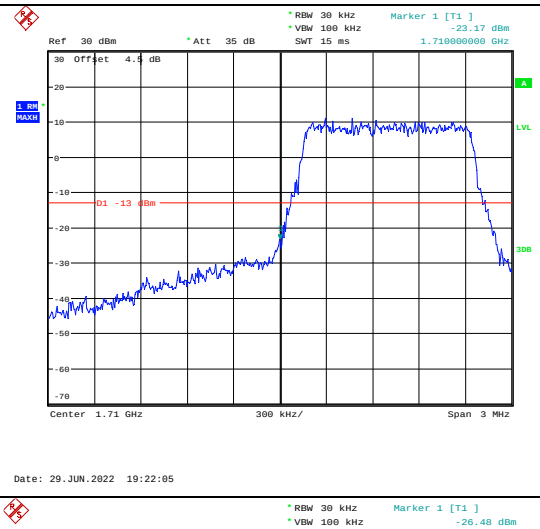
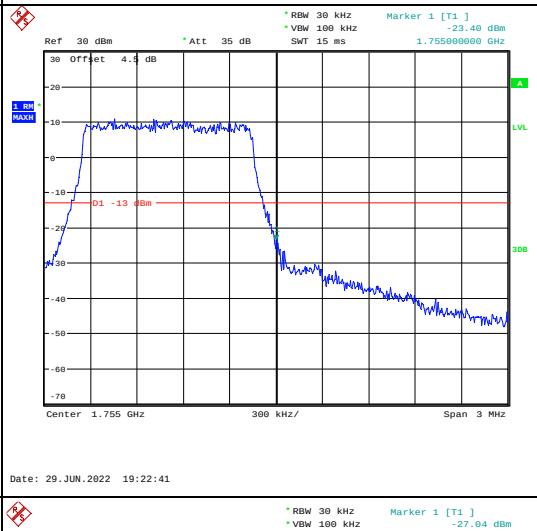
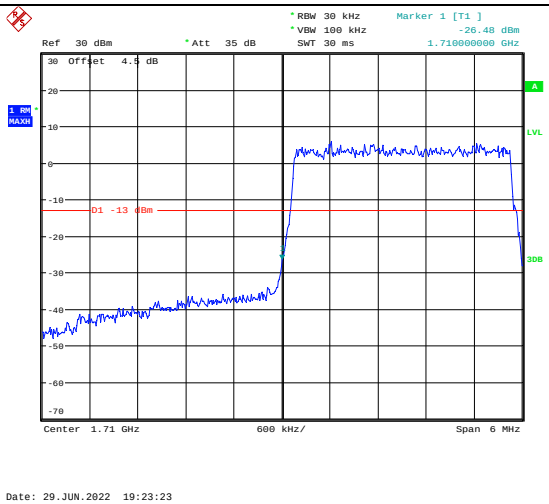
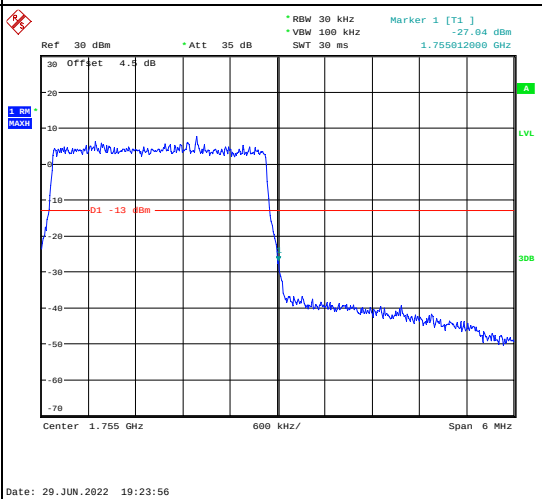
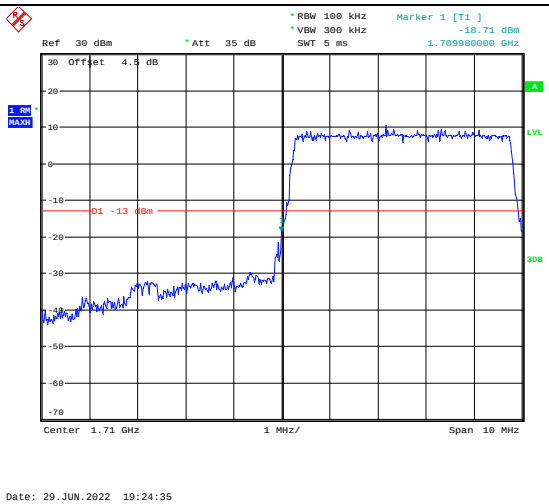
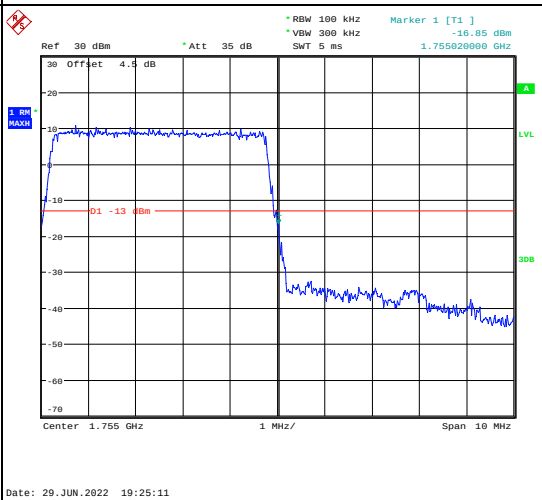
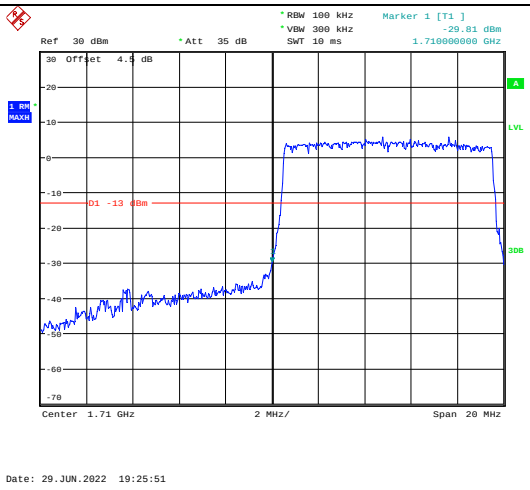
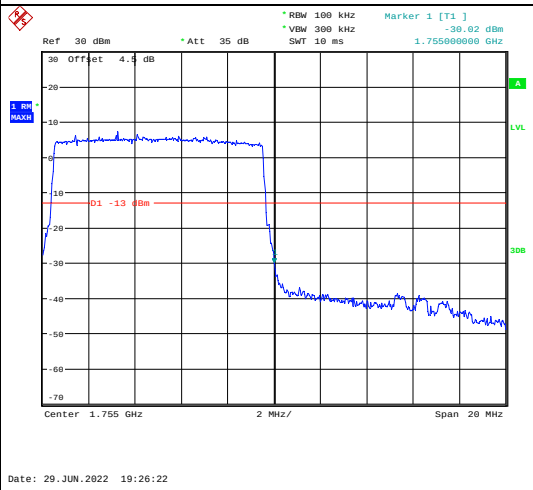
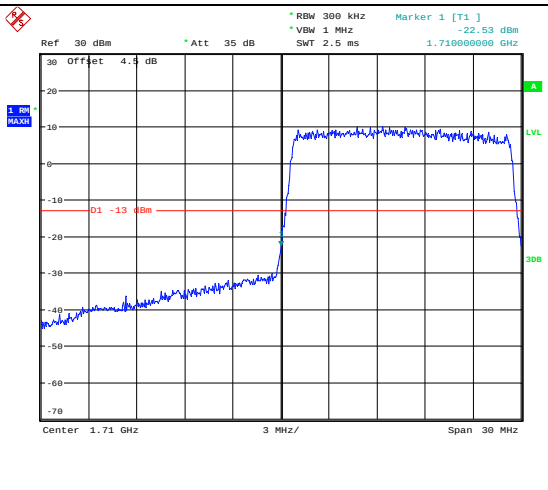
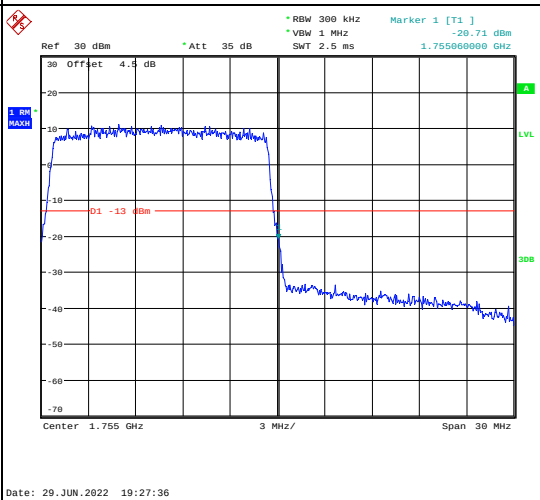
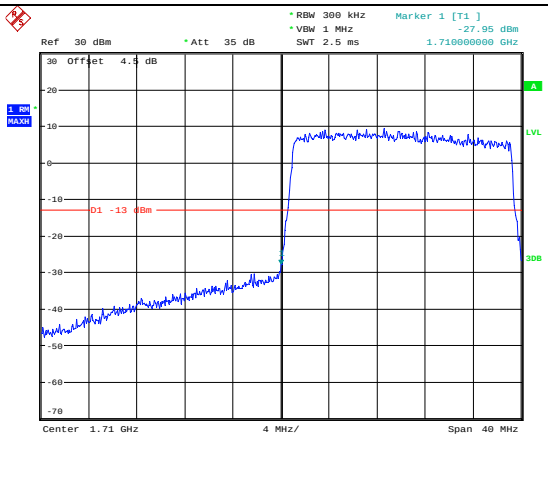
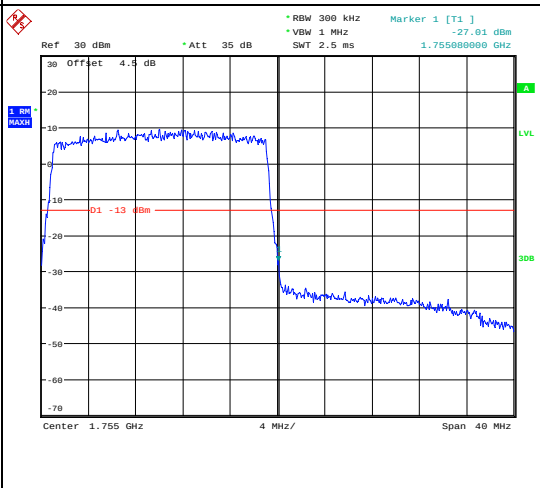
Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 10MHz		
16QAM 15MHz		
16QAM 20MHz		

4.11 Antenna Port Test Data and Results for Module A LTE Band 5

