Time	0 40.1
		Result Summ	ary				
Frame Result 2/2	Min	Mean	Limit	Max	Limit	Unit	
EVM PDSCH QPSK	2.88	2.88		2.88	18.50	%	
EVM PDSCH 16QAM	4.88	4.88		4.88	13.50	%	
EVM PDSCH 64QAM					9.00	%	
lime Alignment Error 2,1						ns	
Time Alignment Error 3,1						ns	
lime Alignment Error 4,1						ns	
Results for Selection	Subframe(s) ALL	Selection	Antenna	1 Frame	Result 2/2	2	
EVM All	3.75	4.24		5.37		%	
EVM Phys. Channel	3.76	4.25		5.29		%	
EVM Phys. Signal	2.90	4.03		6.66		%	
Frequency Error	- 34.08	- 11.14		17.87		Hz	
Sampling Error	- 0.13	0.03		0.14		ppm	
Q Offset	- 44.74	- 43.68		- 43.23		dB	
Q Gain Imbalance	- 0.02	- 0.01		- 0.01		dB	
Q Quadrature Error	0.59	0.67		0.80		0	
RSTP	- 14.79	- 14.50		- 14.43		dBm	
DSTP	16.12	16.33		16.40		dBm	
ower	15.31	16.17		16.36		dBm	
Crest Factor		7.61				dB	

Date: 24.NOV.2014 16:31:33

### Figure 8 I/Q constellation table with I/Q error - 16QAM (2593.0 MHz) (20MHz Channel BW)



Date: 9.0CT.2014 15:39:17

Figure 9 I/Q constellation diagram with capture buffer – 64QAM (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

11, November 2014 Page 73 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

	2 DD, 50 RB (10 MHz), No : EXT RF		as Setup nc State me	1 TX x 1 RX OK 4 Of	Ext. A Captur 4 (4)	tt re Time	40.3
		Result Summ	nary				
Frame Result 4/4	Min	Mean	Limit	Max	Limit	Unit	
EVM PDSCH QPSK					18.50	%	
EVM PDSCH 16QAM					13.50	%	
EVM PDSCH 64QAM	3.41	3.42		3.42	9.00	%	
Time Alignment Error 2,1						ns	
Time Alignment Error 3,1						ns	
Time Alignment Error 4,1						ns	
Results for Selection	n Subframe(s) ALI	_ Selection	n Antenna	1 Frame F	Result 4/4	4	
EVM All	2.71	3.73		4.89		%	
EVM Phys. Channel	2.69	3.73		4.98		%	
EVM Phys. Signal	2.62	3.65		5.95		%	
Frequency Error	- 33.66	- 5.51		19.36		Hz	
Sampling Error	- 0.55	0.07		0.60		ppm	
IQ Offset	- 47.50	- 46.24		- 44.85		dB	
IQ Gain Imbalance	- 0.02	- 0.01		0.01		dB	
IQ Quadrature Error	0.37	0.45		0.54		•	
RSTP	- 11.79	- 11.51		- 11.43		dBm	
OSTP	16.23	16.32		16.42		dBm	
Power	15.28	16.14		16.34		dBm	
Crest Factor		7.93				dB	

Date: 9.0CT.2014 15:39:57

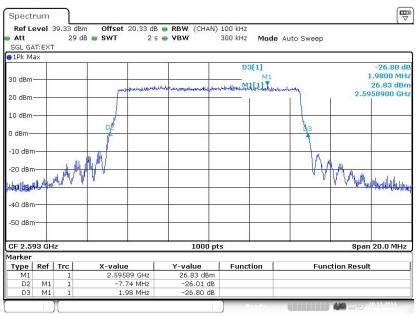
Figure 10 I/Q constellation table with I/Q error – 64QAM (2593.0 MHz) (20MHz Channel BW)



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### 5.2.2. Test No. 3: Occupied Bandwidth



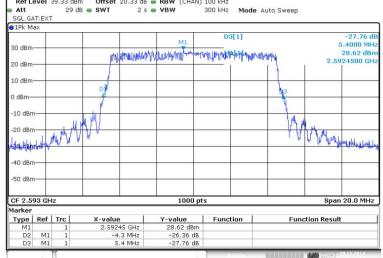


Date: 20.NOV.2014 08:36:46

Figure 11 Occupied Bandwidth – QPSK (2593.0 MHz) (10MHz Channel BW)

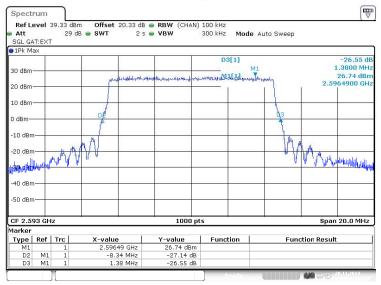


BNFWHD-01	
	D522886124
Spectrum	
Ref Level 39.33 dBm Offset 20.33 dB  RBW (CHAN) 100 kHz	[ ]
Att 29 dB SWT 2 s VBW 300 kHz Mode Auto Sweep	
SGL GAT:EXT	



Date: 20.NOV.2014 08:33:04

#### Figure 12 Occupied Bandwidth – 16QAM (2593.0 MHz) (10MHz Channel BW)



Date: 20.NOV.2014 08:28:27

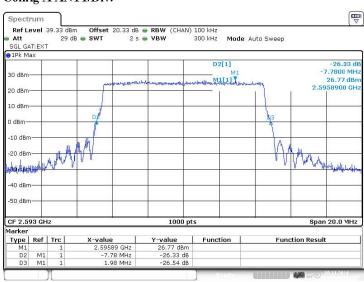
Figure 13 Occupied Bandwidth – 64QAM (2593.0 MHz) (10MHz Channel BW)

