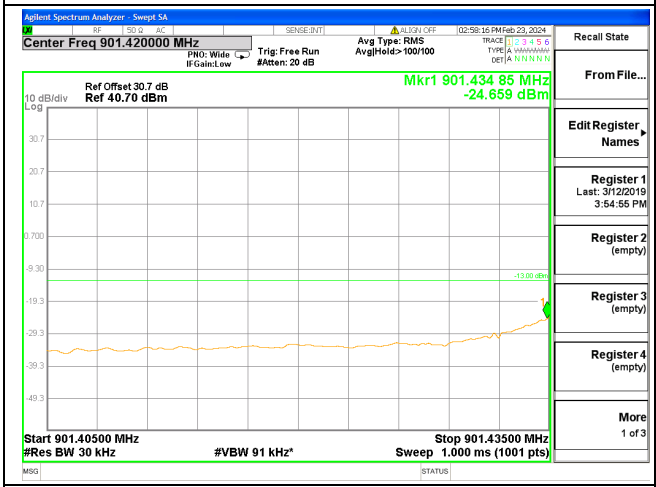
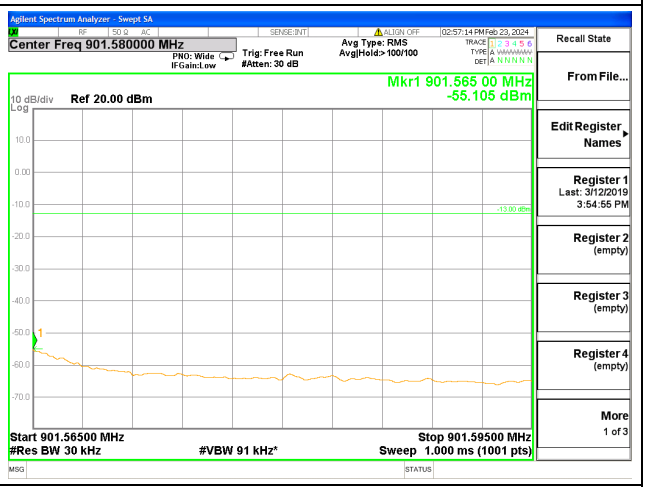
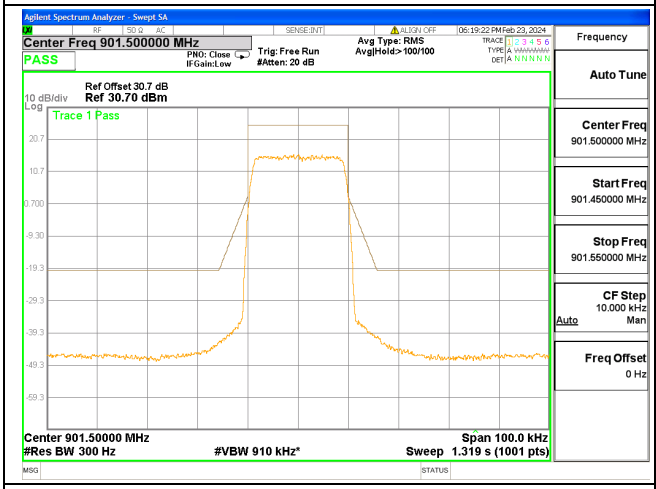
25kHz/ 16QAM /901.4050 -901.4350 MHz