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/1-2022/7/15
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.1	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:					
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*					

EUT Information@ LTE Band 5▲:					
Antenna Gain G_T (dBi):	-5.58	Antenna Gain G_T (dBd):	-7.73	Path Loss L_C (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:			
Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

Test Data:

FCC§2.1046;§ 22.913 (a)

RF Output Power:

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	21.23	21.49	20.64	13.76	38.45
	RB1#3	21.12	21.46	20.42		
	RB1#5	21.09	21.45	20.22		
	RB3#0	20.97	21.35	20.43		
	RB3#3	21.04	21.38	20.25		
	RB6#0	21.00	21.38	20.34		
1.4MHz 16QAM	RB1#0	20.10	20.61	19.69	13.01	38.45
	RB1#3	20.23	20.65	19.62		
	RB1#5	20.26	20.74	19.54		
	RB3#0	20.13	20.50	19.63		
	RB3#3	20.20	20.54	19.53		
	RB6#0	20.12	20.54	19.59		
3MHz QPSK	RB1#0	21.14	21.51	20.79	13.82	38.45
	RB1#8	21.22	21.55	20.69		
	RB1#14	20.99	21.44	20.26		
	RB6#0	21.07	21.47	20.66		
	RB6#9	21.10	21.47	20.41		
	RB15#0	21.08	21.46	20.56		
3MHz 16QAM	RB1#0	20.16	20.47	19.91	13.02	38.45
	RB1#8	20.41	20.75	19.85		
	RB1#14	20.25	20.64	19.46		
	RB6#0	20.17	20.62	19.82		
	RB6#9	20.22	20.66	19.59		
	RB15#0	20.22	20.58	19.71		
5MHz QPSK	RB1#0	21.08	21.39	20.66	13.84	38.45
	RB1#13	21.23	21.57	20.79		
	RB1#24	20.98	21.27	20.16		