FCC Part 27

11, November 2014 Page 76 of 212



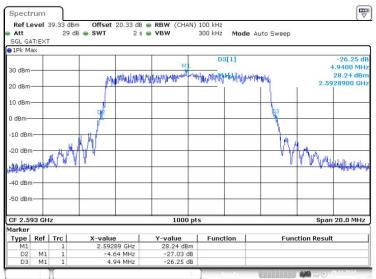
FCC ID:	Test Report No:
VBNFWHD-01	D522886124



#### Config A ANT1/Div:

Date: 20.NOV.2014 08:40:47

### Figure 14 Occupied Bandwidth – QPSK (2593.0 MHz) (10MHz Channel BW)



Date: 20.NOV.2014 08:45:53

#### Figure 15 Occupied Bandwidth – 16QAM (2593.0 MHz) (10MHz Channel BW)

FCC Part 27

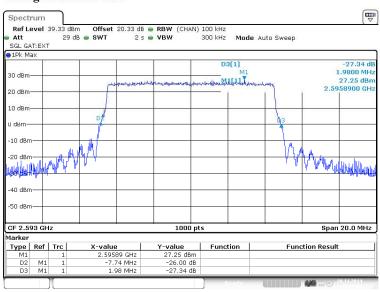
11, November 2014 Page 77 of 212



Test Report No:

	_					
Spectrum						
Ref Level Att			RBW (CHAN)		Auto Sweep	
SGL GAT:EXT				20 Sel (193)	4.45.20	
TEK Max				D3[1]		-26.65 dB
30 dBm				N	11	1.3800 MHz
So dom		apriller will be a start and a start a	Heillanson allowed above	monorthaldelighter	Jayouta	26.83 dBm
20 dBm						2.5964900 GHz
10 dBm					1	
10 dbm					2	
0 dBm		D			<b>0</b> 3	
-10 dBm-					1 L	
-10 0811		m M			14.	
-20 dBm	. h.t				- V V	
Habardan Handland	MYY	VV			l l	V WWW. Mulling
Adhewernings Carson and						a armada
-40 dBm					-	
-50 dBm						
-30 ubiii-						
CF 2.593 GH	z		1000 pt:	s		Span 20.0 MHz
Marker						
Type   Ref		X-value	Y-value	Function	Fund	ction Result
M1	1	2.59649 GHz	26.83 dBm			
D2 M1	1	-8.34 MHz 1.38 MHz	-27.08 dB -26.65 dB			

#### Figure 16 Occupied Bandwidth – 64QAM (2593.0 MHz) (10MHz Channel BW)



### Config A ANT2/Main:

FCC ID:

Date: 20.NOV.2014 08:56:00

### Figure 17 Occupied Bandwidth – QPSK (2593.0 MHz) (10MHz Channel BW)

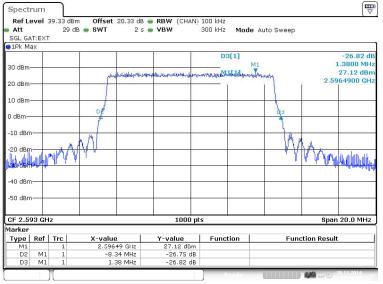
FCC Part 27

11, November 2014 Page 78 of 212



CID:					Test Report N
JFWHD-01					D5228861
Spectrum					
	B 👄 RBW (CHAN) s 🖷 VBW		Auto Sweep		
SGL GAT:EXT			naco o noop		
●1Pk Max		100000			
	M1	D3[1]			-26.54 dB
30 dBm-					5.3800 MHz
anal latrial and a	ANNUM CONTRACTOR	41. Provide And Andrew	all property	9 50	29.00 dBm 924500 GHz
20 dBm				2.09	27300 602
10 dBm			11		
D			03		
0 dBm			1		
1 200 000000 V			1 4		
-10 dBm			1.		
			101	A designed to	
-20 dBm			YY	MAN	a la at th
HER HER HALVING Y Y Y			- <u>U</u>	1 1 1 1	the district of the second
					and the search
-40 dBm			-		N
-50 dBm			-		
CF 2.593 GHz	1000 pts			Snar	20.0 MHz
Marker	1000 pts	,		ohai	20.0 (112)
Type Ref Trc X-value	Y-value	Function	Euro	ction Result	r 1
M1 1 2.59245 GHz	29.00 dBm	rancaon	1.00	ction Result	
D2 M1 1 -4.28 MHz	-26.72 dB	1			
D3 M1 1 5.38 MHz	-26.54 dB				
		Density.	0.000000000	446	20.11.2014
رار					
Date: 20.NOV.2014 09:00:44					