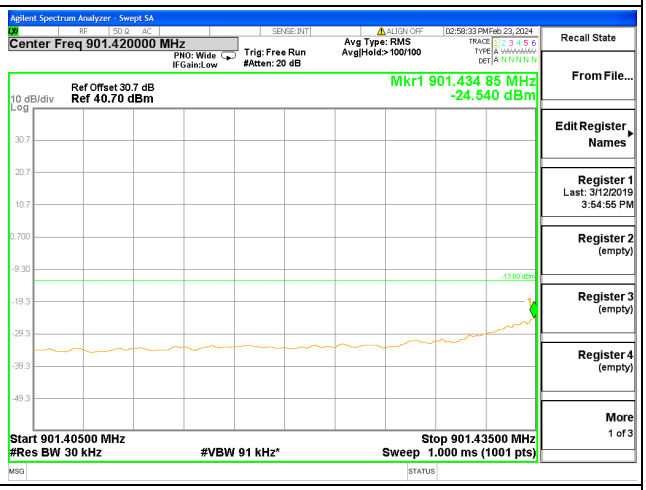
25kHz/ 16QAM /901.5650 -901.5950 MHz



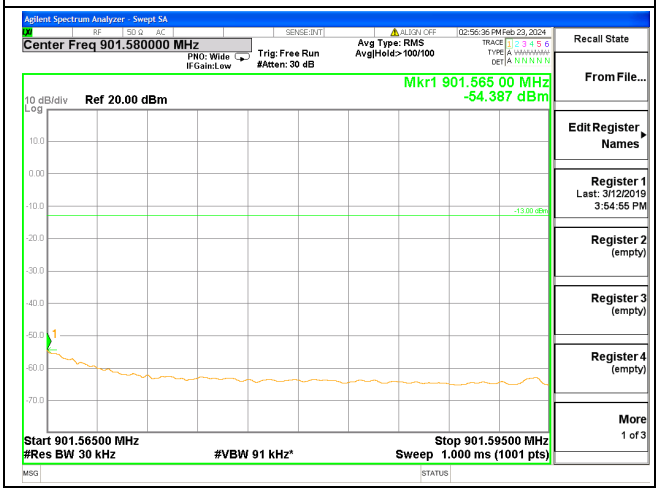
25kHz/ 64QAM



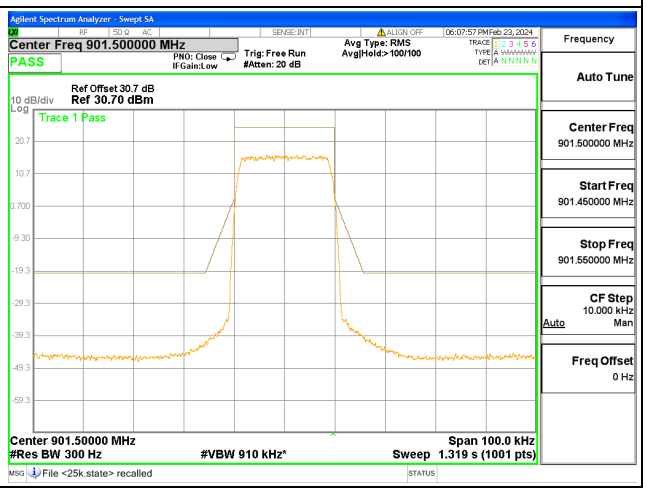
25kHz/ 64QAM /901.4050 -901.4350 MHz



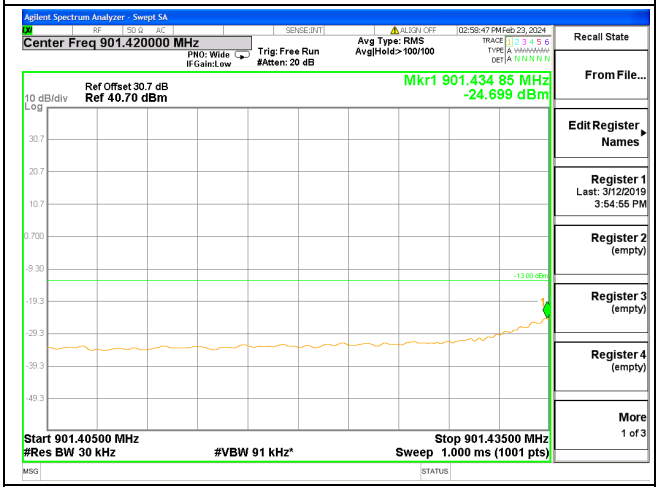
25kHz/ 64QAM /901.5650 -901.5950 MHz



