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

-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

-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

-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	-1.626360754	-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

Product Service

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

-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						

-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

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

-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

-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

-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)

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						

-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
16QAMModulation ANT2						
-40.8	20	-2.955688688	-0.003	44	0.05	compliant
-48	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)

Product Service

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

-55.2	20	1.1447329	0.001	44	0.05	compliant
16QAMModulation 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						

-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

-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.

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

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

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.

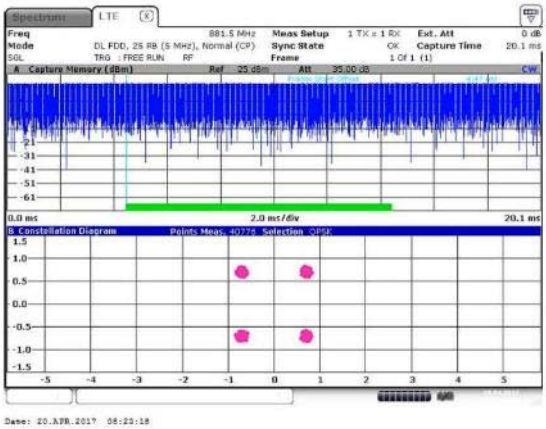


Figure 5 I/Q constellation diagram with capture buffer – QPSK (881.5 MHz) (5MHz Channel BW)

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

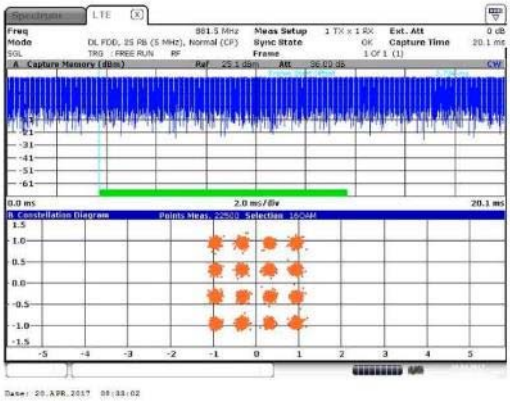


Figure 7 I/Q constellation diagram with capture buffer – 16QAM (881.5 MHz) (5 MHz Channel BW)

Frame Result 1/1	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK	3.53	3.53		3.53	18.50	%
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	5.73	%
EVM Phys. Signal	3.68	4.72	7.34	%
Frequency Error	- 2.93	- 0.76	1.25	Hz
Sampling Error	- 1.33	0.09	1.34	ppm
IQ Offset	- 78.35	- 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	- 9.63	- 9.60	dBm
OSTP	14.95	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)

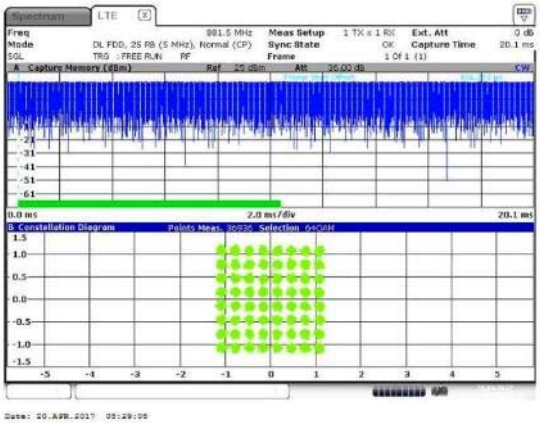
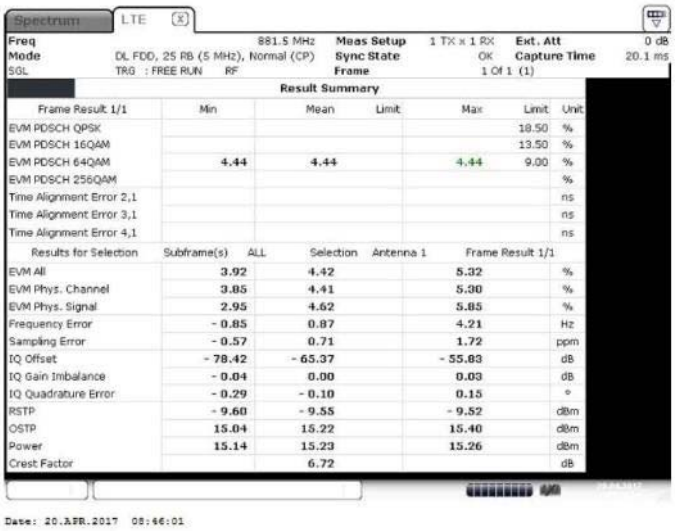