#### Figure 18 Occupied Bandwidth – 16QAM (2593.0 MHz) (10MHz Channel BW)



Date: 20.NOV.2014 09:06:29

#### Figure 19 Occupied Bandwidth – 64QAM (2593.0 MHz) (10MHz Channel BW)

FCC Part 27

11, November 2014 Page 79 of 212

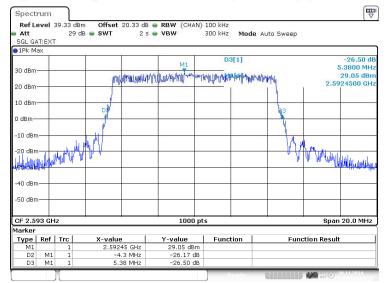


FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Config A ANT2/Div: Spectrum Offset 20.33 dB ● RBW (CHAN) 100 kHz SWT 2 s ● VBW 300 kHz Ref Level 39.33 dBm Att SGL GAT:EX 29 dB 🖷 SWT Mode Auto Sweep 01Pk Ma -27.51 di 1.9600 MH 27.30 dBn D3[1] 30 dBm MILLIN 2.5958900 GH 20 dBr 10 dBm ) dB 10 dB 20 Maddelitte Wallshill 40 dB -50 dBm 1000 pts Span 20.0 MHz CF 2.593 GHz 1arke Y-value 27.30 dBm -26.07 dB -27.51 dB Type | Ref | Trc X-value 2.59589 GHz -7.74 MHz 1.96 MHz Function Result Function M1 MI

Date: 20.NOV.2014 09:15:48

#### Figure 20 Occupied Bandwidth – QPSK (2593.0 MHz) (10MHz Channel BW)



Date: 20.NOV.2014 09:12:30



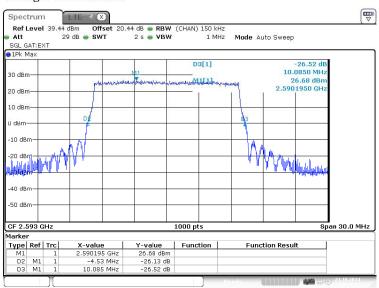
FCC Part 27

11, November 2014 Page 80 of 212



ID:				Test F	
FWHD-01				D5	22886
				_	<u>`</u>
Spectrum					'J
	🖷 📾 RBW (CHAN)				10
Att 29 dB SWT 2 s SGL GAT:EXT	s 🖷 VBW	300 kHz Mode	Auto Sweep		
Pk Max					1
		M1[1]		27.06 dBm	
30 dBm		M1		2.5964900 GHz	
	infreshille. We multimate feature	Maring Linds Baunan	Howerty	-26.88 dB -8.3400 MHz	
20 dBm				0.0400 Miliz	
10 dBm					
D₽			33		
0 dBm			4		
-10 dBm-					
u A A			10 4	1.40	
			WY	V W Walder Walder	
-20 dBm					
				24	
-40 dBm					
-50 dBm					
CF 2.593 GHz	1000 pt	s		Span 20.0 MHz	1
Marker			Statement		
Type         Ref         Trc         X-value           M1         1         2.59649 GHz	Y-value 27.06 dBm	Function	Func	tion Result	
D2 M1 1 -8.34 MHz	-26.88 dB			-	
D3 M1 1 1.38 MHz	-27.00 dB				J
T T		Description -	1	AM	
<u> </u>		_		10	

#### Figure 22 Occupied Bandwidth - 64QAM (2593.0 MHz) (10MHz Channel BW)



#### Config C ANT1/Main:

Date: 21.0CT.2014 12:15:21

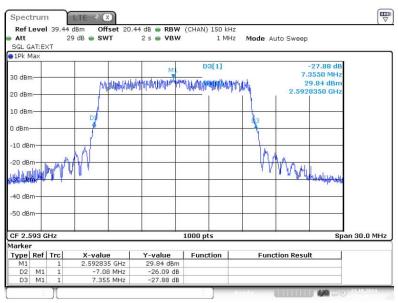
Figure 34 Occupied Bandwidth – QPSK (2599.0 MHz) (15MHz Channel BW)

FCC Part 27

11, November 2014 Page 81 of 212

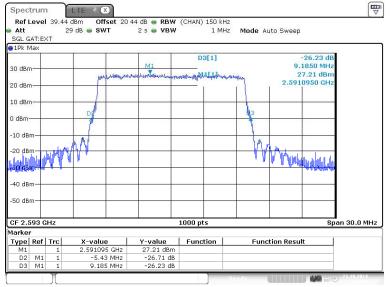


FCC ID:	Test Report No:
VBNFWHD-01	D522886124



Date: 21.0CT.2014 13:36:17

#### Figure 24 Occupied Bandwidth – 16QAM (2593.0 MHz) (15MHz Channel BW)



Date: 21.0CT.2014 13:44:10

Figure 25 Occupied Bandwidth - 64QAM (2593.0 MHz) (15MHz Channel BW)

FCC Part 27

11, November 2014 Page 82 of 212



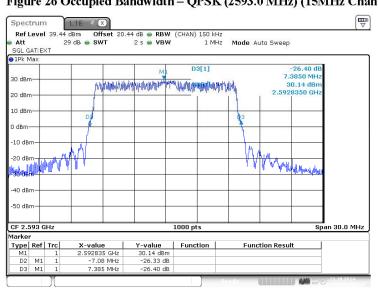
FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Config C ANT1/Div:

1Pk Ma	эх				
30 dBm- 20 dBm-		Mannendarde	FAI	D3[1]	-26.11 dB 6.9650 MHz 26.99 dBm 2.5933150 GHz
10 dBm-		DE			40
10 dBm	- n h				Ana I
20 dBm 30 dBm	ulwry.	YUV			4 V V Drand University
40 dBm 50 dBm					
CF 2.59	93 GHz			1000 pts	Span 30.0 f
larker Tunol R	Ref   Trc	X-value	Y-value	Function	Function Result
M1	1 M1 1	2.593315 GHz -7.65 MHz	26.99 dBm -26.89 dB	- anecion	i unction result