	RB15#0	21.11	21.47	20.69		
	RB15#10	21.07	21.46	20.57		
	RB25#0	21.07	21.45	20.60		
5MHz 16QAM	RB1#0	20.01	20.36	19.83	13.08	38.45
	RB1#13	20.45	20.81	20.02		
	RB1#24	20.15	20.44	19.44		
	RB15#0	20.28	20.59	19.82		
	RB15#10	20.21	20.57	19.76		
	RB25#0	20.20	20.56	19.78		
10MHz QPSK	RB1#0	20.52	20.62	20.63	13.84	38.45

	RB1#25	21.34	21.57	20.92		
	RB1#49	20.71	20.42	19.76		
	RB25#0	20.93	21.25	20.80		
	RB25#25	21.12	21.17	20.51		
	RB50#0	21.01	21.21	20.63		
10MHz 16QAM	RB1#0	19.48	19.74	19.71	13.12	38.45
	RB1#25	20.53	20.85	20.04		
	RB1#49	19.95	19.58	18.96		
	RB25#0	20.04	20.37	19.92		
	RB25#25	20.24	20.32	19.63		
	RB50#0	20.11	20.33	19.76		
Note: ERP= Conducted Power(dBm) - L_C(dB) + G_T(dBd)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.52	4.67	4.58	13
	RB50#0	4.64	4.93	4.81	13
10MHz 16QAM	RB1#0	5.30	5.77	5.65	13
	RB50#0	5.74	5.97	5.83	13
				Result:	**Pass**

FCC §2.1049, §22.905:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.108	1.102	1.096	1.344	1.326	1.320
1.4MHz 16QAM	1.114	1.102	1.108	1.326	1.308	1.320
3MHz QPSK	2.707	2.707	2.683	2.952	2.964	2.964
3MHz 16QAM	2.683	2.695	2.707	2.976	2.952	2.964
5MHz QPSK	4.531	4.531	4.511	5.000	5.040	5.080
5MHz 16QAM	4.511	4.511	4.511	5.020	5.020	5.040
10MHz QPSK	8.942	8.981	8.942	9.760	9.840	9.800
10MHz 16QAM	8.942	8.942	8.942	9.720	9.720	9.720
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