Figure 9 I/Q constellation diagram with capture buffer – 64QAM (881.5 MHz) (5 MHz Channel BW)



Frame Result 1/1	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK					18.50	%
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)

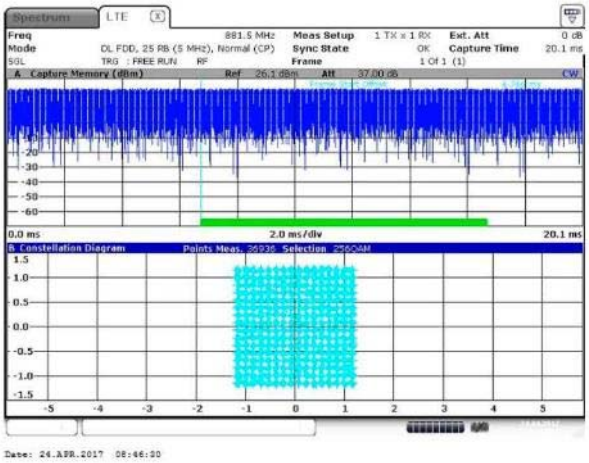
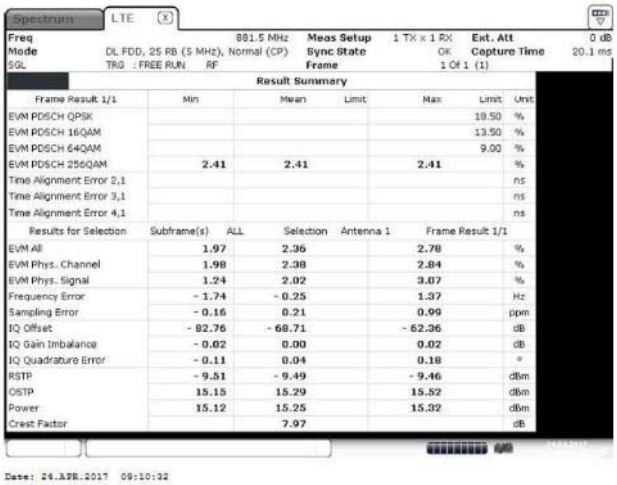


Figure 11 I/Q constellation diagram with capture buffer – 256QAM (881.5 MHz) (5 MHz Channel BW)



Frame Result 1/1	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK					18.50	%
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	- 68.71	- 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)

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)

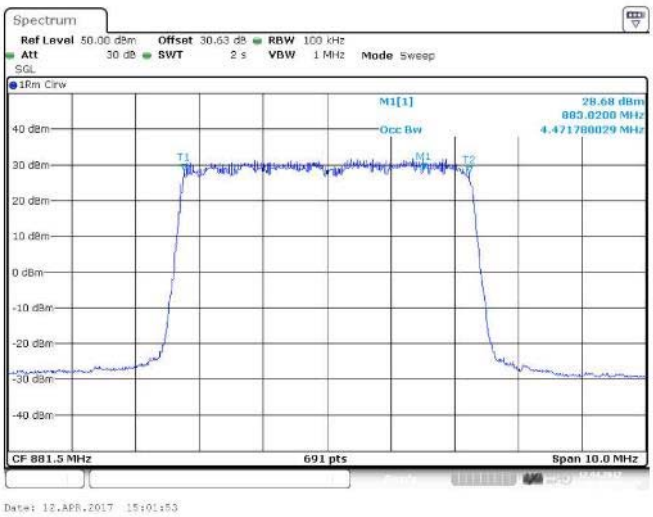


Figure 14 Occupied Bandwidth – 16QAM (881.5 MHz) (5 MHz Channel BW)