Date: 21.0CT.2014 11:42:33

#### Figure 26 Occupied Bandwidth – QPSK (2593.0 MHz) (15MHz Channel BW)



Date: 21.0CT.2014 11:49:58

Figure 27 Occupied Bandwidth - 16QAM (2593.0 MHz) (15MHz Channel BW)

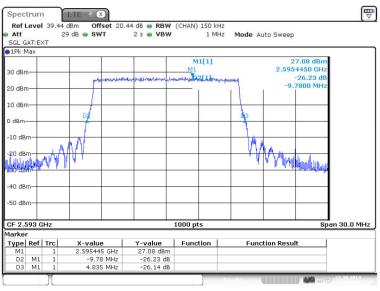
FCC Part 27

11, November 2014 Page 83 of 212



ID: FWHD-01					Test Report D522886
Spectrum	44 do - 0000	(CUAN) 150 LU-			
Ref Level 39.44 dBm Offset 20 Att 29 dB SWT SGL GAT:EXT	.44 dB 👄 RBW 2 s 👄 VBW	(CHAN) 150 KH2 1 MHz		o Sweep	
1Pk Max	29 D.			- 1938 - 1938	
		D3[1]		-26.60 dB	
30 dBm				12.5750 MHz 27.55 dBm	
20 dBm	have been and the second second	enner the property of the second	whiter	2.5876450 GHz	
20 0000			1 1		
10 dBm					
DE			dja		
0 dBm			1		
-10 dBm					
M Al			18 4		
-20 dBm			- WWA	WWWWWWWWWWW	
TOP TO A CALL OF THE TOP TO A CALL OF TO A CALLO A CALL OF TO A C				W SHALL HALLAND	
1600 CBW/					
-40 dBm-					
-50 dBm					
CF 2.593 GHz		1000 pts		Span	30.0 MHz
Marker					
Type         Ref         Trc         X-value           M1         1         2.587645 GHz	Y-value 27.55 dBm	Function	Functi	on Result	
D2 M1 1 -1.86 MHz	-26.45 dB				
D3 M1 1 12.575 MHz	-26.60 dB				
r m			franke Mil	<b>40</b>	21.10.2014
				and the second s	

### Figure 28 Occupied Bandwidth – 64QAM (2593.0 MHz) (15MHz Channel BW)



#### Config C ANT2/Main:

Date: 21.0CT.2014 11:28:33

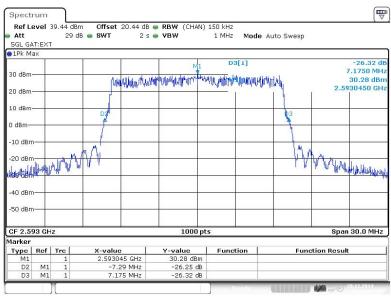
Figure 29 Occupied Bandwidth – QPSK (2593.0 MHz) (15MHz Channel BW)

FCC Part 27

11, November 2014 Page 84 of 212

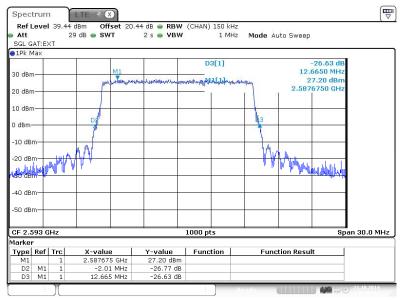


FCC ID:	Test Report No:
VBNFWHD-01	D522886124



Date: 20.NOV.2014 09:20:17

#### Figure 30 Occupied Bandwidth – 16QAM (2593.0 MHz) (15MHz Channel BW)



Date: 21.0CT.2014 10:58:54

Figure 31 Occupied Bandwidth – 64QAM (2593.0 MHz) (15MHz Channel BW)

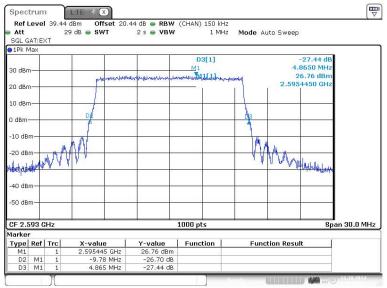
FCC Part 27

11, November 2014 Page 85 of 212



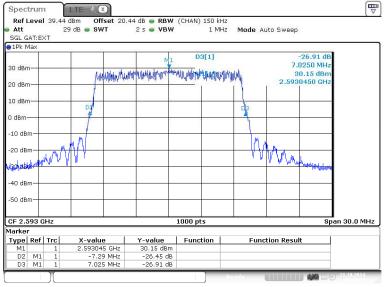
FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Config C ANT2/Div:



Date: 21.0CT.2014 09:44:41

#### Figure 32 Occupied Bandwidth – QPSK (2593.0 MHz) (15MHz Channel BW)



Date: 21.0CT.2014 09:41:37

Figure 33 Occupied Bandwidth – 16QAM (2593.0 MHz) (15MHz Channel BW)