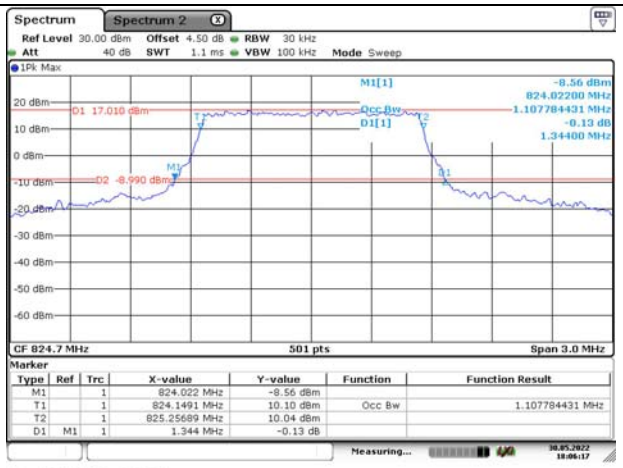
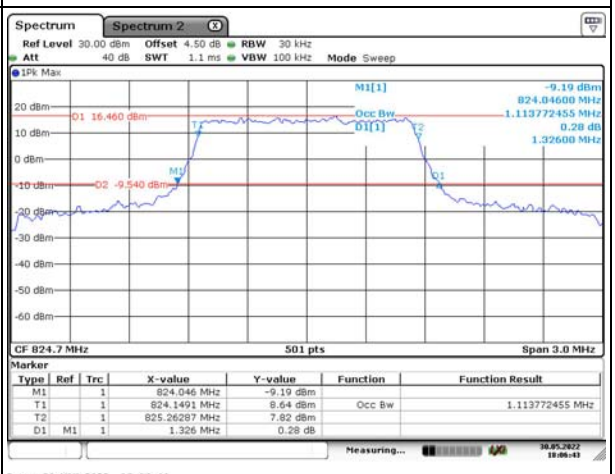
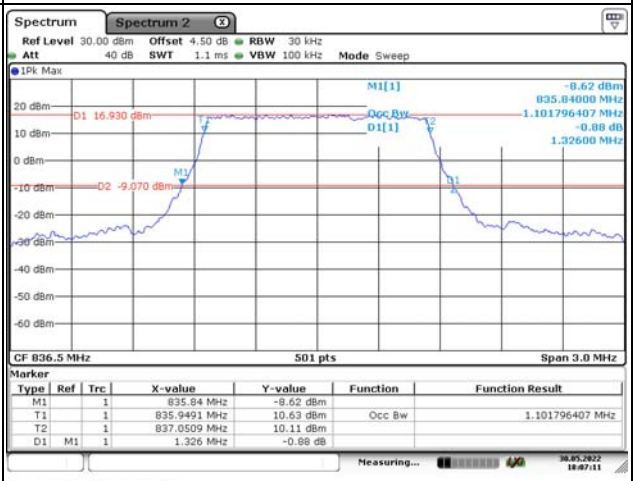
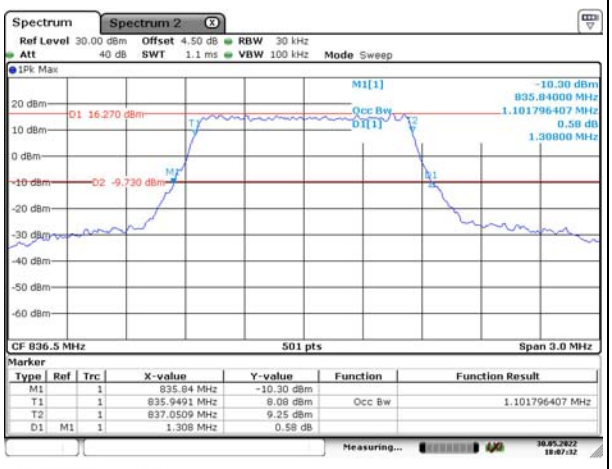
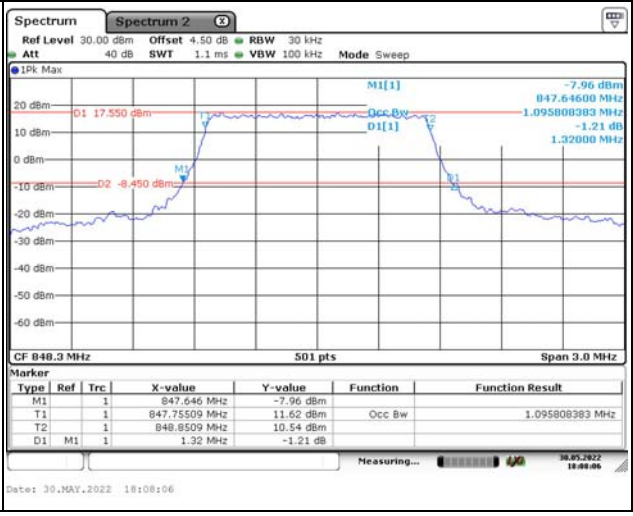
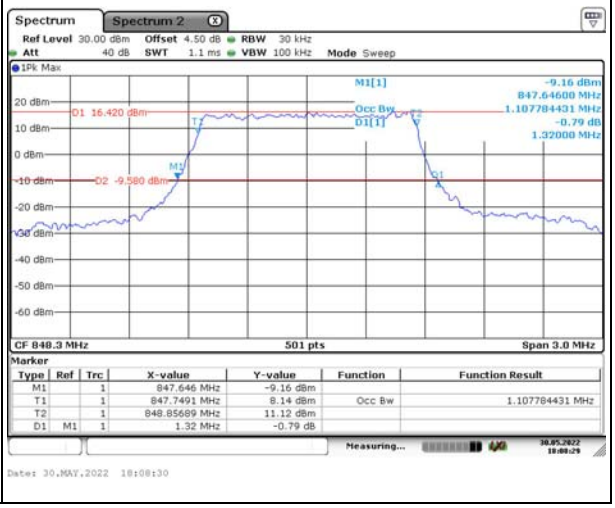
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

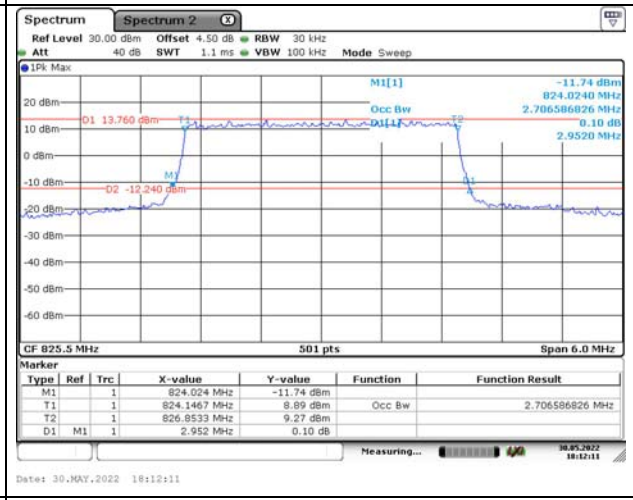
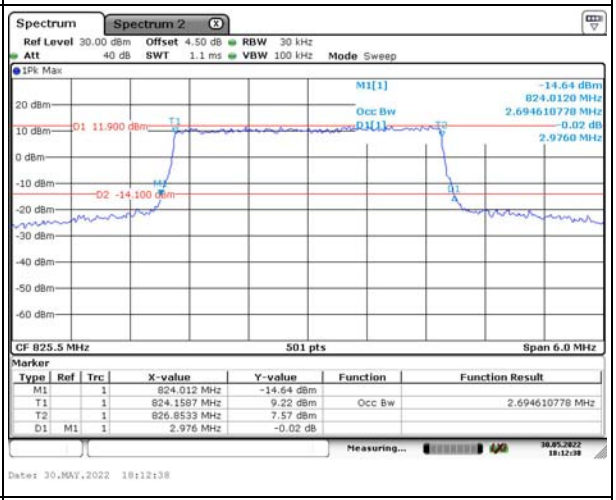
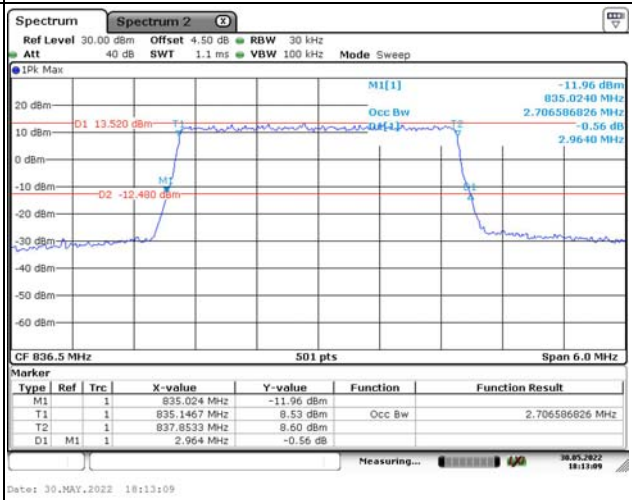
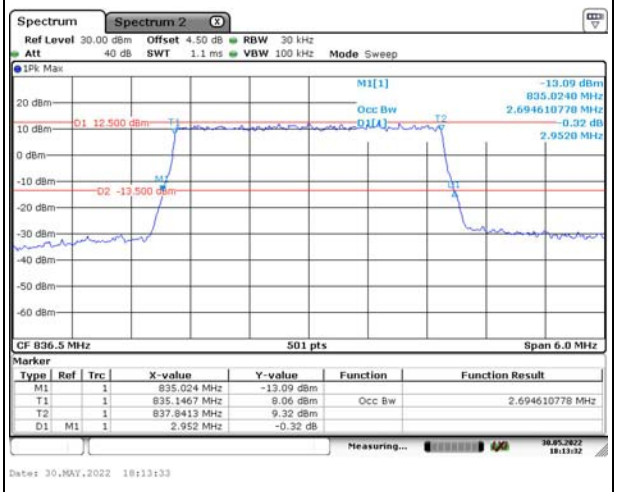
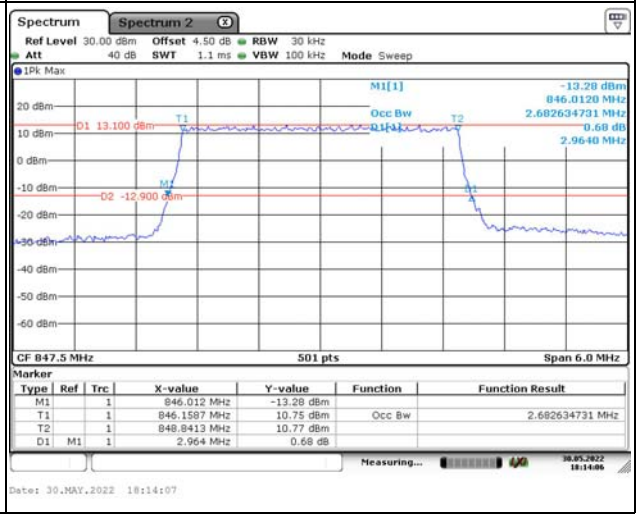
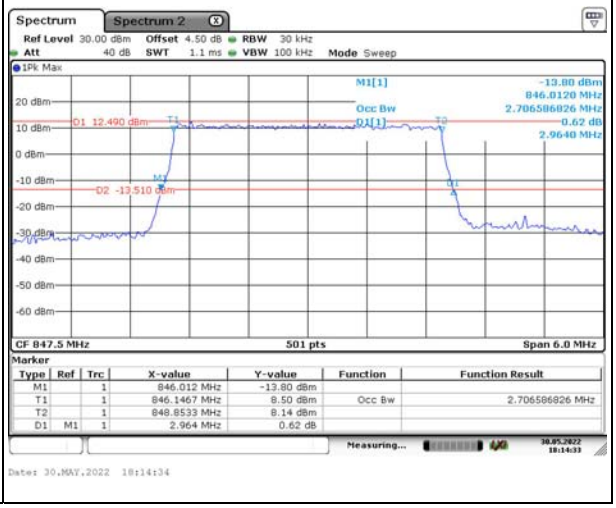
FCC §2.1055, §22.355: Frequency Stability

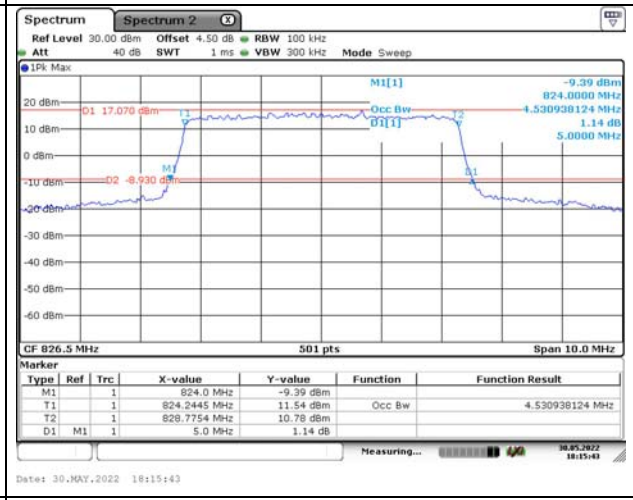
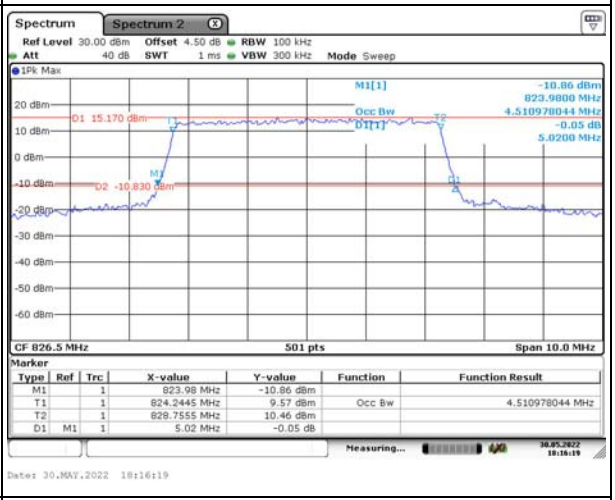