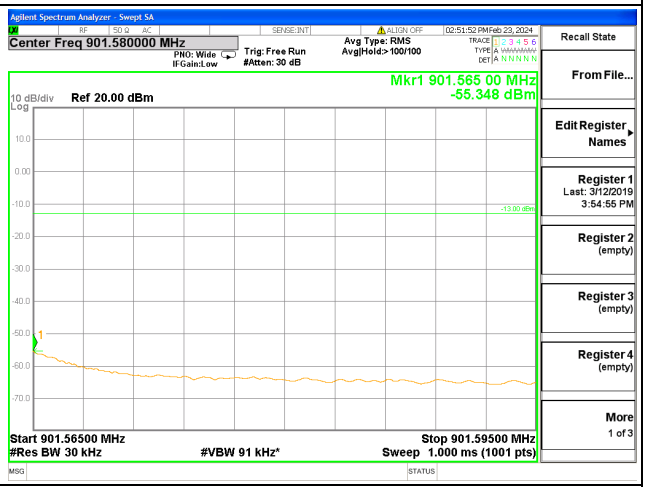
25kHz/256QAM



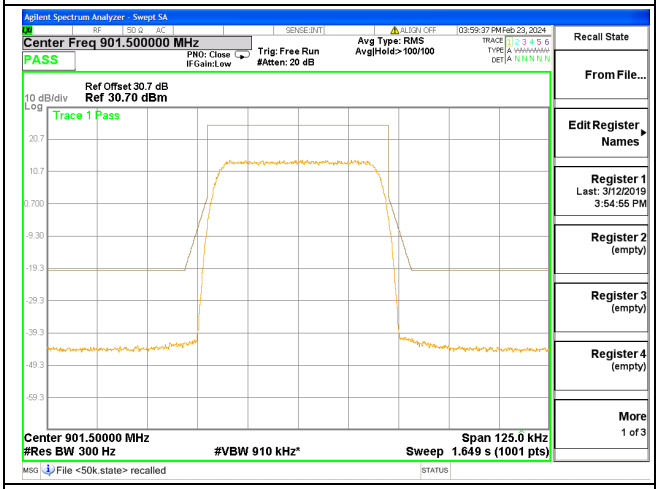
25kHz/ 256QAM /901.4050 -901.4350 MHz



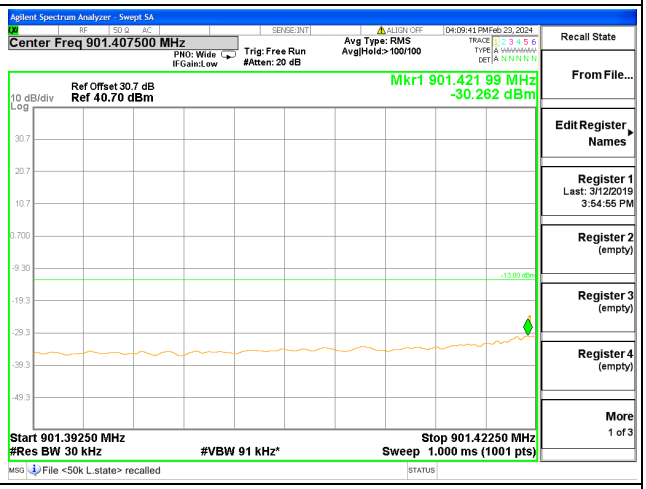
25kHz/ 256QAM /901.5650 -901.5950 MHz



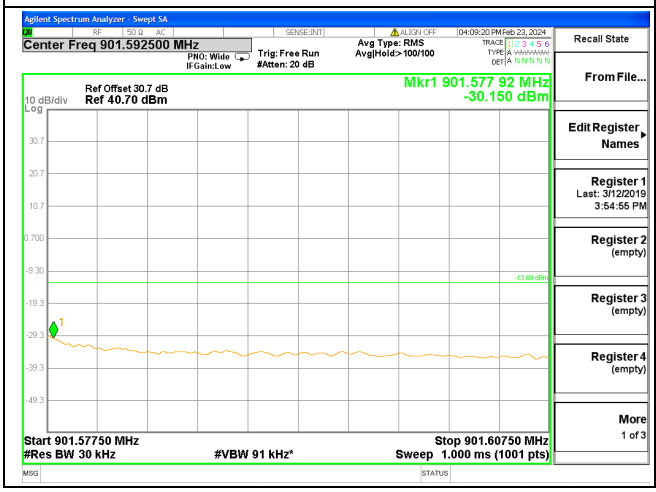
50kHz/ QPSK