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

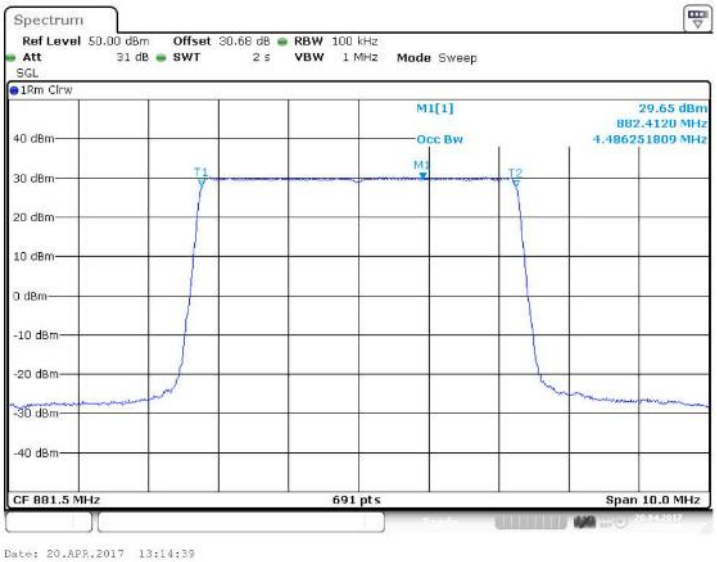


Figure 16 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)

Config A ANT2:

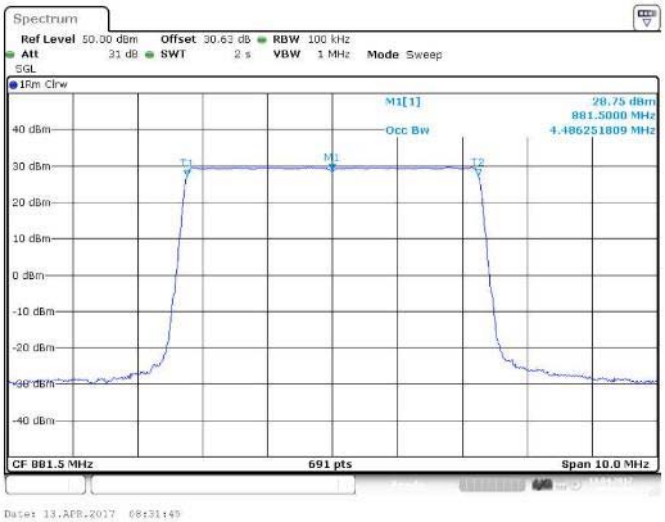


Figure 17 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)

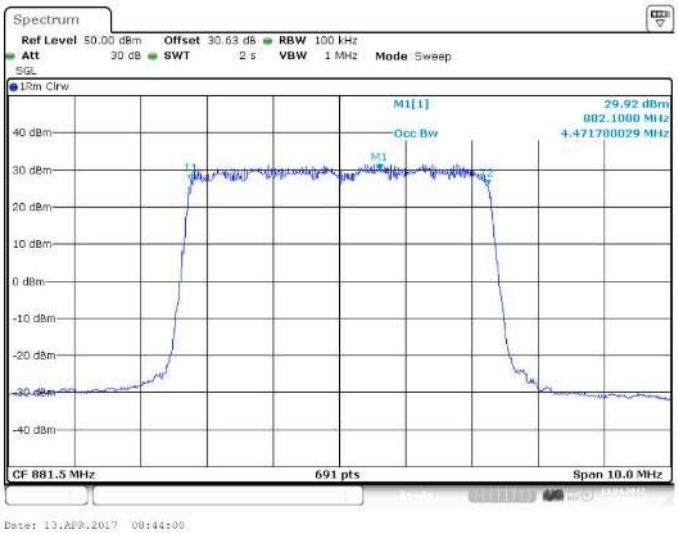


Figure 18 Occupied Bandwidth – 16QAM (881.5 MHz) (5MHz Channel BW

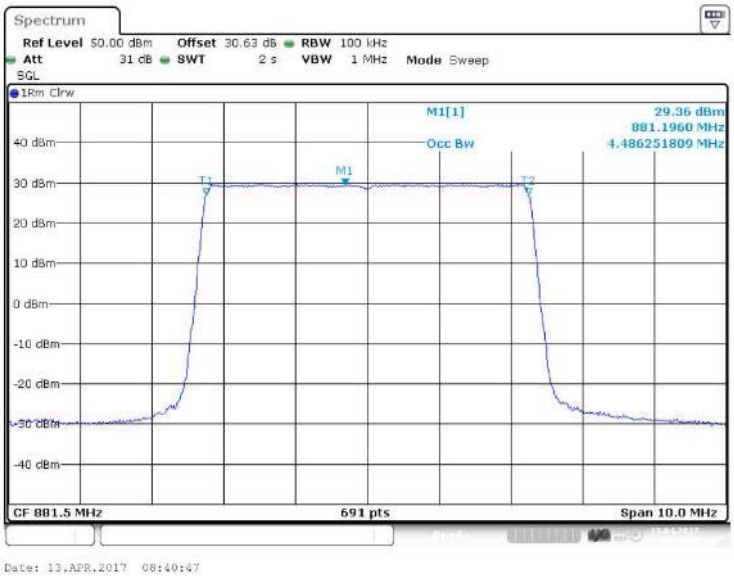


Figure 19 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)

