



FCC ID:  
VBNAHCA-01

Test Report No:  
D555647736

**4.6.4. Test Procedure and Results**

**Frequency Stability with Temperature Variation:**

The supply voltage of the EUT was set to the nominal value and the temperature of the environmental chamber was varied in 10 degree steps from -30 degrees Celsius to +50 degrees Celsius. The EUT was allow to stabilize 60 min. at each temperature and the frequency error was measured.

**Config A:**

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48	-30	-1.854247894	-0.002	44	0.05	compliant
-48	-20	-2.304271184	-0.003	44	0.05	compliant
-48	-10	-2.284659931	-0.003	44	0.05	compliant
-48	0	-1.670835263	-0.002	44	0.05	compliant
-48	10	-0.854386053	-0.001	44	0.05	compliant
-48	30	-1.452011493	-0.002	44	0.05	compliant
-48	40	-1.378892703	-0.002	44	0.05	compliant
-48	50	-1.81975789	-0.002	44	0.05	compliant
QPSK Modulation ANT2						
-48	-30	-1.70103347	-0.002	44	0.05	compliant
-48	-20	-1.55270609	-0.002	44	0.05	compliant
-48	-10	-1.231555871	-0.001	44	0.05	compliant
-48	0	-1.329641382	-0.002	44	0.05	compliant
-48	10	-1.605148209	-0.002	44	0.05	compliant
-48	30	-2.151742156	-0.002	44	0.05	compliant
-48	40	-1.613953136	-0.002	44	0.05	compliant
-48	50	-1.487085392	-0.002	44	0.05	compliant
QPSK Modulation ANT3						
-48	-30	-1.890559215	-0.002	44	0.05	compliant
-48	-20	-1.640406117	-0.002	44	0.05	compliant
-48	-10	-1.86537116	-0.002	44	0.05	compliant
-48	0	-1.800889986	-0.002	44	0.05	compliant
-48	10	-2.531925202	-0.003	44	0.05	compliant
-48	30	-1.516494303	-0.002	44	0.05	compliant
-48	40	-2.644092092	-0.003	44	0.05	compliant
-48	50	-2.330097923	-0.003	44	0.05	compliant
QPSK Modulation ANT4						
-48	-30	-3.235562617	-0.004	44	0.05	compliant
-48	-20	1.270145149	0.001	44	0.05	compliant
-48	-10	1.348146179	0.002	44	0.05	compliant
-48	0	1.940525399	0.002	44	0.05	compliant
-48	10	1.107854041	0.001	44	0.05	compliant
-48	30	-1.704283968	-0.002	44	0.05	compliant
-48	40	-2.13307736	-0.002	44	0.05	compliant
-48	50	-1.826270891	-0.002	44	0.05	compliant
64QAM Modulation ANT1						
-48	-30	1.760360537	0.002	44	0.05	compliant

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-48	-20	1.991101453	0.002	44	0.05	compliant
-48	-10	2.423202095	0.003	44	0.05	compliant
-48	0	0.876046288	0.001	44	0.05	compliant
-48	10	1.797174773	0.002	44	0.05	compliant
-48	30	1.351237224	0.002	44	0.05	compliant
-48	40	-1.200797997	-0.001	44	0.05	compliant
-48	50	1.906348843	0.002	44	0.05	compliant
64QAM Modulation ANT2						
-48	-30	2.02316769	0.002	44	0.05	compliant
-48	-20	2.078293764	0.002	44	0.05	compliant
-48	-10	1.759560328	0.002	44	0.05	compliant
-48	0	-1.999748129	-0.002	44	0.05	compliant
-48	10	-1.405766307	-0.002	44	0.05	compliant
-48	30	1.50970398	0.002	44	0.05	compliant
-48	40	2.608539726	0.003	44	0.05	compliant
-48	50	1.588987507	0.002	44	0.05	compliant
64QAM Modulation ANT3						
-48	-30	2.217392102	0.003	44	0.05	compliant
-48	-20	2.819224974	0.003	44	0.05	compliant
-48	-10	1.890571439	0.002	44	0.05	compliant
-48	0	1.713329875	0.002	44	0.05	compliant
-48	10	1.715958388	0.002	44	0.05	compliant
-48	30	1.843202335	0.002	44	0.05	compliant
-48	40	1.541191887	0.002	44	0.05	compliant
-48	50	1.938908827	0.002	44	0.05	compliant
64QAM Modulation ANT4						
-48	-30	1.776185527	0.002	44	0.05	compliant
-48	-20	2.323799708	0.003	44	0.05	compliant
-48	-10	1.601607946	0.002	44	0.05	compliant
-48	0	1.743217581	0.002	44	0.05	compliant
-48	10	1.538107826	0.002	44	0.05	compliant
-48	30	2.080268314	0.002	44	0.05	compliant
-48	40	-1.315214686	-0.001	44	0.05	compliant
-48	50	1.505889013	0.002	44	0.05	compliant
16QAM Modulation ANT1						
-48	-30	-1.060362702	-0.001	44	0.05	compliant
-48	-20	-1.422972127	-0.002	44	0.05	compliant
-48	-10	-1.085548574	-0.001	44	0.05	compliant
-48	0	-1.356174253	-0.002	44	0.05	compliant
-48	10	-1.121627429	-0.001	44	0.05	compliant
-48	30	-1.968247234	-0.002	44	0.05	compliant
-48	40	-2.486736048	-0.003	44	0.05	compliant
-48	50	-2.409964363	-0.003	44	0.05	compliant
16QAM Modulation ANT2						
-48	-30	-2.028436502	-0.002	44	0.05	compliant
-48	-20	-1.655092565	-0.002	44	0.05	compliant
-48	-10	-1.400472829	-0.002	44	0.05	compliant
-48	0	-2.816731139	-0.003	44	0.05	compliant
-48	10	-2.469988394	-0.003	44	0.05	compliant
-48	30	-2.364497341	-0.003	44	0.05	compliant

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-48	40	-1.527027343	-0.002	44	0.05	compliant
-48	50	-2.636339486	-0.003	44	0.05	compliant
16QAM Modulation ANT3						
-48	-30	-1.580217722	-0.002	44	0.05	compliant
-48	-20	-1.236210228	-0.001	44	0.05	compliant
-48	-10	-2.195670968	-0.002	44	0.05	compliant
-48	0	-1.955526604	-0.002	44	0.05	compliant
-48	10	-0.910637027	-0.001	44	0.05	compliant
-48	30	-2.416273928	-0.003	44	0.05	compliant
-48	40	-2.315626916	-0.003	44	0.05	compliant
-48	50	-2.445343198	-0.003	44	0.05	compliant
16QAM Modulation ANT4						
-48	-30	-1.965052943	-0.002	44	0.05	compliant
-48	-20	-2.262889466	-0.003	44	0.05	compliant
-48	-10	-2.869707823	-0.003	44	0.05	compliant
-48	0	-2.467350714	-0.003	44	0.05	compliant
-48	10	-1.176486112	-0.001	44	0.05	compliant
-48	30	-2.975734969	-0.003	44	0.05	compliant
-48	40	-2.538482513	-0.003	44	0.05	compliant
-48	50	1.81978452	0.002	44	0.05	compliant
256QAM Modulation ANT1						
-48	-30	-1.442123248	-0.002	44	0.05	compliant
-48	-20	-1.701600122	-0.002	44	0.05	compliant
-48	-10	-1.636807574	-0.002	44	0.05	compliant
-48	0	-1.965233896	-0.002	44	0.05	compliant
-48	10	-1.440246706	-0.002	44	0.05	compliant
-48	30	-1.364139243	-0.002	44	0.05	compliant
-48	40	-2.397475546	-0.003	44	0.05	compliant
-48	50	-0.88622277	-0.001	44	0.05	compliant
256QAM Modulation ANT2						
-48	-30	1.059628194	0.001	44	0.05	compliant
-48	-20	-1.655092565	-0.002	44	0.05	compliant
-48	-10	-1.67299404	-0.002	44	0.05	compliant
-48	0	-1.488143607	-0.002	44	0.05	compliant
-48	10	-1.635413319	-0.002	44	0.05	compliant
-48	30	-1.208378599	-0.001	44	0.05	compliant
-48	40	-2.413977636	-0.003	44	0.05	compliant
-48	50	-1.55586371	-0.002	44	0.05	compliant
256QAM Modulation ANT3						
-48	-30	-1.838916651	-0.002	44	0.05	compliant
-48	-20	1.270145149	0.001	44	0.05	compliant
-48	-10	-1.20843797	-0.001	44	0.05	compliant
-48	0	-1.406734373	-0.002	44	0.05	compliant
-48	10	1.133492406	0.001	44	0.05	compliant
-48	30	0.641526476	0.001	44	0.05	compliant
-48	40	-1.612429223	-0.002	44	0.05	compliant
-48	50	-2.065371227	-0.002	44	0.05	compliant
256QAM Modulation ANT4						
-48	-30	-2.412864415	-0.003	44	0.05	compliant
-48	-20	1.30770437	0.001	44	0.05	compliant

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-48	-10	-1.3892688	-0.002	44	0.05	compliant
-48	0	-2.171145825	-0.002	44	0.05	compliant
-48	10	1.461764514	0.002	44	0.05	compliant
-48	30	1.472030708	0.002	44	0.05	compliant
-48	40	2.502870775	0.003	44	0.05	compliant
-48	50	-2.304747468	-0.003	44	0.05	compliant