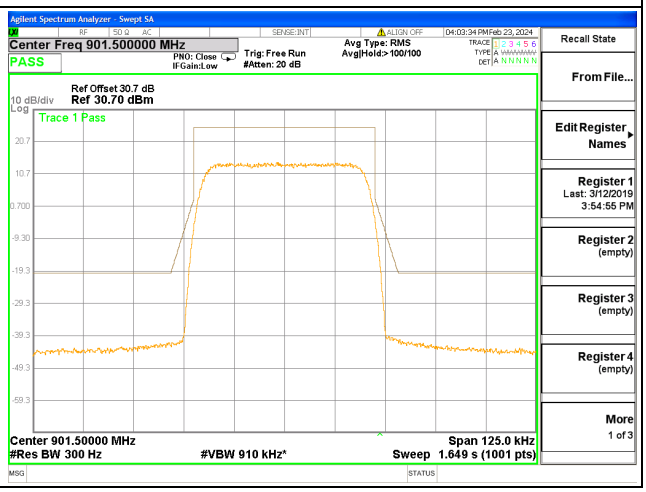
50kHz/ QPSK/901.3925 -901.4225 MHz



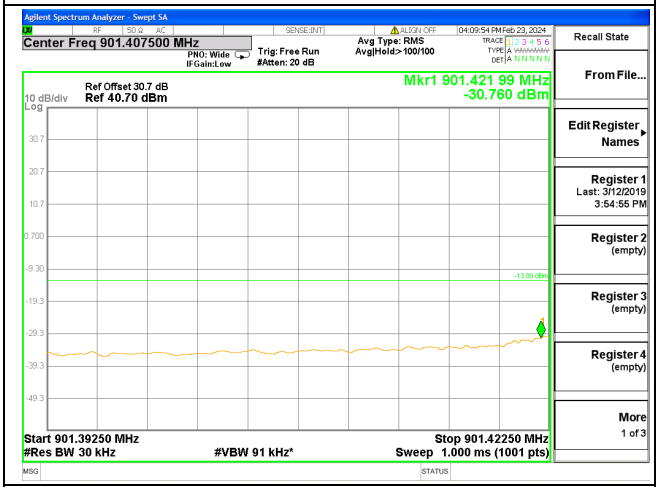
50kHz/ QPSK/901.5775 -901.6075 MHz



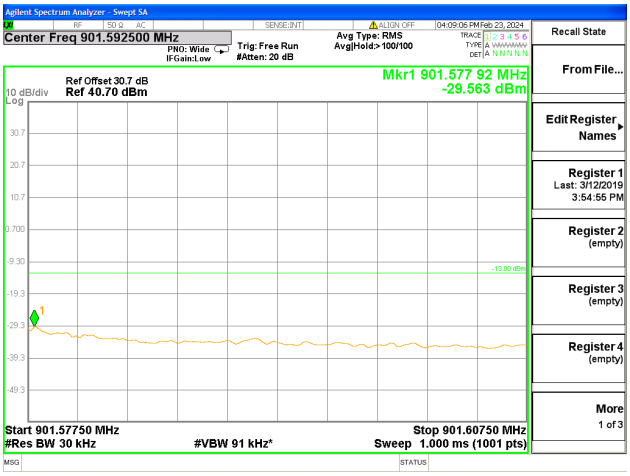
50kHz/16QAM



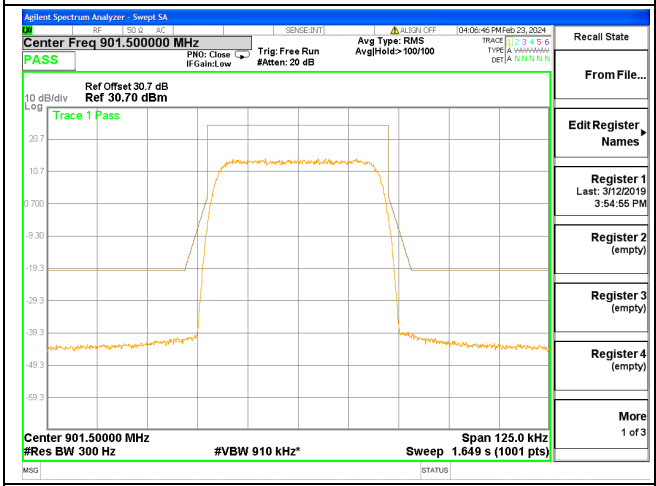
50kHz/ 16QAM /901.3925 -901.4225 MHz