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

Config A ANT3:

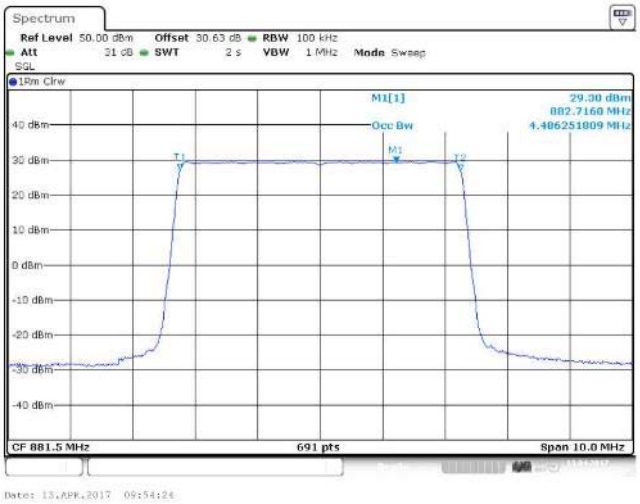


Figure 21 Occupied Bandwidth – QPSK (881.5 MHz) (5 MHz Channel BW)

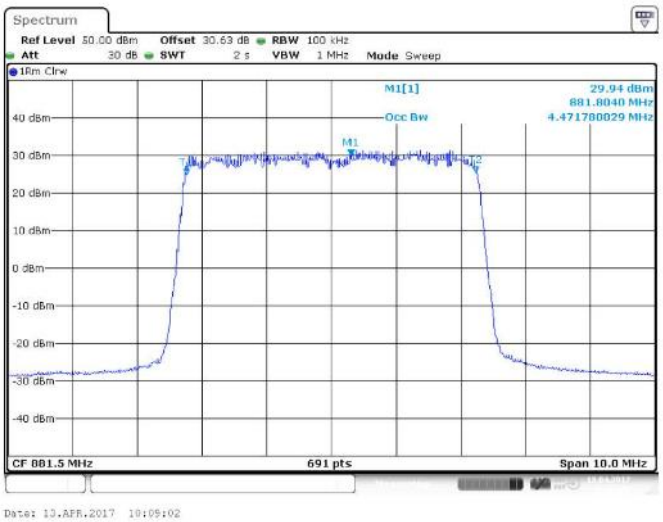


Figure 22 Occupied Bandwidth – 16QAM (881.5 MHz) (5 MHz Channel BW)

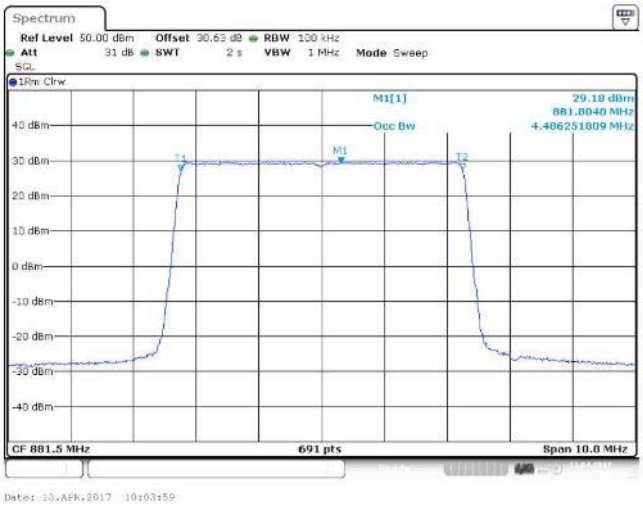


Figure 23 Occupied Bandwidth – 64QAM (881.5 MHz) (5 MHz Channel BW)