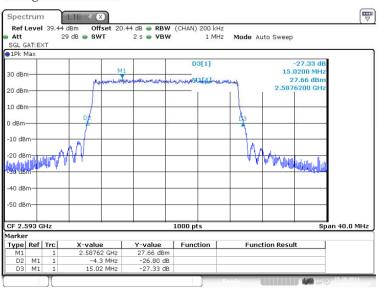
FCC Part 27

11, November 2014 Page 86 of 212



CID: NFWHD-01	Test Report No D52288612
NFWHD-01	D32288012
Spectrum	
	(  \)
RefLevel 39.44 dBm Offset 20.44 dB  RBW (CHAN) 150 kHz Att 29 dB SWT 2 s VBW 1 MHz Mode Auto Sweep	
Att 29 dB SWT 2 s VBW 1 MHz Mode Auto Sweep SGL GAT:EXT	
IPk Max	
	82 dB
30 dBm M1 12.6650	
30 april 10 million rando senten and marked and the senten and the	EdBm
20 dBm 2.5876750	0 GHz
	and a second
10 dBm	
02	
0 dBm	
-10 dBm	
-10 UBII	
-20 dBm	
	land and a second s
hadd bething of the	to the second
-40 dBm	
-50 dBm	
-30 dbm	
CF 2.593 GHz 1000 pts	Span 30.0 MHz
Marker	
Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.587675 GHz         26.94 dBm         Function         Function         Function	
D2 M1 1 -2.01 MHz -26.99 dB	
D3 M1 1 12.665 MHz -26.82 dB	
	21.10.2014

#### Figure 23 Occupied Bandwidth - 64QAM (2593.0 MHz) (15MHz Channel BW)



#### Config E ANT1/Main:

Date: 15.0CT.2014 09:36:37

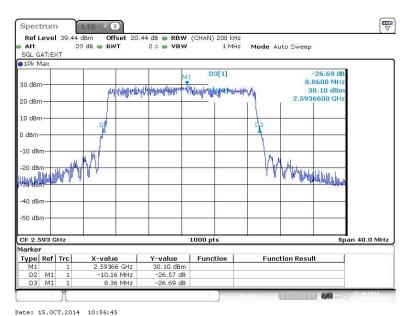
Figure 35 Occupied Bandwidth – QPSK (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

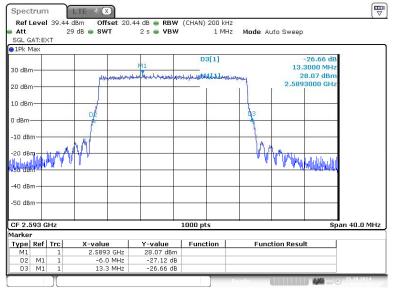
11, November 2014 Page 87 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124



#### Figure 36 Occupied Bandwidth – 16QAM (2593.0 MHz) (20MHz Channel BW)



Date: 15.0CT.2014 10:47:42

Figure 37 Occupied Bandwidth – 64QAM (2593.0 MHz) (20MHz Channel BW)

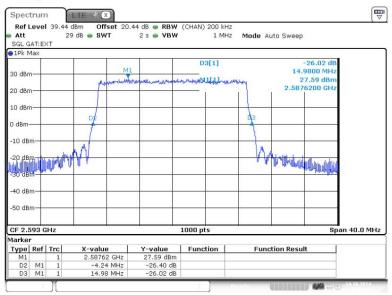
FCC Part 27

11, November 2014 Page 88 of 212



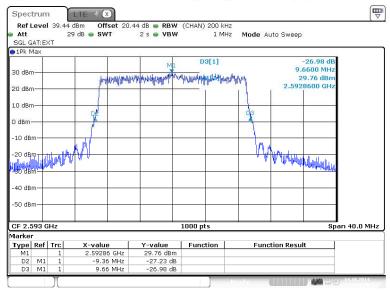
FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Config E ANT1/Div:



Date: 14.0CT.2014 12:03:10

#### Figure 38 Occupied Bandwidth – QPSK (2593.0 MHz) (20MHz Channel BW)



Date: 14.0CT.2014 12:13:40

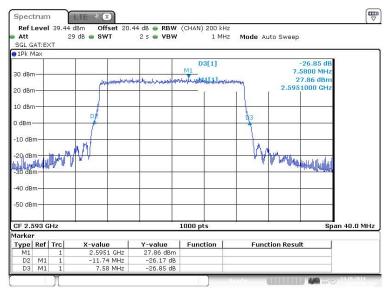
Figure 39 Occupied Bandwidth – 16QAM (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

11, November 2014 Page 89 of 212

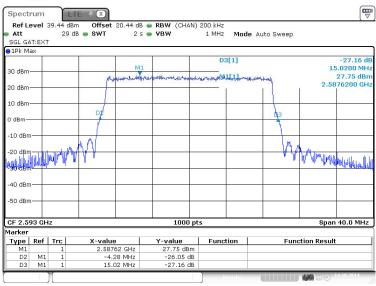


FCC ID:	Test Report No:
VBNFWHD-01	D522886124



Date: 14.0CT.2014 13:43:19

#### Figure 40 Occupied Bandwidth – 64QAM (2593.0 MHz) (20MHz Channel BW)



#### Config E ANT2/Main:

Date: 14.0CT.2014 11:44:46

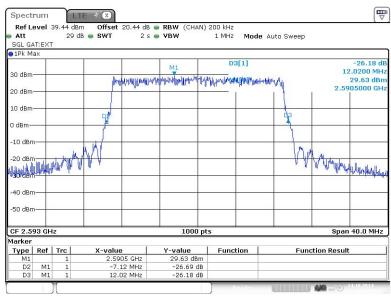
Figure 41 Occupied Bandwidth – QPSK (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