Table 46 Frequency stability with temp. var. (5 MHz Channel BW)

Config D:

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48	-30	-2.095866512	-0.002	44	0.05	compliant
-48	-20	-1.295298061	-0.001	44	0.05	compliant
-48	-10	-1.592340705	-0.002	44	0.05	compliant
-48	0	1.50576132	0.002	44	0.05	compliant
-48	10	-0.950459798	-0.001	44	0.05	compliant
-48	30	-1.293865716	-0.001	44	0.05	compliant
-48	40	-1.626380754	-0.002	44	0.05	compliant
-48	50	-1.539296463	-0.002	44	0.05	compliant
QPSK Modulation ANT2						
-48	-30	-2.008651063	-0.002	44	0.05	compliant
-48	-20	1.063527307	0.001	44	0.05	compliant
-48	-10	-2.30859092	-0.003	44	0.05	compliant
-48	0	1.109576488	0.001	44	0.05	compliant
-48	10	-1.095788466	-0.001	44	0.05	compliant
-48	30	0.770177066	0.001	44	0.05	compliant
-48	40	-1.153234625	-0.001	44	0.05	compliant
-48	50	-1.443240399	-0.002	44	0.05	compliant
QPSK Modulation ANT3						
-48	-30	-1.626314261	-0.002	44	0.05	compliant
-48	-20	-1.466224712	-0.002	44	0.05	compliant
-48	-10	-1.256982505	-0.001	44	0.05	compliant
-48	0	2.048774841	0.002	44	0.05	compliant
-48	10	1.714803366	0.002	44	0.05	compliant
-48	30	-0.95292482	-0.001	44	0.05	compliant
-48	40	1.434125188	0.002	44	0.05	compliant
-48	50	-1.523586288	-0.002	44	0.05	compliant
QPSK Modulation ANT4						
-48	-30	-1.943835159	-0.002	44	0.05	compliant
-48	-20	1.029092964	0.001	44	0.05	compliant
-48	-10	-2.146787665	-0.002	44	0.05	compliant
-48	0	-1.335092675	-0.002	44	0.05	compliant
-48	10	-1.39280055	-0.002	44	0.05	compliant
-48	30	-1.575838833	-0.002	44	0.05	compliant
-48	40	-0.847722768	-0.001	44	0.05	compliant
-48	50	2.09524158	0.002	44	0.05	compliant

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64QAM Modulation ANT1						
-48	-30	1.481381551	0.002	44	0.05	compliant
-48	-20	1.420735862	0.002	44	0.05	compliant
-48	-10	-1.536379714	-0.002	44	0.05	compliant
-48	0	1.508317364	0.002	44	0.05	compliant
-48	10	1.228007095	0.001	44	0.05	compliant
-48	30	-0.868916868	-0.001	44	0.05	compliant
-48	40	-1.75053472	-0.002	44	0.05	compliant
-48	50	-0.917760553	-0.001	44	0.05	compliant
64QAM Modulation ANT2						
-48	-30	-2.05556833	-0.002	44	0.05	compliant
-48	-20	2.016783474	0.002	44	0.05	compliant
-48	-10	-1.30290704	-0.001	44	0.05	compliant
-48	0	-1.426509771	-0.002	44	0.05	compliant
-48	10	-1.945035692	-0.002	44	0.05	compliant
-48	30	0.994392321	0.001	44	0.05	compliant
-48	40	-1.483948072	-0.002	44	0.05	compliant
-48	50	-1.429529548	-0.002	44	0.05	compliant
64QAM Modulation ANT3						
-48	-30	-1.654489897	-0.002	44	0.05	compliant
-48	-20	-2.255413638	-0.003	44	0.05	compliant
-48	-10	-1.258111006	-0.001	44	0.05	compliant
-48	0	2.625115376	0.003	44	0.05	compliant
-48	10	-1.327919599	-0.002	44	0.05	compliant
-48	30	-1.415131774	-0.002	44	0.05	compliant
-48	40	0.729002059	0.001	44	0.05	compliant
-48	50	-1.634793189	-0.002	44	0.05	compliant
64QAM Modulation ANT4						
-48	-30	1.328159487	0.002	44	0.05	compliant
-48	-20	1.112499667	0.001	44	0.05	compliant
-48	-10	-0.820843488	-0.001	44	0.05	compliant
-48	0	-1.334646076	-0.002	44	0.05	compliant
-48	10	-1.368693192	-0.002	44	0.05	compliant
-48	30	-1.164627793	-0.001	44	0.05	compliant
-48	40	-1.051394393	-0.001	44	0.05	compliant
-48	50	-1.196995363	-0.001	44	0.05	compliant
16QAM Modulation ANT1						
-48	-30	-1.94948836	-0.002	44	0.05	compliant
-48	-20	2.360340877	0.003	44	0.05	compliant
-48	-10	-1.663188741	-0.002	44	0.05	compliant
-48	0	1.088577847	0.001	44	0.05	compliant
-48	10	-1.504506872	-0.002	44	0.05	compliant
-48	30	-1.513431198	-0.002	44	0.05	compliant
-48	40	-1.800882237	-0.002	44	0.05	compliant
-48	50	-1.180194231	-0.001	44	0.05	compliant
16QAM Modulation ANT2						
-48	-30	-2.05556833	-0.002	44	0.05	compliant
-48	-20	-1.976905041	-0.002	44	0.05	compliant
-48	-10	0.760023395	0.001	44	0.05	compliant
-48	0	-1.122375033	-0.001	44	0.05	compliant

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-48	10	1.344101693	0.002	44	0.05	compliant
-48	30	1.09291308	0.001	44	0.05	compliant
-48	40	1.127594733	0.001	44	0.05	compliant
-48	50	-1.399432513	-0.002	44	0.05	compliant
16QAM Modulation ANT3						
-48	-30	1.199433209	0.001	44	0.05	compliant
-48	-20	-1.198798564	-0.001	44	0.05	compliant
-48	-10	-1.350384191	-0.002	44	0.05	compliant
-48	0	1.076222834	0.001	44	0.05	compliant
-48	10	-1.43451296	-0.002	44	0.05	compliant
-48	30	1.951444792	0.002	44	0.05	compliant
-48	40	-1.71898515	-0.002	44	0.05	compliant
-48	50	-1.040543975	-0.001	44	0.05	compliant
16QAM Modulation ANT4						
-48	-30	0.778587073	0.001	44	0.05	compliant
-48	-20	-1.632524727	-0.002	44	0.05	compliant
-48	-10	-1.527576205	-0.002	44	0.05	compliant
-48	0	1.298950956	0.001	44	0.05	compliant
-48	10	1.506023691	0.002	44	0.05	compliant
-48	30	-1.496654841	-0.002	44	0.05	compliant
-48	40	1.501322404	0.002	44	0.05	compliant
-48	50	-2.037332888	-0.002	44	0.05	compliant
256QAM Modulation ANT1						
-48	-30	-0.800731941	-0.001	44	0.05	compliant
-48	-20	-1.348801234	-0.002	44	0.05	compliant
-48	-10	-1.145318311	-0.001	44	0.05	compliant
-48	0	0.770383558	0.001	44	0.05	compliant
-48	10	-1.063199124	-0.001	44	0.05	compliant
-48	30	1.143566406	0.001	44	0.05	compliant
-48	40	-1.239054945	-0.001	44	0.05	compliant
-48	50	-1.494958269	-0.002	44	0.05	compliant
256QAM Modulation ANT2						
-48	-30	0.940001628	0.001	44	0.05	compliant
-48	-20	-1.954740801	-0.002	44	0.05	compliant
-48	-10	-1.476611396	-0.002	44	0.05	compliant
-48	0	1.301311422	0.001	44	0.05	compliant
-48	10	1.23358619	0.001	44	0.05	compliant
-48	30	2.914398865	0.003	44	0.05	compliant
-48	40	-2.052066266	-0.002	44	0.05	compliant
-48	50	1.351970313	0.002	44	0.05	compliant
256QAM Modulation ANT3						
-48	-30	1.870757187	0.002	44	0.05	compliant
-48	-20	1.429849544	0.002	44	0.05	compliant
-48	-10	1.057658774	0.001	44	0.05	compliant
-48	0	0.657389937	0.001	44	0.05	compliant
-48	10	-2.099203994	-0.002	44	0.05	compliant
-48	30	-1.45764745	-0.002	44	0.05	compliant
-48	40	1.779805352	0.002	44	0.05	compliant
-48	50	1.820778016	0.002	44	0.05	compliant
256QAM Modulation ANT4						

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-48	-30	-1.550964444	-0.002	44	0.05	compliant
-48	-20	-1.203112188	-0.001	44	0.05	compliant
-48	-10	-1.527576205	-0.002	44	0.05	compliant
-48	0	-1.421232446	-0.002	44	0.05	compliant
-48	10	-1.419209002	-0.002	44	0.05	compliant
-48	30	1.092162856	0.001	44	0.05	compliant
-48	40	-1.357483707	-0.002	44	0.05	compliant
-48	50	1.18495358	0.001	44	0.05	compliant

Table 47 Frequency stability with temp. var. (10 MHz Channel BW)

Config F:

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48.0	-30.0	-5.10833	-0.006	44	0.05	compliant
-48.0	-20.0	-4.84410	-0.005	44	0.05	compliant
-48.0	-10.0	-4.60608	-0.005	44	0.05	compliant
-48.0	0.0	-4.16364	-0.005	44	0.05	compliant
-48.0	10.0	-5.21255	-0.006	44	0.05	compliant
-48.0	30.0	-5.14881	-0.006	44	0.05	compliant
-48.0	40.0	-4.54603	-0.005	44	0.05	compliant
-48.0	50.0	-3.96088	-0.004	44	0.05	compliant
QPSK Modulation ANT3						
-48.0	-30.0	-5.88826	-0.007	44	0.05	compliant
-48.0	-20.0	-4.04211	-0.005	44	0.05	compliant
-48.0	-10.0	-5.33004	-0.006	44	0.05	compliant
-48.0	0.0	-5.35517	-0.006	44	0.05	compliant
-48.0	10.0	-5.63604	-0.006	44	0.05	compliant
-48.0	30.0	-4.38100	-0.005	44	0.05	compliant
-48.0	40.0	-3.96088	-0.004	44	0.05	compliant
-48.0	50.0	-3.91836	-0.004	44	0.05	compliant
16QAM Modulation ANT1						
-48.0	-30.0	-3.92378	-0.004	44	0.05	compliant
-48.0	-20.0	-3.52943	-0.004	44	0.05	compliant
-48.0	-10.0	-4.56532	-0.005	44	0.05	compliant
-48.0	0.0	-2.84678	-0.003	44	0.05	compliant
-48.0	10.0	-5.25395	-0.006	44	0.05	compliant
-48.0	30.0	-4.13804	-0.005	44	0.05	compliant
-48.0	40.0	-3.57788	-0.004	44	0.05	compliant
-48.0	50.0	-3.75582	-0.004	44	0.05	compliant





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16QAM Modulation ANT3						
-48.0	-30.0	-4.26195	-0.005	44	0.05	compliant
-48.0	-20.0	-2.86669	-0.003	44	0.05	compliant
-48.0	-10.0	-3.71805	-0.004	44	0.05	compliant
-48.0	0.0	-4.60431	-0.005	44	0.05	compliant
-48.0	10.0	-5.08668	-0.006	44	0.05	compliant
-48.0	30.0	-3.94281	-0.004	44	0.05	compliant
-48.0	40.0	-3.75582	-0.004	44	0.05	compliant
-48.0	50.0	-2.91845	-0.003	44	0.05	compliant
64QAM Modulation ANT1						
-48	-30	3.84916	0.004	44	0.05	compliant
-48	-20	4.92876	0.006	44	0.05	compliant
-48	-10	3.75687	0.004	44	0.05	compliant
-48	0	4.06374	0.005	44	0.05	compliant
-48	10	2.61910	0.003	44	0.05	compliant
-48	30	2.55984	0.003	44	0.05	compliant
-48	40	4.16429	0.005	44	0.05	compliant
-48	50	3.32989	0.004	44	0.05	compliant
64QAM Modulation ANT3						
-48	-30	4.00564	0.005	44	0.05	compliant
-48	-20	3.86214	0.004	44	0.05	compliant
-48	-10	3.74357	0.004	44	0.05	compliant
-48	0	3.93131	0.004	44	0.05	compliant
-48	10	2.52769	0.003	44	0.05	compliant
-48	30	3.50168	0.004	44	0.05	compliant
-48	40	3.32989	0.004	44	0.05	compliant
-48	50	3.72206	0.004	44	0.05	compliant
256QAM Modulation ANT1						
-48	-30	-3.88155	-0.004	44	0.05	compliant
-48	-20	-3.73191	-0.004	44	0.05	compliant
-48	-10	-3.24730	-0.004	44	0.05	compliant
-48	0	-3.68592	-0.004	44	0.05	compliant
-48	10	-4.64719	-0.005	44	0.05	compliant
-48	30	-2.82952	-0.003	44	0.05	compliant
-48	40	-3.77030	-0.004	44	0.05	compliant
-48	50	-2.58021	-0.003	44	0.05	compliant
256QAM Modulation ANT3						
-48	-30	-3.44729	-0.004	44	0.05	compliant
-48	-20	-2.38345	-0.003	44	0.05	compliant
-48	-10	-2.64802	-0.003	44	0.05	compliant
-48	0	-3.57921	-0.004	44	0.05	compliant





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-48	10	-4.17883	-0.005	44	0.05	compliant
-48	30	-2.45691	-0.003	44	0.05	compliant
-48	40	-2.58021	-0.003	44	0.05	compliant
-48	50	-3.23100	-0.004	44	0.05	compliant
Measurement Uncertainty:						±1.0 Hz

**Table 48 Frequency stability with temp. var. (5MHz Channel BW)**

**Config I:**

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-48.0	-30.0	2.49004	0.003	44	0.05	compliant
-48.0	-20.0	2.23680	0.003	44	0.05	compliant
-48.0	-10.0	-2.23853	-0.003	44	0.05	compliant
-48.0	0.0	2.88531	0.003	44	0.05	compliant
-48.0	10.0	-2.27421	-0.003	44	0.05	compliant
-48.0	30.0	-2.07673	-0.002	44	0.05	compliant
-48.0	40.0	2.76774	0.003	44	0.05	compliant
-48.0	50.0	2.50931	0.003	44	0.05	compliant
QPSK Modulation ANT3						
-48.0	-30.0	-2.52707	-0.003	44	0.05	compliant
-48.0	-20.0	2.47589	0.003	44	0.05	compliant
-48.0	-10.0	2.46247	0.003	44	0.05	compliant
-48.0	0.0	-2.10588	-0.002	44	0.05	compliant
-48.0	10.0	-2.88306	-0.003	44	0.05	compliant
-48.0	30.0	2.68138	0.003	44	0.05	compliant
-48.0	40.0	2.17141	0.002	44	0.05	compliant
-48.0	50.0	2.58206	0.003	44	0.05	compliant
16QAM Modulation ANT1						
-48.0	-30.0	-2.13818	-0.002	44	0.05	compliant
-48.0	-20.0	2.08818	0.002	44	0.05	compliant
-48.0	-10.0	2.27180	0.003	44	0.05	compliant
-48.0	0.0	2.21580	0.003	44	0.05	compliant
-48.0	10.0	-2.01532	-0.002	44	0.05	compliant
-48.0	30.0	-2.08758	-0.002	44	0.05	compliant
-48.0	40.0	2.25622	0.003	44	0.05	compliant
-48.0	50.0	2.04129	0.002	44	0.05	compliant
16QAM Modulation ANT3						
-48.0	-30.0	2.44835	0.003	44	0.05	compliant



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-48.0	-20.0	-2.67468	-0.003	44	0.05	compliant
-48.0	-10.0	-1.93763	-0.002	44	0.05	compliant
-48.0	0.0	3.73781	0.004	44	0.05	compliant
-48.0	10.0	-2.44450	-0.003	44	0.05	compliant
-48.0	30.0	2.74731	0.003	44	0.05	compliant
-48.0	40.0	-1.41795	-0.002	44	0.05	compliant
-48.0	50.0	-1.96905	-0.002	44	0.05	compliant
64QAM Modulation ANT1						
-48	-30	2.04476	0.002	44	0.05	compliant
-48	-20	-1.92876	-0.002	44	0.05	compliant
-48	-10	-1.38841	-0.002	44	0.05	compliant
-48	0	-1.29763	-0.001	44	0.05	compliant
-48	10	-1.43782	-0.002	44	0.05	compliant
-48	30	-1.80996	-0.002	44	0.05	compliant
-48	40	-1.46353	-0.002	44	0.05	compliant
-48	50	-2.01913	-0.002	44	0.05	compliant
64QAM Modulation ANT3						
-48	-30	1.06581	0.001	44	0.05	compliant
-48	-20	-1.98500	-0.002	44	0.05	compliant
-48	-10	-2.17751	-0.002	44	0.05	compliant
-48	0	-1.33491	-0.002	44	0.05	compliant
-48	10	1.96106	0.002	44	0.05	compliant
-48	30	1.38517	0.002	44	0.05	compliant
-48	40	1.90058	0.002	44	0.05	compliant
-48	50	-2.77813	-0.003	44	0.05	compliant
256QAM Modulation ANT1						
-48	-30	2.36946	0.003	44	0.05	compliant
-48	-20	2.20329	0.002	44	0.05	compliant
-48	-10	2.99582	0.003	44	0.05	compliant
-48	0	2.81931	0.003	44	0.05	compliant
-48	10	3.08037	0.003	44	0.05	compliant
-48	30	2.78481	0.003	44	0.05	compliant
-48	40	2.99953	0.003	44	0.05	compliant
-48	50	2.37092	0.003	44	0.05	compliant
256QAM Modulation ANT3						
-48	-30	2.54673	0.003	44	0.05	compliant
-48	-20	1.96207	0.002	44	0.05	compliant
-48	-10	2.27746	0.003	44	0.05	compliant
-48	0	2.70224	0.003	44	0.05	compliant
-48	10	2.73911	0.003	44	0.05	compliant
-48	30	3.04108	0.003	44	0.05	compliant

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-48	40	2.71299	0.003	44	0.05	compliant
-48	50	-2.05315	-0.002	44	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 49 Frequency stability with temp. var. (10MHz Channel BW)**