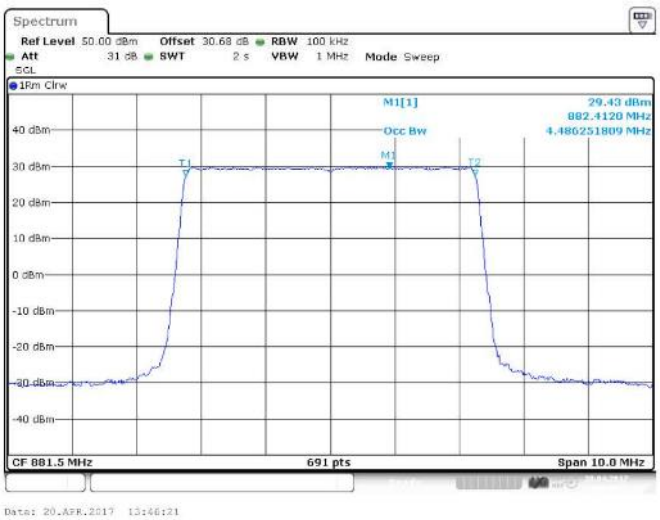
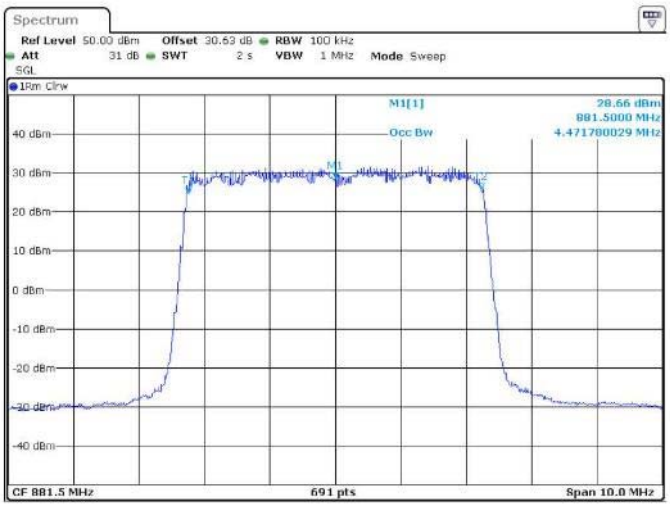


Figure 24 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)

Config A ANT4:

Date: 13.APR.2017 11:01:30

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



Date: 13.APR.2017 11:22:40

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

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

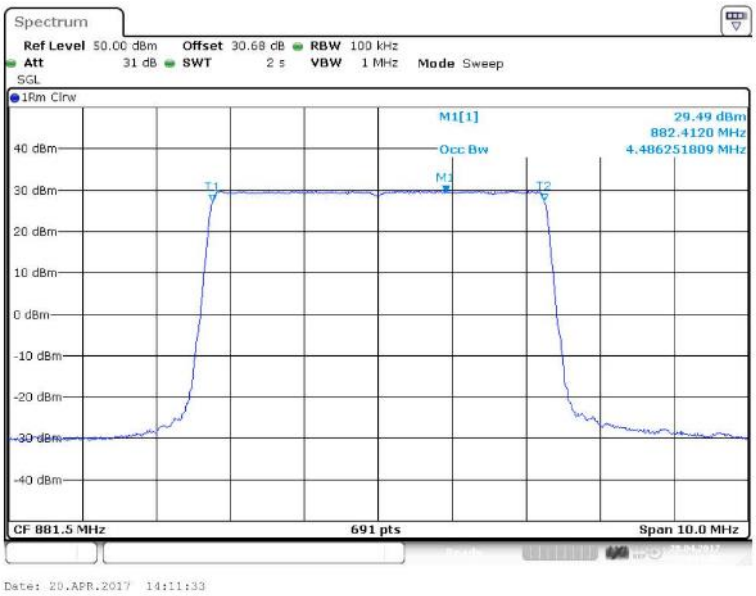


Figure 28 Occupied Bandwidth – 256QAM (881.5 MHz) (5 MHz Channel BW)

Config B ANT1:

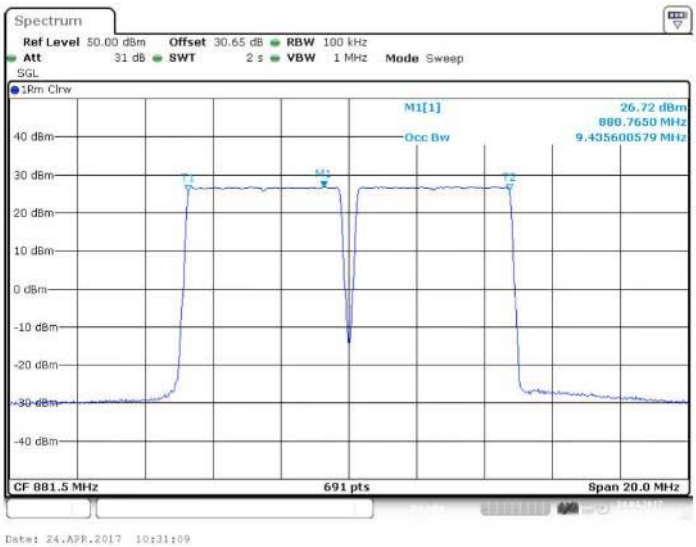


Figure 29 Occupied Bandwidth – QPSK (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)