11, November 2014 Page 90 of 212

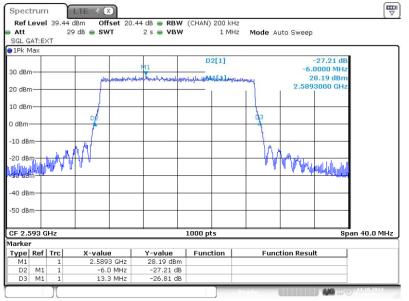


FCC ID:	Test Report No:
VBNFWHD-01	D522886124



Date: 14.0CT.2014 11:14:11

#### Figure 42 Occupied Bandwidth – 16QAM (2593.0 MHz) (20MHz Channel BW)



Date: 14.0CT.2014 10:55:43

#### Figure 43 Occupied Bandwidth – 64QAM (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

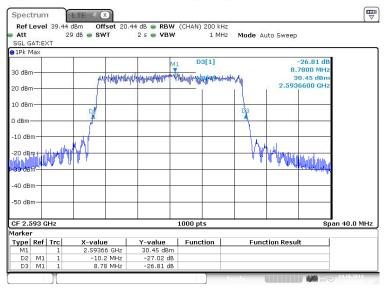
11, November 2014 Page 91 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### Config E ANT2/Div: Spectrum LTE X Ref Level 39 Att 2 s 🖷 VBW (CHAN) 200 kHz 2 s 🖷 VBW 1 MHz 44 dBm Offset 29 dB 🖷 SWT Mode Auto Sweep SGL GAT: EXT D1Pk M -27.21 dB 15.0200 MHz 27.68 dBm 2.5876200 GHz D3[1] M: 30 dBn - huddhide rhomore and the state of the st Make 20 dBm 10 dBm dВ -10 dBm 20 dBm-THU W 40 dBm -50 dBm 1000 pts CF 2.593 GHz Span 40.0 MHz 1arke X-value 2.58762 GHz -4.4 MHz 15.02 MHz | Function | Type Ref Trc M1 1 Function Result Y-value 27.68 dBn M1 -26.55 dB -27.21 dB D2 D3 M1 Date: 14.0CT.2014 08:18:24

#### Figure 44 Occupied Bandwidth – QPSK (2593.0 MHz) (20MHz Channel BW)



Date: 14.0CT.2014 09:09:36

Figure 45 Occupied Bandwidth – 16QAM (2593.0 MHz) (20MHz Channel BW)

FCC Part 27

11, November 2014 Page 92 of 212



FWHD-01						D522
	TE (X)					
1				1973 M		
Ref Level 39.44 dB	m Offset 20. dB = SWT	44 dB  RBW 2 5  VBW	(CHAN) 200 kł 1 Mł		uto Sweep	
SGL GAT:EXT	18 <b>- 5</b> WI	25 <b>• VBW</b>	TIM	H2 MODE A	ito Sweep	
● 1Pk Max						
		100	D3[1]		-26.77	7 dB
30 dBm-		M1			13.2600	
	elson hours	obstate Monacher warenaber	4. Jan Hill Hold - Andrew	spreprometry	27.73 c 2.5893000	
20 dBm	- 1				2.5893000	GHZ
10 dBm						
10 dbiii	ob			da		
0 dBm	- P					_
-10 dBm	M			1 H		
-20 dBm		_			hit the state of the state	
	u .			Ψ.Ψ	Y Y WOLLD	
Golbam						-0.00m
-40 dBm						
-50 dBm						
CF 2.593 GHz			1000 pts		• • • • • • • • • • • • • • • • • • • •	Span 40.0 MHz
Marker						
Type Ref Trc	X-value	Y-value	Function	Func	tion Result	
M1 1 D2 M1 1	2.5893 GHz -6.0 MHz	27.73 dBm -27.15 dB				_
D2 M1 1 D3 M1 1	-6.0 MH2 13.26 MHz	-27.15 dB				-
		20111 00			446	14.10.2014

Figure 46 Occupied Bandwidth – 64QAM (2593.0 MHz) (20MHz Channel BW)



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

#### 5.2.3. Test No. 4: Spurious Emissions at the Antenna Terminals

The external attenuation (cable loss of the setup) can be seen as the 'Offset' value in the screenshots. The external attenuation is frequency dependant. Thus the various 'Offset' values in the screenshots may differ.



#### Config A ANT1/Main:

Date: 13.NOV.2014 07:35:51

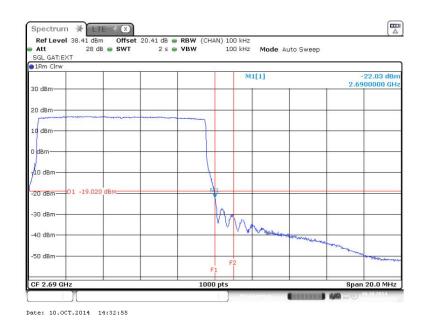
Figure 47 Spurious Emissions (Lower Band Edge) – QPSK (2501.1 MHz) (10MHz Channel BW)

FCC Part 27

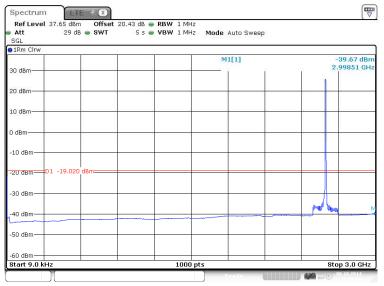
11, November 2014 Page 94 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124