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**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: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-40.8	20	-2.933078504	-0.003	44	0.05	compliant
-48.0	20	-1.917164554	-0.002	44	0.05	compliant
-55.2	20	3.186110916	0.004	44	0.05	compliant
QPSK Modulation ANT2						
-40.8	20	-1.706880066	-0.002	44	0.05	compliant
-48.0	20	-2.648109075	-0.003	44	0.05	compliant
-55.2	20	-3.928166261	-0.004	44	0.05	compliant
QPSK Modulation ANT3						
-40.8	20	-1.728071657	-0.002	44	0.05	compliant
-48.0	20	-3.388159093	-0.004	44	0.05	compliant
-55.2	20	-1.305024125	-0.001	44	0.05	compliant
QPSK Modulation ANT4						
-40.8	20	-1.3784452	-0.002	44	0.05	compliant
-48.0	20	-3.09136	-0.004	44	0.05	compliant
-55.2	20	-1.67973	-0.002	44	0.05	compliant
64QAM Modulation ANT1						
-40.8	20	2.363939639	0.003	44	0.05	compliant
-48.0	20	0.996849158	0.001	44	0.05	compliant
-55.2	20	-3.296049399	-0.004	44	0.05	compliant
64QAM Modulation ANT2						
-40.8	20	1.573418558	0.002	44	0.05	compliant
-48.0	20	2.64651324	0.003	44	0.05	compliant
-55.2	20	2.355148026	0.003	44	0.05	compliant
64QAM Modulation ANT3						
-40.8	20	1.202210942	0.001	44	0.05	compliant
-48.0	20	1.434903461	0.002	44	0.05	compliant
-55.2	20	-1.802944425	-0.002	44	0.05	compliant
64QAM Modulation ANT4						
-40.8	20	2.661454637	0.003	44	0.05	compliant
-48.0	20	-1.502859632	-0.002	44	0.05	compliant
-55.2	20	-1.765015	-0.002	44	0.05	compliant
64QAM Modulation ANT1						
-40.8	20	2.363939639	0.003	44	0.05	compliant
-48.0	20	0.996849158	0.001	44	0.05	compliant
-55.2	20	-3.296049399	-0.004	44	0.05	compliant
64QAM Modulation ANT2						





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-40.8	20	1.573418558	0.002	44	0.05	compliant
-48.0	20	2.64651324	0.003	44	0.05	compliant
-55.2	20	2.355148026	0.003	44	0.05	compliant
64QAM Modulation ANT3						
-40.8	20	1.202210942	0.001	44	0.05	compliant
-48.0	20	1.434903461	0.002	44	0.05	compliant
-55.2	20	-1.802944425	-0.002	44	0.05	compliant
64QAM Modulation ANT4						
-40.8	20	2.661454637	0.003	44	0.05	compliant
-48.0	20	-1.502859632	-0.002	44	0.05	compliant
-55.2	20	-1.765015	-0.002	44	0.05	compliant
16QAM Modulation ANT1						
-40.8	20	-1.662316281	-0.002	44	0.05	compliant
-48.0	20	-3.012837551	-0.003	44	0.05	compliant
-55.2	20	-2.647491783	-0.003	44	0.05	compliant
16QAM Modulation ANT2						
-40.8	20	-2.955688688	-0.003	44	0.05	compliant
-48.0	20	-2.127725602	-0.002	44	0.05	compliant
-55.2	20	-3.037398274	-0.003	44	0.05	compliant
16QAM Modulation ANT3						
-40.8	20	-1.91738829	-0.002	44	0.05	compliant
-48.0	20	2.476485242	0.003	44	0.05	compliant
-55.2	20	-1.728371572	-0.002	44	0.05	compliant
16QAM Modulation ANT4						
-40.8	20	-1.77268893	-0.002	44	0.05	compliant
-48.0	20	-2.172694294	-0.002	44	0.05	compliant
-55.2	20	-2.270889381	-0.003	44	0.05	compliant
256QAM Modulation ANT1						
-40.8	20	-2.351844596	-0.003	44	0.05	compliant
-48.0	20	-1.884997037	-0.002	44	0.05	compliant
-55.2	20	-3.885071492	-0.004	44	0.05	compliant
256QAM Modulation ANT2						
-40.8	20	1.188853021	0.001	44	0.05	compliant
-48.0	20	-1.651852217	-0.002	44	0.05	compliant
-55.2	20	-2.506971141	-0.003	44	0.05	compliant
256QAM Modulation ANT3						
-40.8	20	-1.418791435	-0.002	44	0.05	compliant
-48.0	20	1.684921881	0.002	44	0.05	compliant
-55.2	20	-1.90627983	-0.002	44	0.05	compliant
256QAM Modulation ANT4						
-40.8	20	1.183357308	0.001	44	0.05	compliant
-48.0	20	2.57757536	0.003	44	0.05	compliant
-55.2	20	1.676245083	0.002	44	0.05	compliant

Table 50 Frequency stability with voltage var. (5 MHz Channel BW)



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**Config D:**

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-40.8	20	-1.4422117	-0.002	44	0.05	compliant
-48.0	20	-0.8812522	-0.001	44	0.05	compliant
-55.2	20	-2.0227523	-0.002	44	0.05	compliant
QPSK Modulation ANT2						
-40.8	20	1.7440947	0.002	44	0.05	compliant
-48.0	20	-1.1694417	-0.001	44	0.05	compliant
-55.2	20	-1.2263933	-0.001	44	0.05	compliant
QPSK Modulation ANT3						
-40.8	20	-1.8297243	-0.002	44	0.05	compliant
-48.0	20	1.3477092	0.002	44	0.05	compliant
-55.2	20	-1.3367538	-0.002	44	0.05	compliant
QPSK Modulation ANT4						
-40.8	20	1.6691295	0.002	44	0.05	compliant
-48.0	20	-1.775678	-0.002	44	0.05	compliant
-55.2	20	-1.6774146	-0.002	44	0.05	compliant
64QAM Modulation ANT1						
-40.8	20	0.9117784	0.001	44	0.05	compliant
-48.0	20	-1.2879233	-0.001	44	0.05	compliant
-55.2	20	-1.1733975	-0.001	44	0.05	compliant
64QAM Modulation ANT2						
-40.8	20	1.5684467	0.002	44	0.05	compliant
-48.0	20	-1.433651	-0.002	44	0.05	compliant
-55.2	20	-0.7319063	-0.001	44	0.05	compliant
64QAM Modulation ANT3						
-40.8	20	-1.7706306	-0.002	44	0.05	compliant
-48.0	20	-2.5803471	-0.003	44	0.05	compliant
-55.2	20	-0.8769997	-0.001	44	0.05	compliant
64QAM Modulation ANT4						
-40.8	20	-1.4221219	-0.002	44	0.05	compliant
-48.0	20	-1.4661263	-0.002	44	0.05	compliant
-55.2	20	-1.5939579	-0.002	44	0.05	compliant
16QAM Modulation ANT1						
-40.8	20	2.0449807	0.002	44	0.05	compliant
-48	20	1.8467657	0.002	44	0.05	compliant

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-55.2	20	1.1447329	0.001	44	0.05	compliant
16QAM Modulation ANT2						
-40.8	20	-1.2113688	-0.001	44	0.05	compliant
-48.0	20	-1.7120803	-0.002	44	0.05	compliant
-55.2	20	-1.4044767	-0.002	44	0.05	compliant
16QAM Modulation ANT3						
-40.8	20	-1.7749996	-0.002	44	0.05	compliant
-48.0	20	-1.7717993	-0.002	44	0.05	compliant
-55.2	20	1.147552	0.001	44	0.05	compliant
16QAM Modulation ANT4						
-40.8	20	1.8888514	0.002	44	0.05	compliant
-48.0	20	-1.325281	-0.002	44	0.05	compliant
-55.2	20	-2.2907925	-0.003	44	0.05	compliant
256QAM Modulation ANT1						
-40.8	20	2.0649336	0.002	44	0.05	compliant
-48.0	20	1.7471898	0.002	44	0.05	compliant
-55.2	20	-1.452876	-0.002	44	0.05	compliant
256QAM Modulation ANT2						
-40.8	20	1.9663019	0.002	44	0.05	compliant
-48	20	1.5729687	0.002	44	0.05	compliant
-55.2	20	-0.946414	-0.001	44	0.05	compliant
256QAM Modulation ANT3						
-40.8	20	1.9311202	0.002	44	0.05	compliant
-48.0	20	-1.0384429	-0.001	44	0.05	compliant
-55.2	20	1.1124102	0.001	44	0.05	compliant
256QAM Modulation ANT4						
-40.8	20	1.893888	0.002	44	0.05	compliant
-48.0	20	-2.0537252	-0.002	44	0.05	compliant
-55.2	20	-1.0037399	-0.001	44	0.05	compliant

Table 51 Frequency stability with voltage var. (10 MHz Channel BW)

Config F:

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						

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-40.8	20.0	-5.24319	-0.003	44	0.05	compliant
-48.0	20.0	-3.58320	-0.005	44	0.05	compliant
-55.2	20.0	-4.37091	-0.005	44	0.05	compliant
QPSK Modulation ANT3						
-40.8	20.0	-4.31800	-0.005	44	0.05	compliant
-48.0	20.0	-4.63117	-0.005	44	0.05	compliant
-55.2	20.0	-4.68519	-0.005	44	0.05	compliant
16QAM Modulation ANT1						
-40.8	20.0	-3.59993	-0.004	44	0.05	compliant
-48.0	20.0	-4.26018	-0.005	44	0.05	compliant
-55.2	20.0	-3.49168	-0.004	44	0.05	compliant
16QAM Modulation ANT3						
-40.8	20.0	-2.73028	-0.003	44	0.05	compliant
-48.0	20.0	-4.62577	-0.005	44	0.05	compliant
-55.2	20.0	-4.38630	-0.005	44	0.05	compliant
64QAM Modulation ANT1						
-40.8	20	4.19708	0.005	44	0.05	compliant
-48	20	3.43944	0.004	44	0.05	compliant
-55.2	20	3.10971	0.004	44	0.05	compliant
64QAM Modulation ANT3						
-40.8	20	3.03010	0.003	44	0.05	compliant
-48	20	3.23680	0.004	44	0.05	compliant
-55.2	20	3.10393	0.004	44	0.05	compliant
256QAM Modulation ANT1						
-40.8	20	-2.97941	-0.003	44	0.05	compliant
-48	20	-2.73621	-0.003	44	0.05	compliant
-55.2	20	-4.86761	-0.006	44	0.05	compliant
256QAM Modulation ANT3						
-40.8	20	-3.06775	-0.003	44	0.05	compliant
-48	20	-3.48453	-0.004	44	0.05	compliant
-55.2	20	-3.53413	-0.004	44	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

Table 52 Frequency stability with voltage var. (5 MHz Channel BW)

Config I:

Carrier Frequency: 881.5 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation ANT1						
-40.8	20.0	2.57786	0.003	44	0.05	compliant





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-48.0	20.0	2.96977	0.003	44	0.05	compliant
-55.2	20.0	2.48808	0.003	44	0.05	compliant
QPSK Modulation ANT3						
-40.8	20.0	1.75619	0.002	44	0.05	compliant
-48.0	20.0	3.15848	0.004	44	0.05	compliant
-55.2	20.0	2.66420	0.003	44	0.05	compliant
16QAM Modulation ANT1						
-40.8	20.0	2.45455	0.003	44	0.05	compliant
-48.0	20.0	-1.88580	-0.002	44	0.05	compliant
-55.2	20.0	2.48690	0.003	44	0.05	compliant
16QAM Modulation ANT3						
-40.8	20.0	-2.25097	-0.003	44	0.05	compliant
-48.0	20.0	-2.34068	-0.003	44	0.05	compliant
-55.2	20.0	2.75481	0.003	44	0.05	compliant
64QAM Modulation ANT1						
-40.8	20	-2.14413	-0.002	44	0.05	compliant
-48	20	-1.44975	-0.002	44	0.05	compliant
-55.2	20	-1.92275	-0.002	44	0.05	compliant
64QAM Modulation ANT3						
-40.8	20	-2.61187	-0.003	44	0.05	compliant
-48	20	-2.28422	-0.003	44	0.05	compliant
-55.2	20	-2.23262	-0.003	44	0.05	compliant
256QAM Modulation ANT1						
-40.8	20	2.66021	0.003	44	0.05	compliant
-48	20	2.36483	0.003	44	0.05	compliant
-55.2	20	2.15252	0.002	44	0.05	compliant
256QAM Modulation ANT3						
-40.8	20	3.70613	0.004	44	0.05	compliant
-48	20	2.76950	0.003	44	0.05	compliant
-55.2	20	2.44173	0.003	44	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 53 Frequency stability with voltage var. (10 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.



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## 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 13	101041	01/2017	01/2018	1, 2, 3, 4, 6
2	Signal Analyzer	Rohde & Schwarz: FSQ 26	100363	01/2017	01/2018	1, 2, 3, 4, 6
3	Vector Network Analyzer	Rohde & Schwarz: ZVA40	100146	01/2017	01/2018	1, 2, 3, 4, 6
4	Vector Network Analyzer	Rohde & Schwarz: ZVL13	101177	07/2016	07/2017	1, 2, 3, 4, 6
5	Calibration Unit	Rohde & Schwarz: ZV-Z54	100125	06/2016	06/2017	1, 2, 3, 4, 6
6	Calibration Kit	Hewlett-Packard: HP85032B	2919A04843	07/2016	07/2017	1, 2, 3, 4, 6
7	Frequency Standard	Datum 8040	41005473	01/2017	01/2018	6
8	Frequency Standard	Datum 8040	23006282	07/2016	07/2017	6
9	Multimeter	Fluke 83	65870302	12/2016	12/2017	1, 2, 3, 4, 6
10	Humidity and Temperature Indicator	Vaisala: HMI 31	P3730008	01/2017	01/2018	1, 2, 3, 4, 6
11	DC Power Supply	Maxion: EA-PSI 8080-510	13314600001	cnn	-	1, 2, 3, 4, 6
12	DC Power Supply	SGI 80/188	0525A00547	cnn	-	1, 2, 3, 4, 6
13	Attenuator	Aeroflex/Weinschel: 66-20-33	CF0630	cnn	-	1, 2, 3, 4, 6
14	Attenuator	Aeroflex/Weinschel: 66-10-34	CE6853	cnn	-	1, 2, 3, 4, 6
15	Attenuator	Aeroflex/Weinschel: 66-20-33	BW3346	cnn	-	1, 2, 3, 4, 6
16	Attenuator	Aeroflex/Weinschel: 66-10-34	BK1136	cnn	-	1, 2, 3, 4, 6
16	EMI Test Receiver	R&S ESU40	100262/040	05/2016	05/2017	5
17	Horn Antenna	ETS-Lindgren 3116C-PA	00206990	09/2016	09/2017	5
18	Horn Antenna	ETS-Lindgren ETS3115	92148	06/2016	06/2017	5
19	Bilog Antenna	Schaffner Chase CBL6112B	2003	06/2016	06/2017	5
20	Humidity and temperature meter	Vaisala HM34	G3330003	05/2016	05/2017	5
21	Mast Controller	Maturo NCD/180 2	17210416	cnn	-	5
22	4 meter mast	Maturo TAM4.0-E	086/17210915	cnn	-	5

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23	Anechoic Chamber	S&MC	B83317-C6019	09/2016	09/2019	5
24	Amplifier	Miteq 4FSX4	902638	cnn	-	5

**Table 54 Part List of the RF Measurement Test Equipment**



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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 28.

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

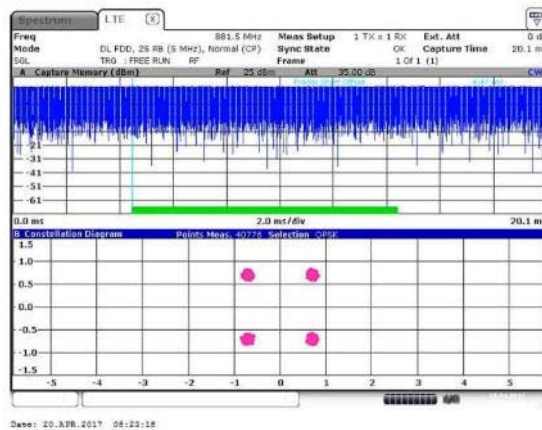


Figure 5 I/Q constellation diagram with capture buffer – QPSK (881.5 MHz) (5MHz Channel BW)

Result Summary					
	Min	Mean	Limit	Max	Unit
Frame Result 1/1					
EVM PDSCH QPSK	4.60	4.50		4.60	%
EVM PDSCH 16QAM				13.50	%
EVM PDSCH 64QAM				9.00	%
EVM PDSCH 256QAM					%
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 Result 1/1
EVM All		3.56	4.55		4.95
EVM Phys. Channel		3.61	4.57		4.99
EVM Phys. Signal		2.99	4.20		5.21
Frequency Error		-3.57	-1.65		1.60
Sampling Error		-2.28	0.20		1.79
IQ Offset		-73.73	-62.99		-56.42
IQ Gain Imbalance		-0.04	-0.00		0.02
IQ Quadrature Error		-0.01	0.06		0.19
RISF		-9.60	-9.55		-9.50
OSTP		15.15	15.19		15.25
Power		15.14	15.20		15.25
Crest Factor			6.71		

Figure 6 I/Q constellation table with I/Q error – QPSK (881.5 MHz) (5 MHz Channel BW)





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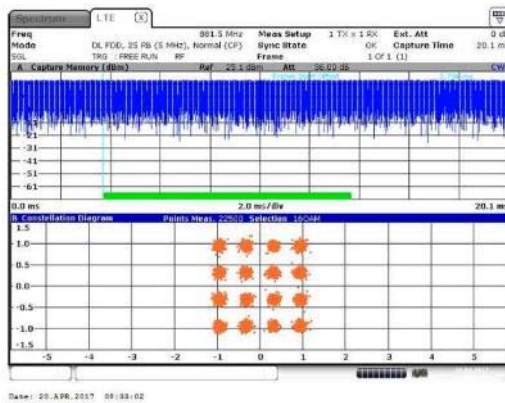


Figure 7 I/Q constellation diagram with capture buffer – 16QAM (881.5 MHz) (5 MHz Channel BW)