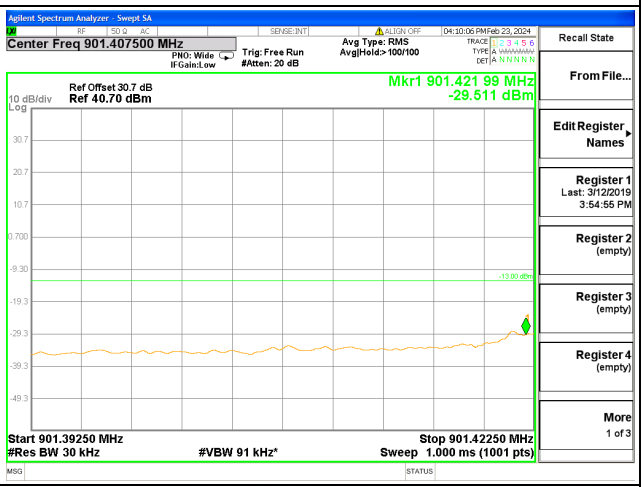
50kHz/ 16QAM /901.5775 -901.6075 MHz



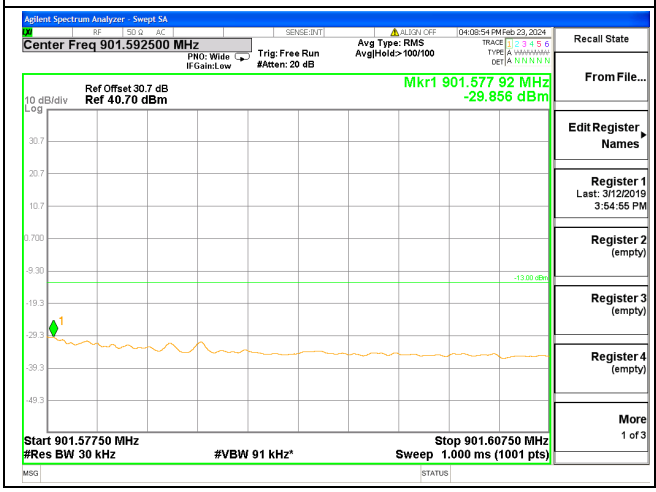
50kHz/ 64QAM



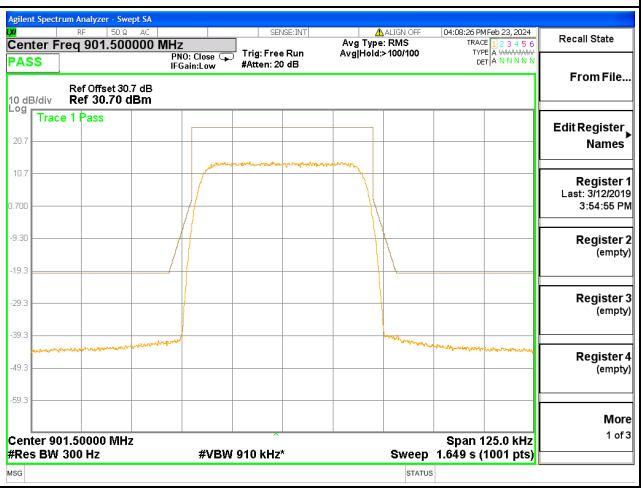
50kHz/ 64QAM /901.3925 -901.4225 MHz

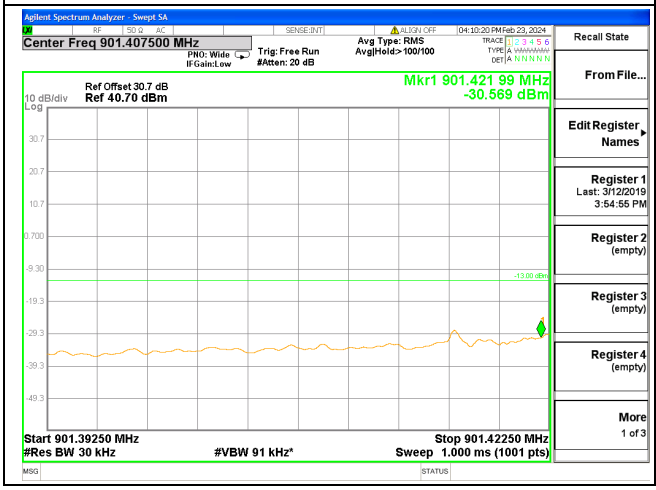
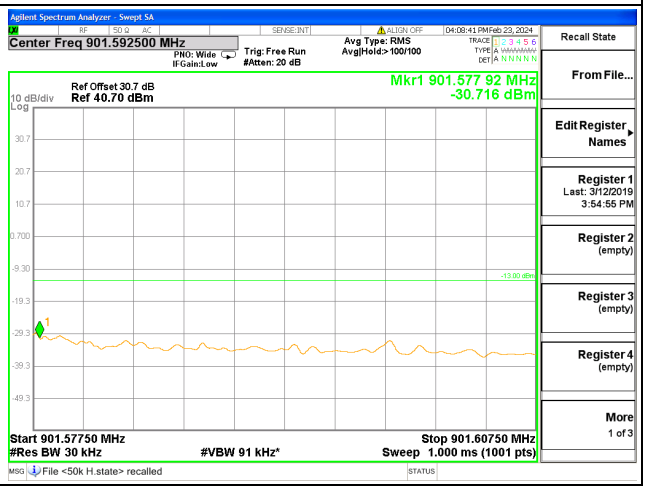