# Figure 48 Spurious Emissions (Upper Band Edge) – QPSK (2685.0 MHz) (10MHz Channel BW)



Date: 8.0CT.2014 13:03:50

Figure 49 Spurious Emissions (9kHz – 3GHz) - QPSK (2593.0 MHz) (10MHz Channel BW)

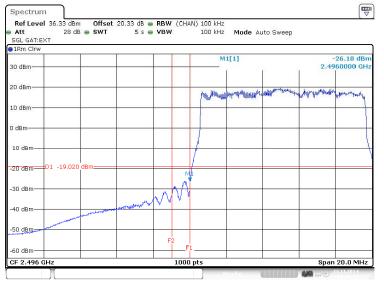
FCC Part 27

11, November 2014 Page 95 of 212



ID:		Test Repor
FWHD-01		D52288
Spectrum LTE (X)		
Ref Level 32.00 dBm Offse	t 20.56 dB 👄 RBW 1 MHz	(*)
Att 24 dB SWT SGL	5 s 🖷 VBW 1 MHz 🛛 Mode Auto Sweep	
●1Rm Clrw		
	M1[1]	-36.72 dBm 5.1810 GHz
20 dBm	n n	5.1810 GHZ
20 0011		
10 dBm		
0 dBm		
-10 dBm		
-20 dBm D1 -19.020 dBm		
-30 dBm		
MI		
-40 dBm		
- hour	munnum	mmmm
-50 dBm		
-60 dBm		
Start 3.0 GHz	2000 pts	Stop 26.9 GHz
1 Л	an a subscription of the s	ALL

# Figure 50 Spurious Emissions (3GHz – 26.900GHz) – QPSK (2593.0 MHz) (10MHz Channel BW)



Date: 13.NOV.2014 08:43:39

### Figure 51 Spurious Emissions (Lower Band Edge) – 16QAM (2501.1 MHz) (10MHz Channel BW)

FCC Part 27

-

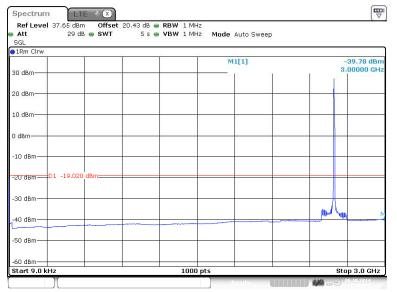
11, November 2014 Page 96 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Att : SGL GAT:EXT 1Rm Clrw	28 dB 👄 SWT	2 s 🖷 V	BW	100 kHz	Mode A	uto Sweep		
				M	1[1]			22.68 dBn
30 dBm						1		
	uther an	handhire the with the feature of the second s	pullitur.H					
LC dBm-								
dBm			-					
10 dBm								
по авт			1					
20 dBm D1 -19	0.020 dBm							
30 dBm				n.				
			L	VV.				
40 dBm				1.0	the many torray	aprilique at war and a		
50 dBm							and and and and and and	and an and a start of the start
			F1	F2				- and
CF 2.69 GHz	1 1	ļ.	1000 (	ate		1 1	Enan	20.0 MHz

### Figure 52 Spurious Emissions (Upper Band Edge) – 16QAM (2685.0 MHz) (10MHz Channel BW)



Date: 8.0CT.2014 13:14:22

#### Figure 53 Spurious Emissions (9kHz – 3GHz) – 16QAM (2593.0 MHz) (10MHz Channel BW)

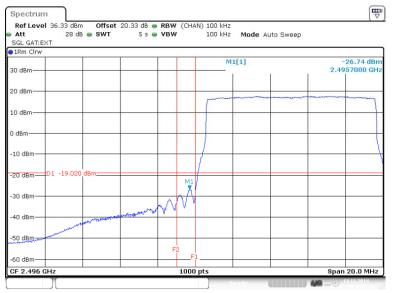
FCC Part 27

11, November 2014 Page 97 of 212



D:		Test Rep
WHD-01		D522
Spectrum LTE - X		
Ref Level 32.00 dBm Offse Att 24 dB SWT	t 20.56 dB 👄 RBW 1 MHz 5 s 👄 VBW 1 MHz 🛛 Mode Auto Sweep	
SGL		
●1Rm Clrw		-36.32 dBm
	7 1	5.1810 GHz
20 dBm		
10 dBm		
0 dBm		
-10 dBm		
-211 dBm-01 -19.020 dBm		
-20 dBm-01 -19.020 dBm-		
-30 dBm		
-40 dBm		
-40 UBIII	andraman	manna
-50 dBm	and the second s	
-60 dBm		
-00 0811		
Start 3.0 GHz	2000 pts	Stop 26.9 GHz
T		4105.01.80 (crime 100)

### Figure 54 Spurious Emissions (3GHz – 26.900GHz) – 16QAM (2593.0 MHz) (10MHz Channel BW)



Date: 13.NOV.2014 09:02:28

Figure 55 Spurious Emissions (Lower Band Edge) – 64QAM (2501.1 MHz) (10MHz Channel BW)