Result Summary					
Frame Result 1/1	Min	Mean	Limit	Max	Limit
EVM PDSCH QPSK	3.53	3.33		3.33	19.50 %
EVM PDSCH 16QAM	6.18	6.18		6.18	13.50 %
EVM PDSCH 64QAM					9.00 %
EVM PDSCH 256QAM					%
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 Result 1/1	
EVM All	4.23	5.22		5.82	%
EVM Phys. Channel	4.21	5.24		5.70	%
EVM Phys. Signal	3.68	4.72		7.34	%
Frequency Error	-2.50	-0.76		1.25	Hz
Sampling Error	-1.33	0.09		1.34	ppm
IQ Offset	-76.35	-63.14		-57.78	dB
IQ Gain Imbalance	-0.02	0.01		0.03	dB
IQ Quadrature Error	-0.14	0.01		0.00	°
RSTP	-9.69	-9.69		-9.60	dBm
OSFP	14.93	15.12		15.24	dBm
Power	15.05	15.14		15.17	dBm
Crest Factor		6.72			dB

Figure 8 I/Q constellation table with I/Q error – 16QAM (881.5 MHz) (5 MHz Channel BW)



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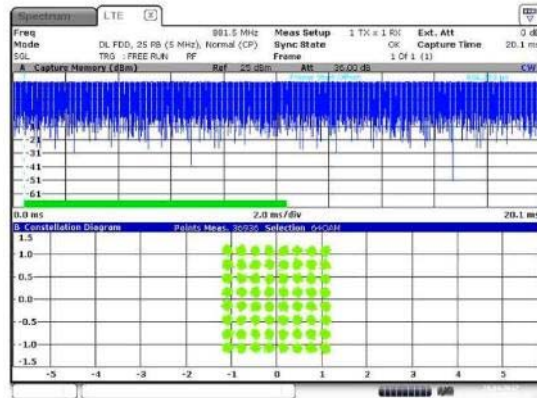


Figure 9 I/Q constellation diagram with capture buffer – 64QAM (881.5 MHz) (5 MHz Channel BW)

Result Summary						
Frame Result 1/1	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK					10.50	%
EVM PDSCH 16QAM					13.50	%
EVM PDSCH 64QAM	4.44	4.44		4.44	9.00	%
EVM PDSCH 256QAM						%
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 Result 1/1	
EVM All	3.92	4.42		5.32		%
EVM Phys. Channel	3.85	4.41		5.30		%
EVM Phys. Signal	2.95	4.62		5.85		%
Frequency Error	-0.85	0.87		4.21		Hz
Sampling Error	-0.57	0.71		1.72		ppm
IQ Offset	-78.42	-65.37		-55.83		dB
IQ Gain Imbalance	-0.04	0.00		0.03		dB
IQ Quadrature Error	-0.29	-0.10		0.15		°
RSTP	-9.60	-9.55		-9.52		dBm
OSTP	15.04	15.22		15.40		dBm
Power	15.14	15.23		15.26		dBm
Crest Factor		6.72				dB

Figure 10 I/Q constellation table with I/Q error – 64QAM (881.5 MHz) (5 MHz Channel BW)



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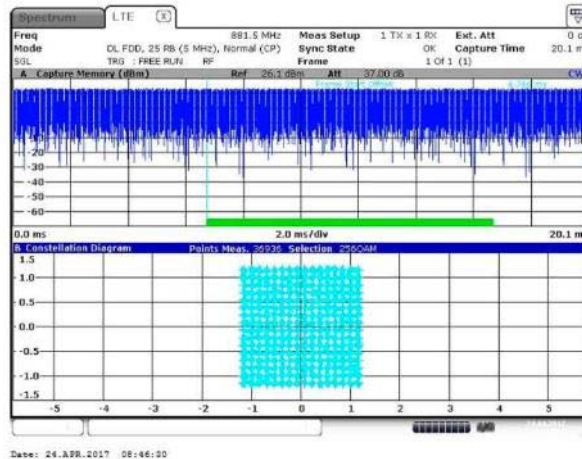


Figure 11 I/Q constellation diagram with capture buffer – 256QAM (881.5 MHz) (5 MHz Channel BW)

Result Summary						
Frame Result 1/1	Min	Mean	Limit	Max	Limit	Units
EVM PDSCH QPSK					19.50	%
EVM PDSCH 16QAM					13.50	%
EVM PDSCH 64QAM					9.00	%
EVM PDSCH 256QAM	2.41	2.41		2.41		%
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 Result 1/1	
EVM All	1.97	2.36		2.78		%
EVM Phys. Channel	1.98	2.38		2.84		%
EVM Phys. Signal	1.24	2.02		3.07		%
Frequency Error	-1.74	-0.25		1.37		Hz
Sampling Error	-0.16	0.21		0.99		ppm
IQ Offset	-82.76	-69.71		-62.36		dB
IQ Gain Imbalance	-0.02	0.00		0.02		dB
IQ Quadrature Error	-0.11	0.04		0.18		°
RSTP	-9.51	-9.49		-9.46		dBm
OSTP	15.15	15.29		15.52		dBm
Power	15.12	15.25		15.32		dBm
Crest Factor		7.97				dB

Figure 12 I/Q constellation table with I/Q error – 16QAM (881.5 MHz) (5 MHz Channel BW)



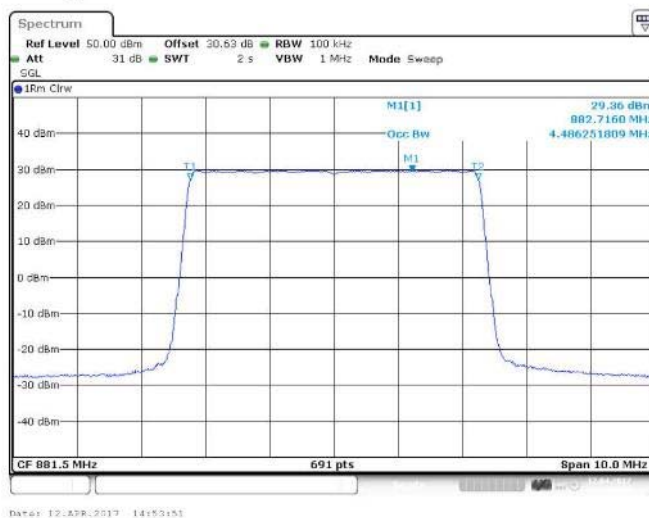
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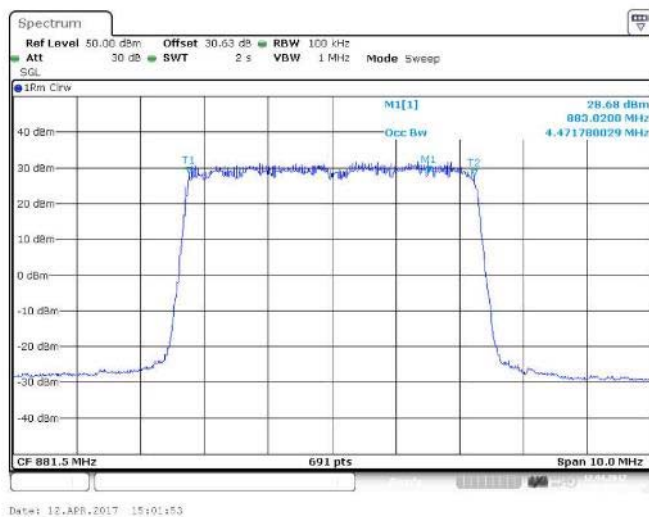
**5.2.2. Test No. 3: Occupied Bandwidth**

The value ‘Occ BW’ is the measured occupied bandwidth.

**Config A ANT1:**



**Figure 13 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)**



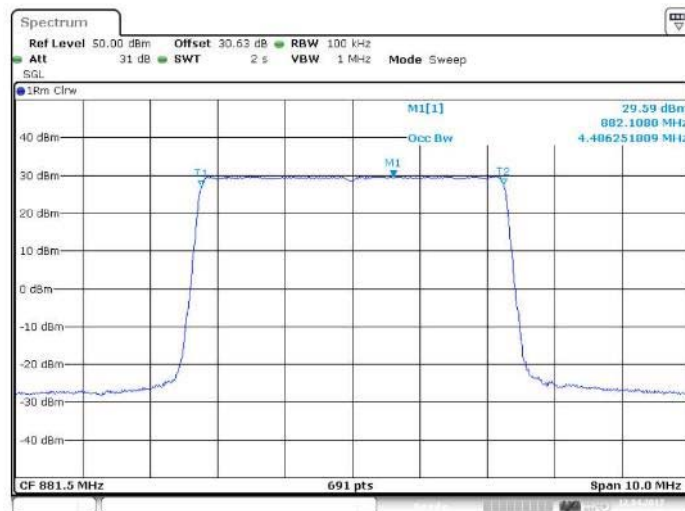
**Figure 14 Occupied Bandwidth – 16QAM (881.5 MHz) (5 MHz Channel BW)**