50kHz/ 64QAM /901.5775 -901.6075 MHz



50kHz/256QAM



50kHz/ 256QAM /901.3925 -901.4225 MHz	50kHz/ 256QAM /901.5775 -901.6075 MHz
	

2.4. Radiated Spurious Emissions

2.4.1. Requirement

According to FCC section 2.1053 and section 24.133(a).For operations in the 901-902 MHz band , the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 901-902 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

2.4.2. Test Result

Note 1: No discrete emissions were detected.
Note 2: The power of the EUT transmitting frequency should be ignored.
Note 3: N/A means the frequency is the basic frequency; they are no need to verdict.
Note 4: For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements. For measurements above 1GHz the resolution bandwidth is set to 1MHz for peak measurements.
Note 5: All bandwidth and modulation were considered and evaluated respectively by performing full test, only the worst cases were recorded in this test report.
Note 6: The received power level is the measured power adjusted for measurement antenna gain, connecting cable loss, and any external signal amplification or attenuation used in the test configuration. Mathematically, as in Equation:

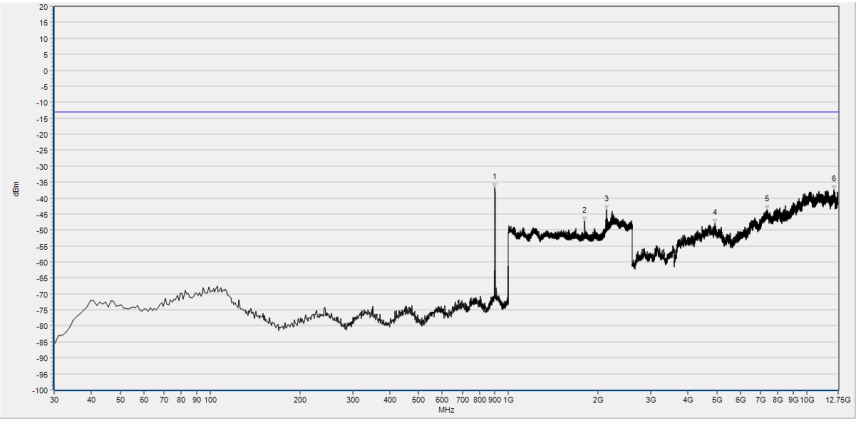
$P_R = P_{meas} - G_R + L_C - G_{amp}$

where

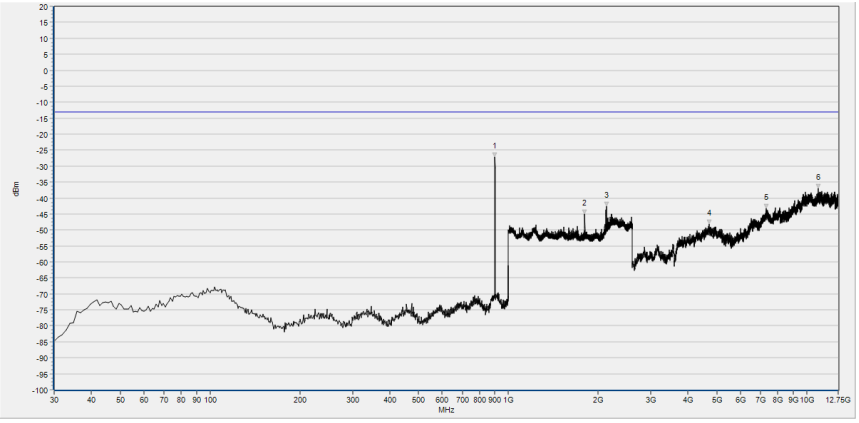
P_{meas} measured power level, in dBm;
G_R gain of the receive (measurement) antenna, in dBi;
L_C signal loss in the measurement cable, in dB;
G_{amp} value of external amplification, in dB.