FCC Part 27

-

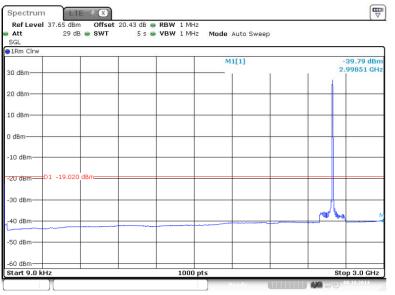
11, November 2014 Page 98 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Att SGL GAT:EXT	28 dB 👜 SWT	2 s 🖷 VBW	100 kHa	Z Mode Auto Sv	теер	
1Rm Clrw			N	41[1]	-21 2.6900	.42 dBi 000 GH
20 dBm				-		
d dBm						
I dBm				3		
10 dBm	19.020 dBm		Ma			
20 dBm						
40 dBm			VVV	Marina	- James Margaren and and and	
50 dBm			F2 F1		- contraction and and the second	hall again and the
F 2.69 GHz		10	100 pts		Span 20	1.0 MH:

#### Figure 56 Spurious Emissions (Upper Band Edge) – 64QAM (2685.0 MHz) (10MHz Channel BW)



Date: 8.0CT.2014 13:19:57

#### Figure 57 Spurious Emissions (9kHz – 3GHz) – 64QAM (2593.0 MHz) (10MHz Channel BW)

FCC Part 27

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11, November 2014 Page 99 of 212

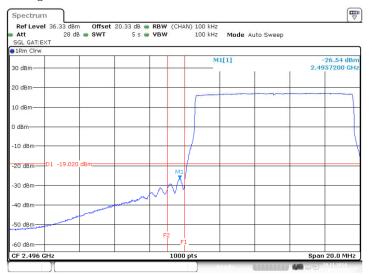


CC ID: BNFWHD-01			Report No 0522886124
Spectrum LTE (X)			
Ref Level 32.00 dBm Offset 20.56 dB ■ Att 24 dB ■ SWT 5 s SGL	<ul> <li>RBW 1 MH2</li> <li>VBW 1 MH2</li> <li>Mode Auto Sweep</li> </ul>		
IRm Cirw		-36.32 dBm	
20 dBm		5.1810 GHz	
10 dBm			
0 dBm			
-10 dBm			
-20 dBm D1 -19.020 dBm			
-30 dBm			
-40 dBm	mannen	man	
-50 dBm			
-60 dBm			
Start 3.0 GHz	2000 pts	Stop 26.9 GHz	
Date: 8.0CT.2014 13:21:03		and the second se	

Figure 58 Spurious Emissions (3GHz – 26.900GHz) – 64QAM (2593.0 MHz) (10MHz Channel BW)

#### Config A ANT1/Div:

-



Date: 20.NOV.2014 16:00:28

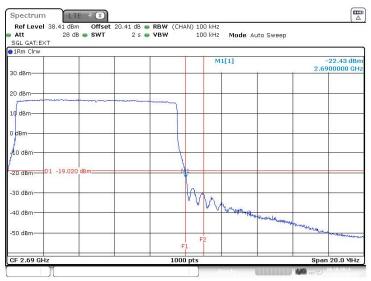
Figure 59 Spurious Emissions (Lower Band Edge) – QPSK (2501.1 MHz) (10MHz Channel BW)

FCC Part 27

11, November 2014 Page 100 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124



Date: 10.0CT.2014 13:11:42

# Figure 60 Spurious Emissions (Upper Band Edge) – QPSK (2685.0 MHz) (10MHz Channel BW)

Att 29 dB  SWT SGL	5 s 👄 VBW 1 MHz 🛛 Mode Auto Sweep	
1Rm Clrw	M1[1]	-39.80 dBn
30 dBm	(miti)	2.99851 GH:
20 dBm		
10 dBm		
) dBm		
10 dBm		
20 dBm D1 -19.020 dBm		
30 dBm		
40 dBm		rait ha
50 dBm		
60 dBm		

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Figure 61 Spurious Emissions (9kHz – 3GHz) - QPSK (2593.0 MHz) (10MHz Channel BW)

FCC Part 27

11, November 2014 Page 101 of 212



FCC ID:	Test Report No:
VBNFWHD-01	D522886124

Ref Level         32.00 dBm         Off           Att         24 dB • SW         SGL           IRm Clrw         1         1	set 20.56 dB ● RBW 1 MHz T 5 s ● VBW 1 MHz Mode	Auto Sweep	
IRM CIW	N	41[1]	-36.13 dB 5.1810 GF
20 dBm			
LO dBm			
) dBm			
10 dBm			
20 dBm-01 -19.020 dBm-			
30 dBm		× · · · · ·	10
40 dBm			h
50 dBm	mannant	munhun	m
60 dBm			
Start 3.0 GHz	2000 pts		Stop 26.9 GH

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### Figure 62 Spurious Emissions (3GHz – 26.900GHz) – QPSK (2593.0 MHz) (10MHz Channel BW)

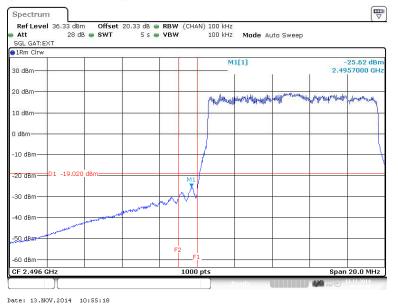


Figure 63 Spurious Emissions (Lower Band Edge) – 16QAM (2501.1 MHz) (10MHz Channel BW)

FCC Part 27

11, November 2014 Page 102 of 212