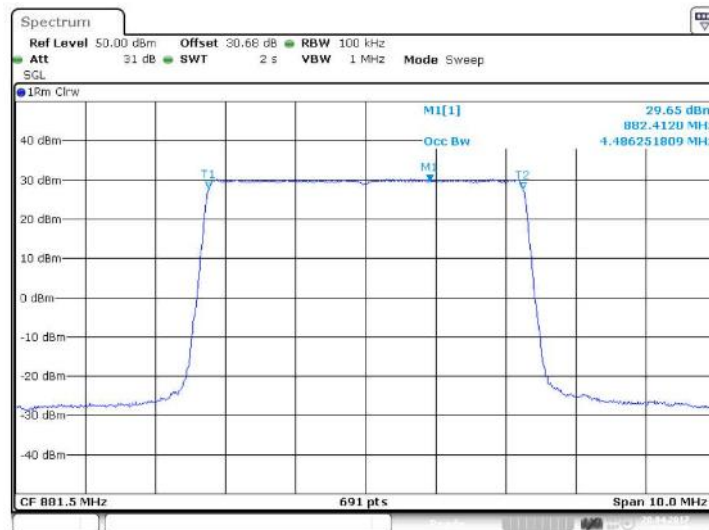
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Date: 12.APR.2017 14:59:02

Figure 15 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)



Date: 20.APR.2017 13:14:39

Figure 16 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)



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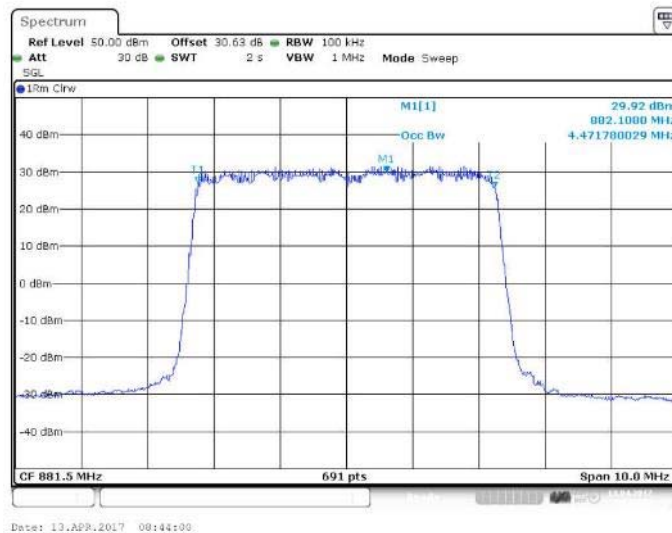
FCC ID:  
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Test Report No:  
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**Config A ANT2:**



**Figure 17 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)**

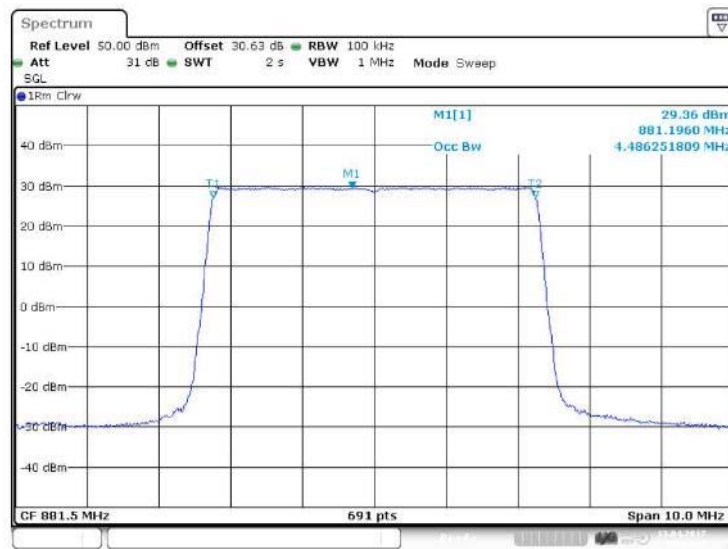


**Figure 18 Occupied Bandwidth – 16QAM (881.5 MHz) (5MHz Channel BW)**



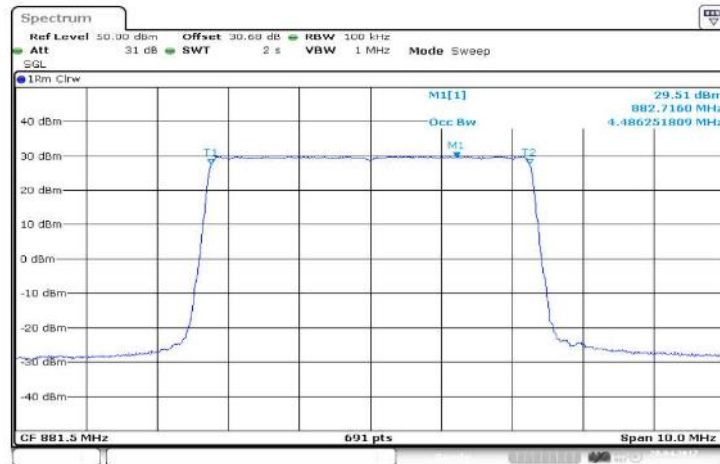
FCC ID:  
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Date: 13.APR.2017 08:40:47

Figure 19 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)



Date: 20.APR.2017 13:31:52

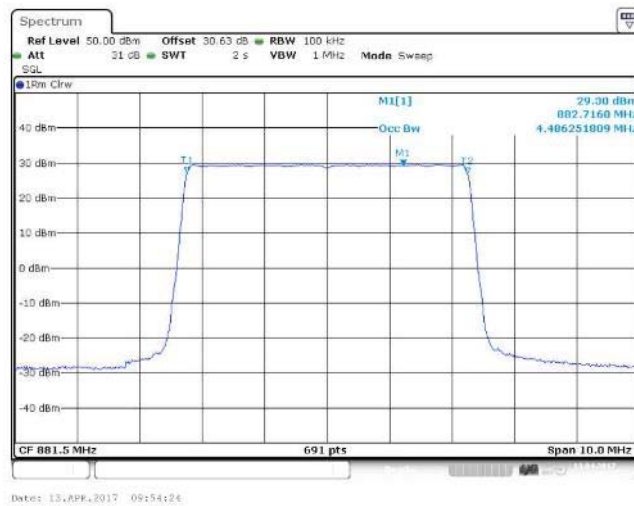
Figure 20 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)



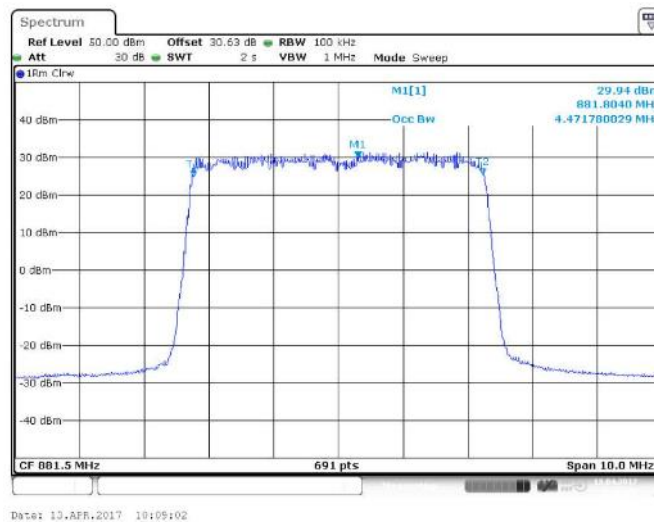
FCC ID:  
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**Config A ANT3:**



**Figure 21 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)**



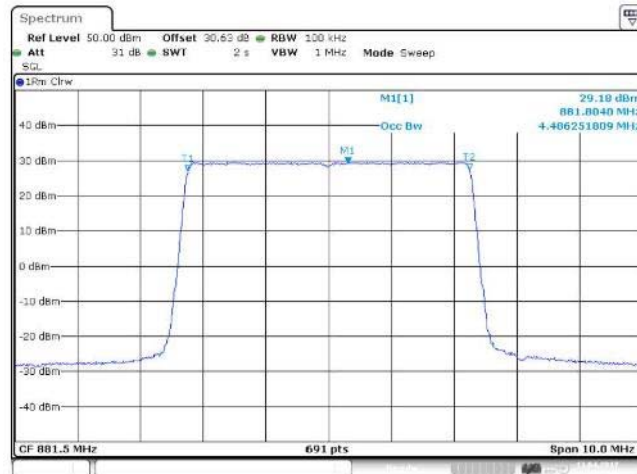
**Figure 22 Occupied Bandwidth – 16QAM (881.5 MHz) (5 MHz Channel BW)**





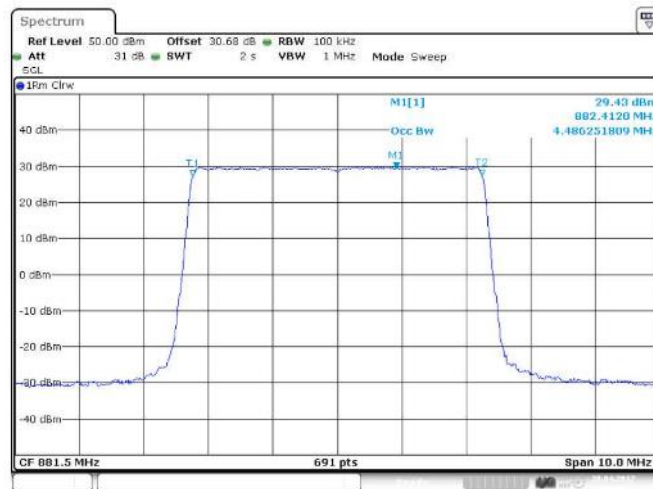
FCC ID:  
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Date: 19.APR.2017 10:03:59