Type 1:

Nominal Frequency 901.5MHz, 50kHz BW, 256QAM



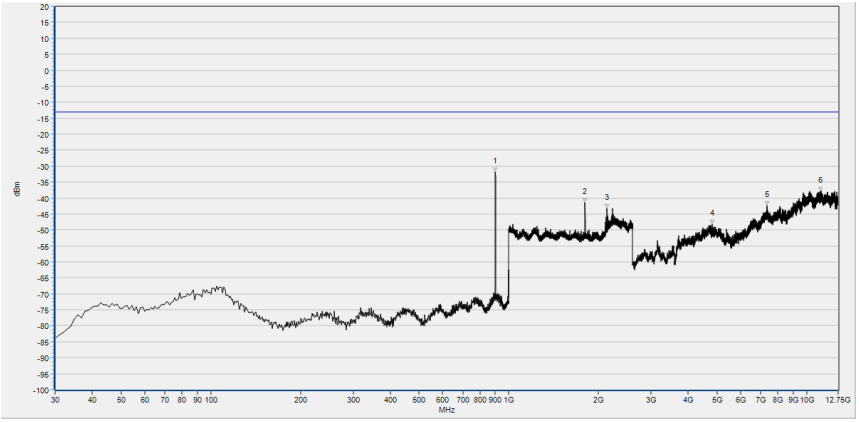
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-36.66	-13.00	H	NA
2	1803.200	-47.35	-13.00	H	PASS
3	2136.000	-43.59	-13.00	H	PASS
4	4922.320	-47.82	-13.00	H	PASS
5	7352.230	-43.60	-13.00	H	PASS
6	12368.360	-37.35	-13.00	H	PASS



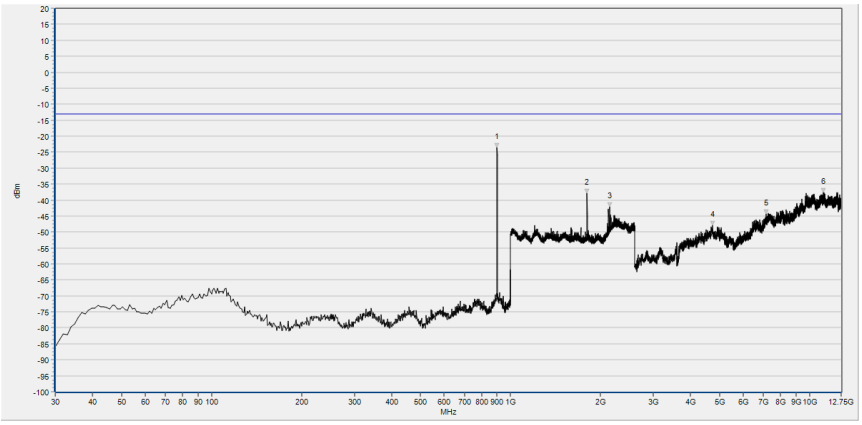
No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-27.24	-13.00	V	NA
2	1802.667	-45.05	-13.00	V	PASS
3	2133.333	-42.50	-13.00	V	PASS
4	4715.260	-48.15	-13.00	V	PASS
5	7329.900	-43.24	-13.00	V	PASS
6	10945.330	-37.09	-13.00	V	PASS

Type 2:

Nominal Frequency 901.5MHz, 50kHz BW, 256QAM



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-31.82	-13.00	H	NA
2	1803.200	-41.56	-13.00	H	PASS
3	2137.600	-43.31	-13.00	H	PASS
4	4808.640	-48.20	-13.00	H	PASS
5	7358.320	-42.33	-13.00	H	PASS
6	11103.670	-37.89	-13.00	H	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	901.060	-23.48	-13.00	V	NA
2	1802.667	-37.92	-13.00	V	PASS
3	2140.267	-42.04	-13.00	V	PASS
4	4725.410	-47.87	-13.00	V	PASS
5	7167.500	-44.26	-13.00	V	PASS
6	11138.180	-37.64	-13.00	V	PASS

2.5. Frequency Stability

2.5.1. Requirement

According to FCC section 2.1055 and FCC section 24.135.e frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 24.135, the test conditions are:

The frequency stability of the transmitter shall be maintained within ±0.0001 percent (±1 ppm) of the center frequency over a temperature variation of −30 °Celsius to + 50 °Celsius at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of 20 °Celsius..