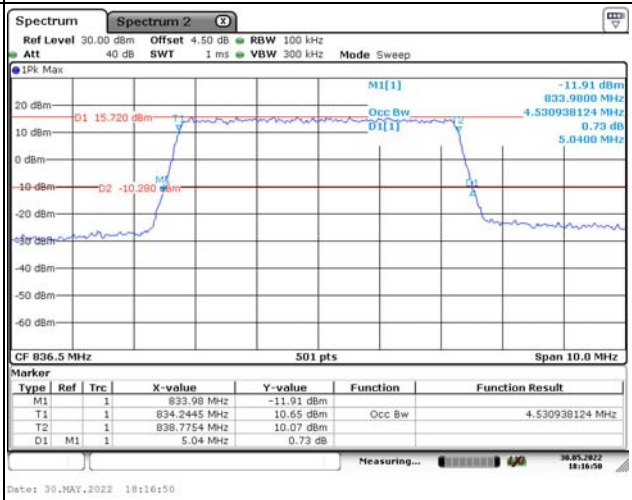
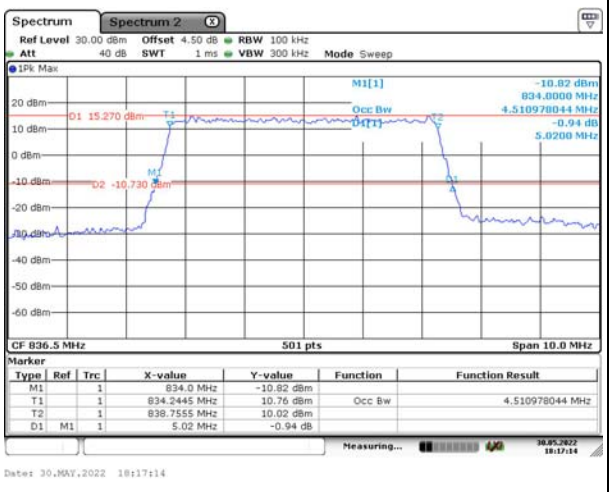
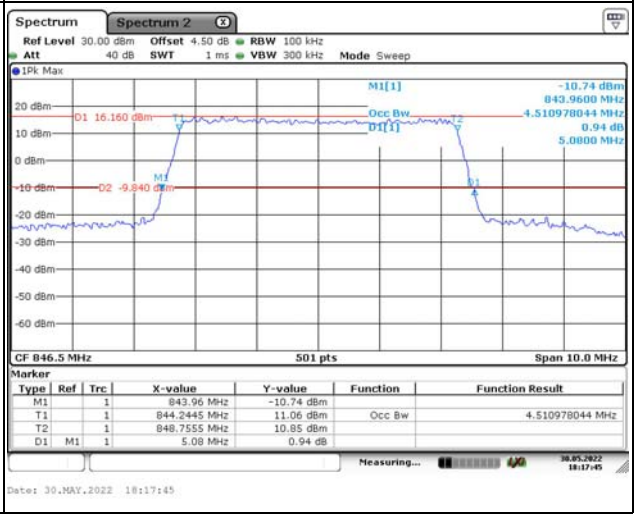
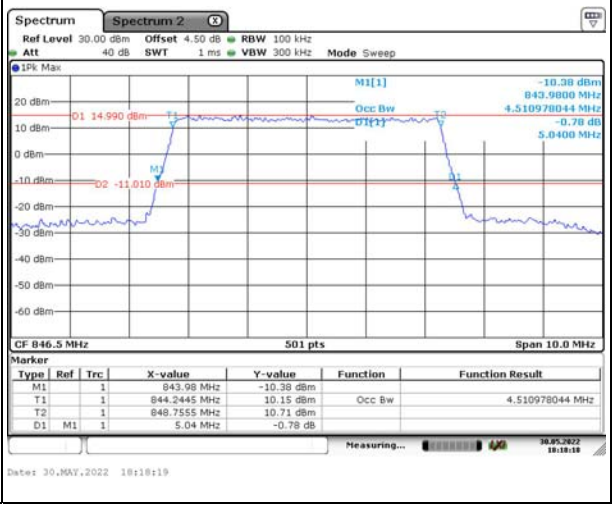
Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	-1	-0.001	2.5
	-20	3.85	-6	-0.007	2.5
	-10	3.85	5	0.006	2.5
	0	3.85	8	0.010	2.5
	10	3.85	-6	-0.007	2.5
	20	3.85	-2	-0.002	2.5
	30	3.85	-6	-0.007	2.5
	40	3.85	-5	-0.006	2.5
	50	3.85	7	0.008	2.5
Frequency Stability vs. Voltage	20	3.5	-8	-0.010	2.5
	20	4.4	6	0.007	2.5
				Result:	**Pass**

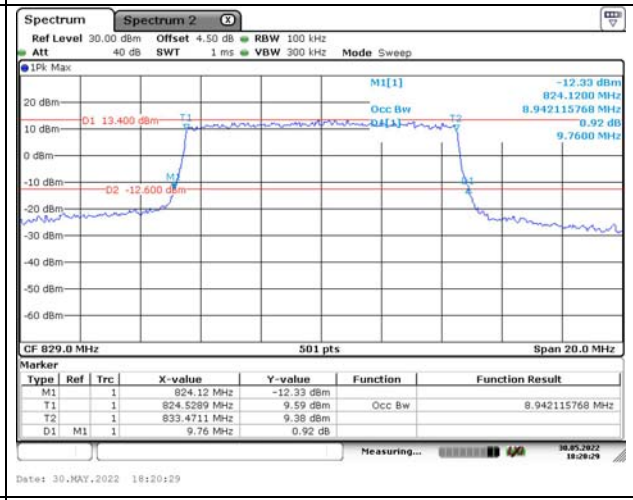
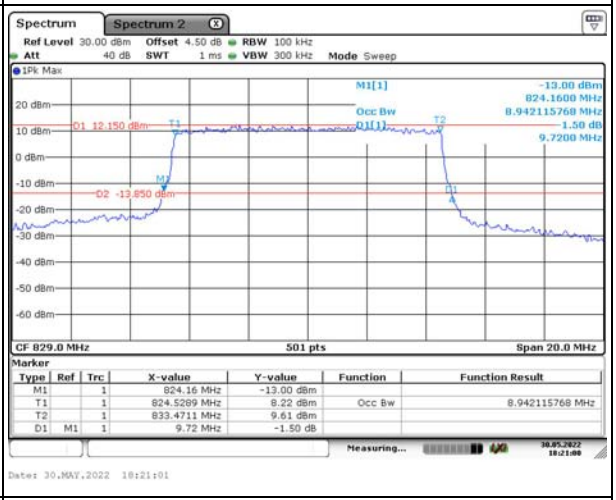
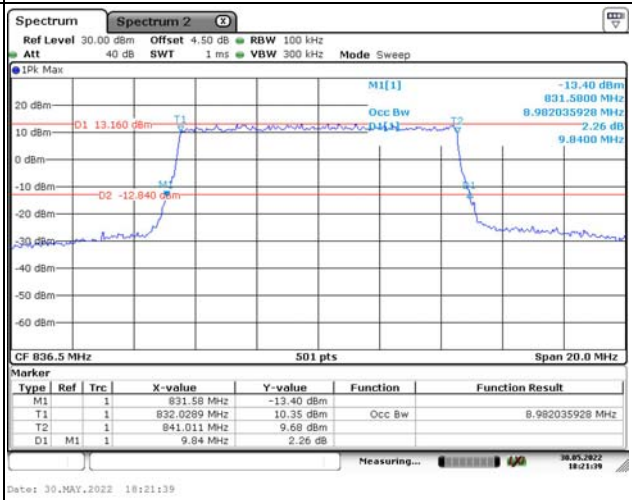
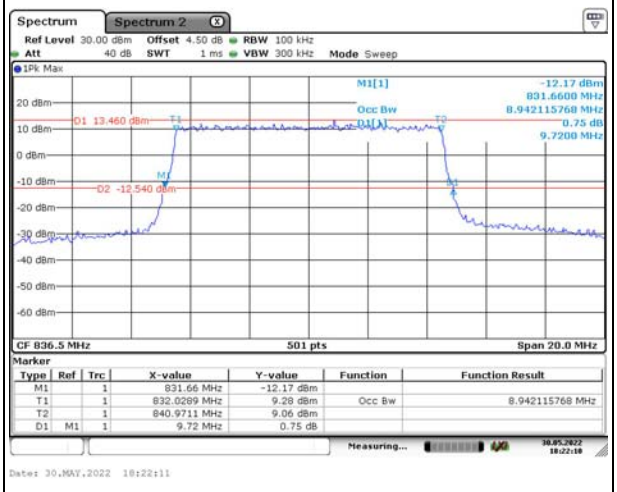