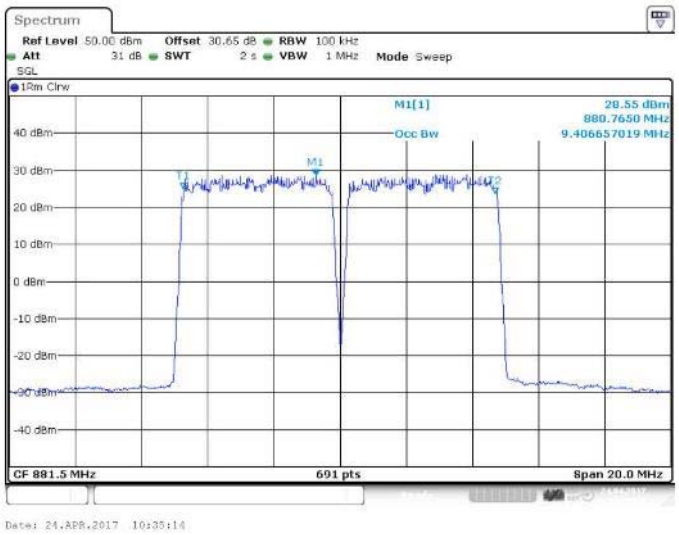


Figure 30 Occupied Bandwidth – 16QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW

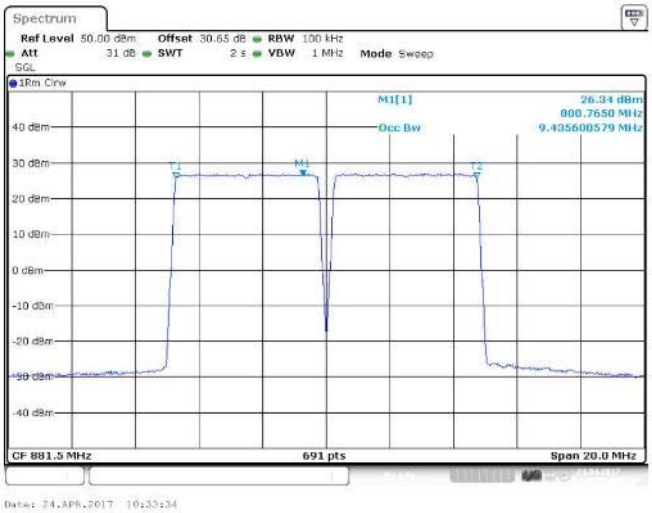


Figure 31 Occupied Bandwidth – 64QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)

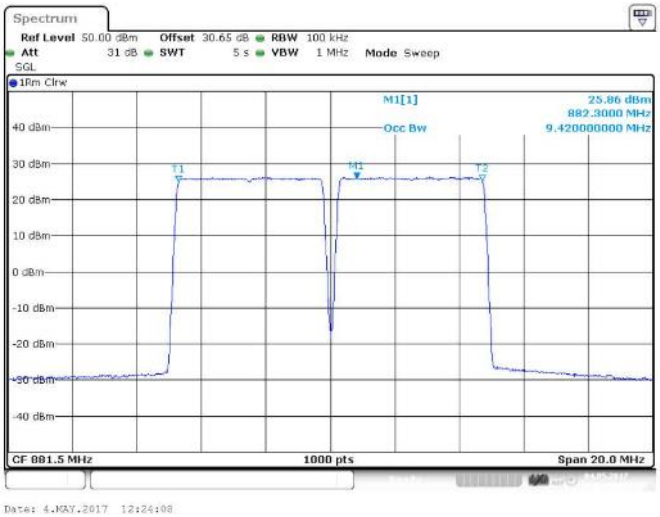


Figure 32 Occupied Bandwidth – 256QAM (879 MHz, 884 MHz) (2 X 5 MHz Channel BW)