2.5.2. Test Results

901.5MHz QPSK 12.5kHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100	24.0	+20(Ref)	-8	-0.009	PASS
100		-40	19	0.021	
100		-30	18	0.020	
100		-20	13	0.014	
100		-10	0	0.000	
100		0	18	0.020	
100		+10	16	0.018	
100		+20	15	0.017	
100		+30	15	0.017	
100		+40	23	**0.026**	
100		+50	-11	-0.012	
100		+60	13	0.014	
100		+70	16	0.018	
115	27.6	+20	20	0.022	
85	20.4	+20	-7	-0.008	

901.5MHz QPSK 25.0kHz Limit =Within Authorized Band					
Voltage (%)	**Power**	**Temp (°C)**	**Fre. Dev.**	**Deviation**	**Result**

	(VDC)		(Hz)	(ppm)	
100		+20(Ref)	14	0.016	
100		-40	17	0.019	
100		-30	22	**0.024**	
100		-20	7	0.008	
100		-10	19	0.021	
100		0	18	0.020	
100	24.0	+10	13	0.014	
100		+20	19	0.021	PASS
100		+30	-11	-0.012	
100		+40	20	0.022	
100		+50	16	0.018	
100		+60	-1	-0.001	
100		+70	14	0.016	
115	27.6	+20	15	0.017	
85	20.4	+20	-17	-0.019	

901.5MHz QPSK 50.0kHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
100		+20(Ref)	15	0.017	
100		-40	22	0.024	
100		-30	-10	-0.011	
100		-20	14	0.016	
100		-10	-19	-0.021	
100		0	23	**0.026**	
100	24.0	+10	-6	-0.007	
100		+20	13	0.014	PASS
100		+30	16	0.018	
100		+40	18	0.020	
100		+50	-11	-0.012	
100		+60	19	0.021	
100		+70	-2	-0.002	
115	27.6	+20	20	0.022	
85	20.4	+20	18	0.020	

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Output Power	±2.22 dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Band Edge	±2.77 dB
Equivalent Isotropic Radiated Power	±2.22 dB
Radiated Spurious Emissions	±6 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipment Utilized

4.1 Conducted Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Power Splitter	NW521	1506A	Weinschel	N/A	N/A
Attenuator 1	(N/A.)	30.0dB	Resnet	N/A	N/A
Attenuator 2	(N/A.)	30.0dB	Resnet	N/A	N/A
EXA Signal Analyzer	MY51511149	N9020A	Agilent	2023.06.21	2024.06.20
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	S022177101 00089002	KMT-36LF 1A0	KOMEG	2023.09.19	2024.09.18

4.2 List of Software Used

Description	Manufacturer	Software Version
MORLAB EMCR	MORLAB	V1.2

4.3 Radiated Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Bi-Log Antenna	9163-274	VULB 9163	SCHWARZBECK	2023.06.27	2024.06.26
Horn Antenna	9120D-963	BBHA 9120D	SCHWARZBECK	2023.06.27	2024.06.26
Receiver	MY54130016	N9038A	Agilent	2023.06.21	2024.06.20
6db Attenuator	E191001	BW-N6W5+	Mini-circuits	2023.9.19	2024.9.18
Preamplifier（2GHz-18GHz）	61171.61172	S020180L3203	LUCIX CORP.	2023.06.27	2024.06.26
Preamplifier（10MHz-6GHz）	46732	S10M100L3802	LUCIX CORP.	2023.06.27	2024.06.26
RF Coaxial Cable（DC-18GHz）	MRE001	PE330	Pasternack	2023.06.27	2024.06.26
RF Coaxial Cable（DC-18GHz）	MRE002	CLU18	Pasternack	2023.06.27	2024.06.26

END OF REPORT