Figure 23 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)



Date: 20.APR.2017 13:46:21

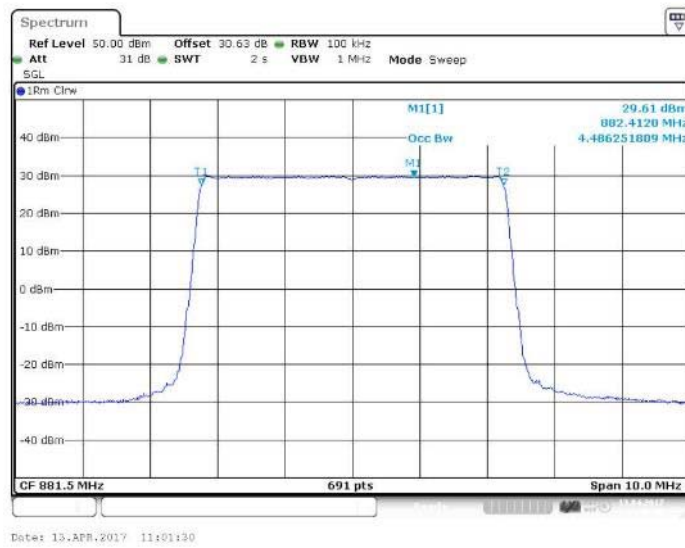
Figure 24 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)



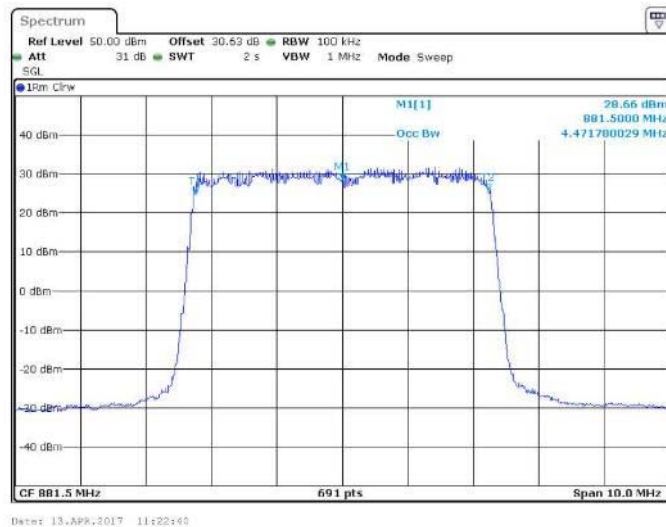
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**Config A ANT4:**



**Figure 25 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)**



**Figure 26 Occupied Bandwidth – 16QAM (881.5 MHz) (5 MHz Channel BW)**



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Figure 27 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)

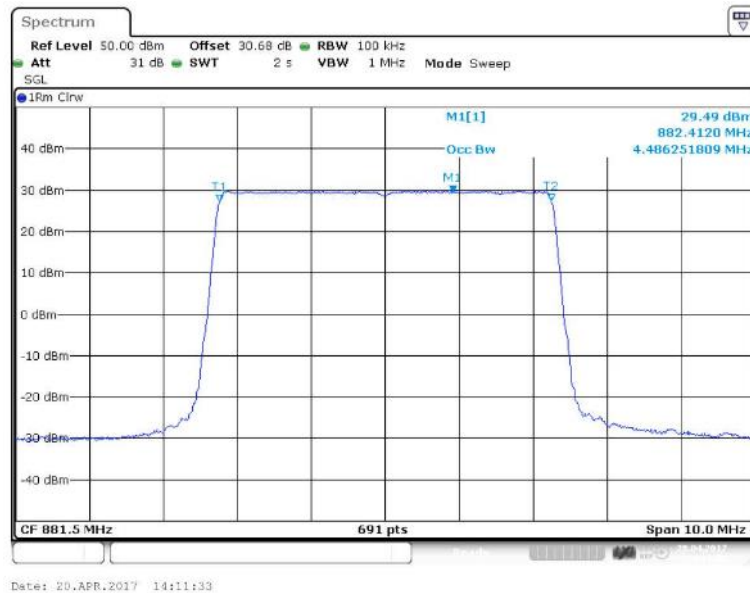


Figure 28 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)

**Config B ANT1:**

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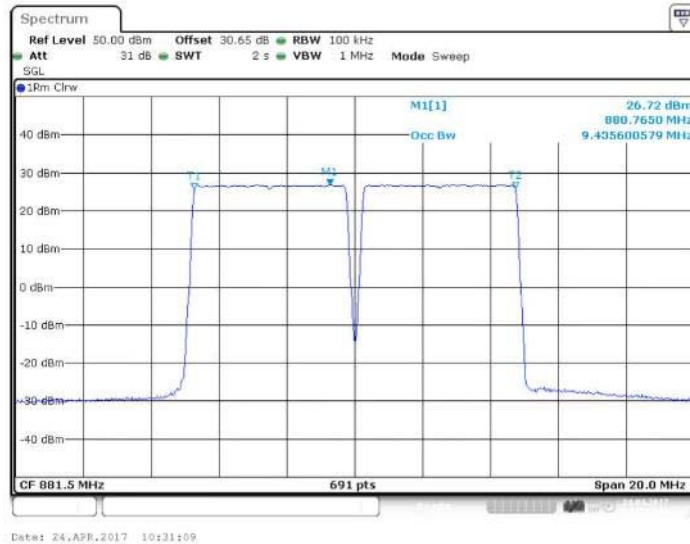


Figure 29 Occupied Bandwidth – QPSK (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)

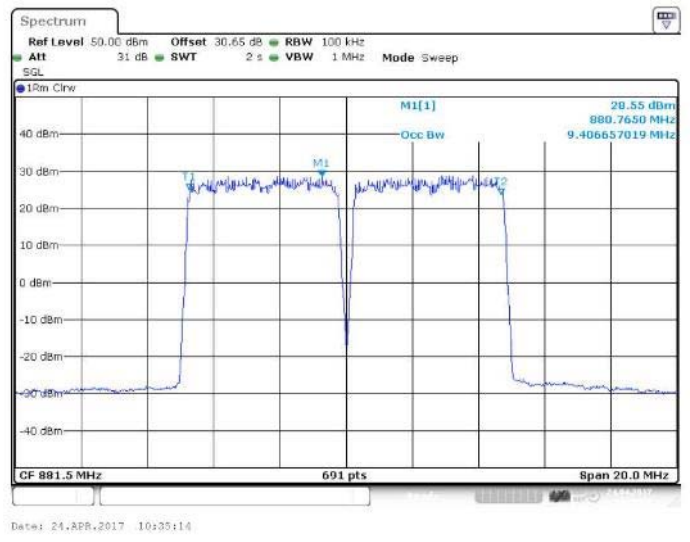


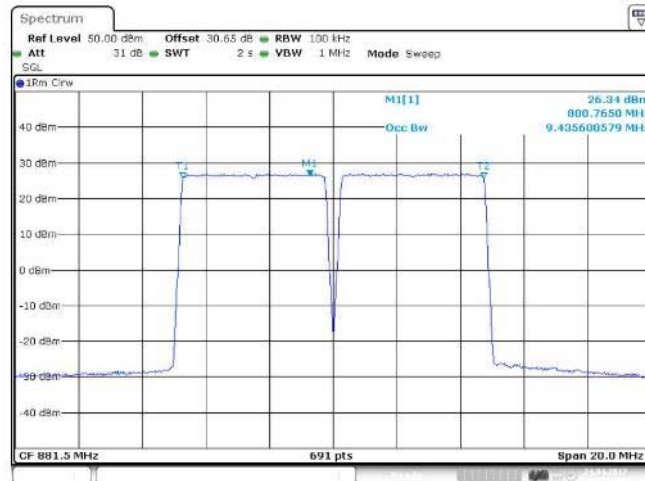
Figure 30 Occupied Bandwidth – 16QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)



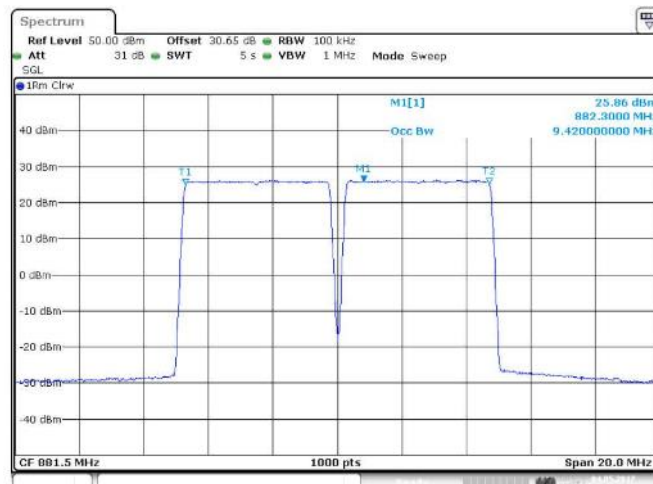


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**Figure 31 Occupied Bandwidth – 64QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)**



**Figure 32 Occupied Bandwidth – 256QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)**