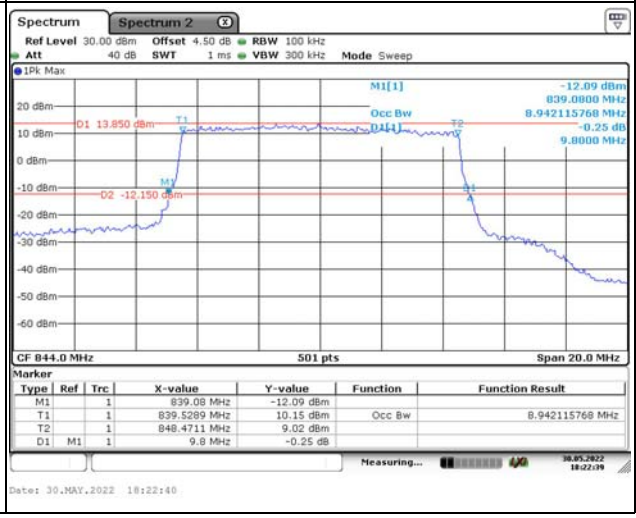
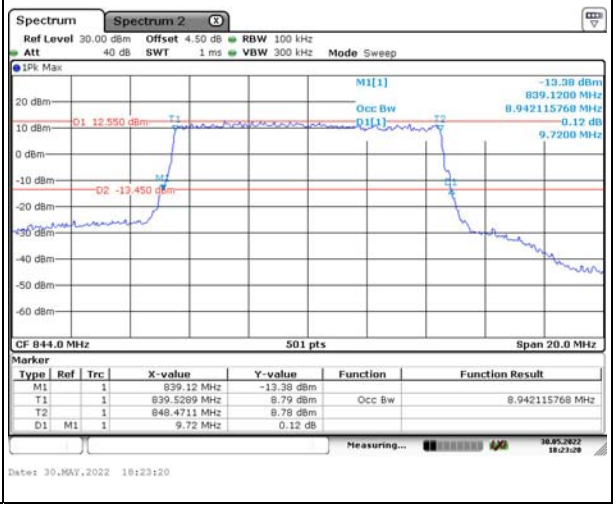
Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	0	0.000	2.5
	-20	3.85	-6	-0.007	2.5
	-10	3.85	-7	-0.008	2.5
	0	3.85	5	0.006	2.5
	10	3.85	-4	-0.005	2.5
	20	3.85	0	0.000	2.5
	30	3.85	7	0.008	2.5
	40	3.85	-7	-0.008	2.5
	50	3.85	3	0.004	2.5
Frequency Stability vs. Voltage	20	3.5	5	0.006	2.5
	20	4.4	2	0.002	2.5
				Result:	**Pass**

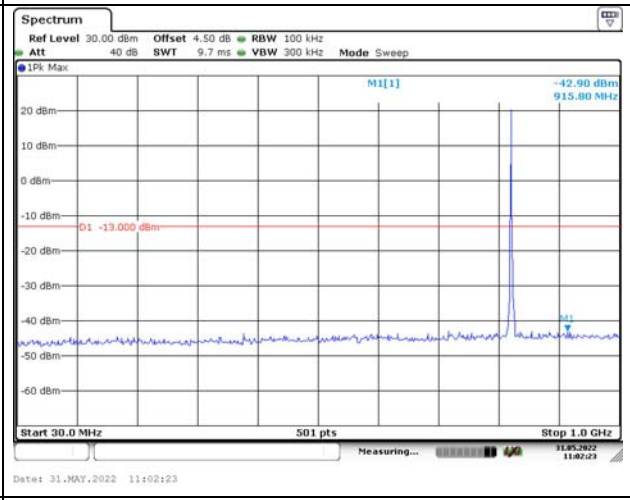
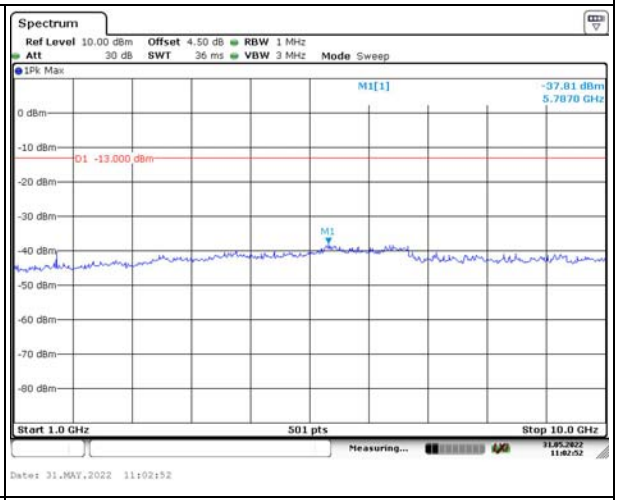
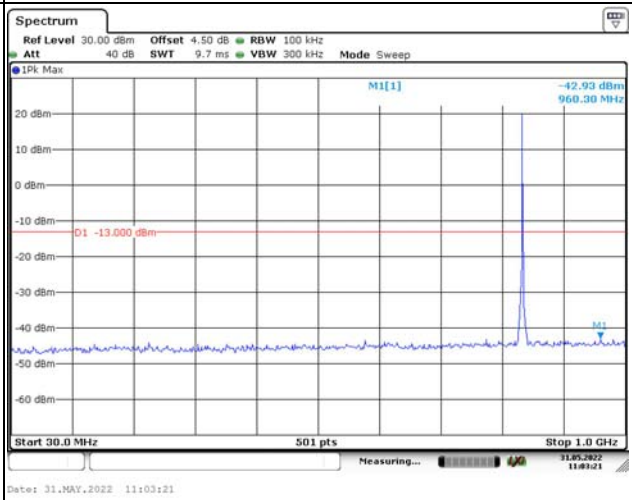
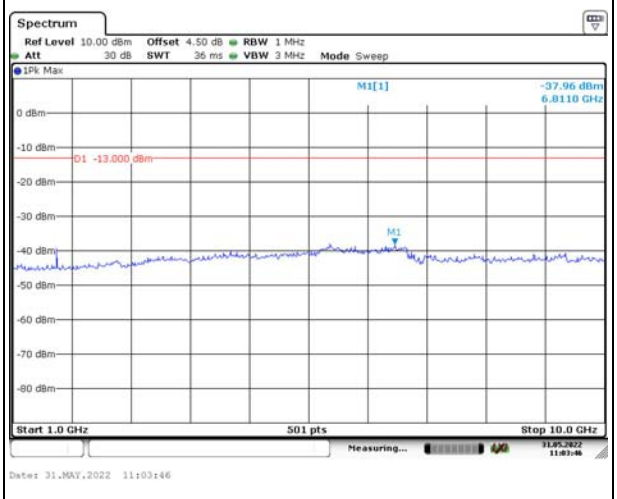
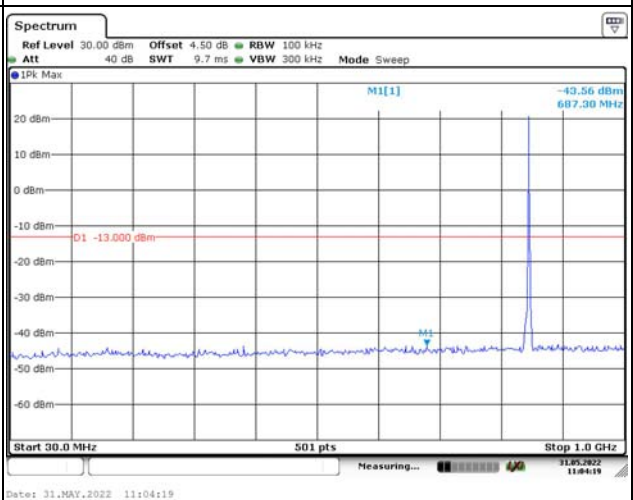
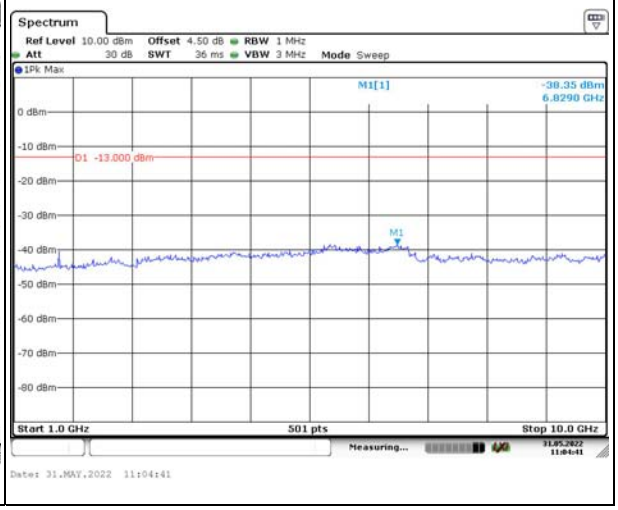
Test Plots:

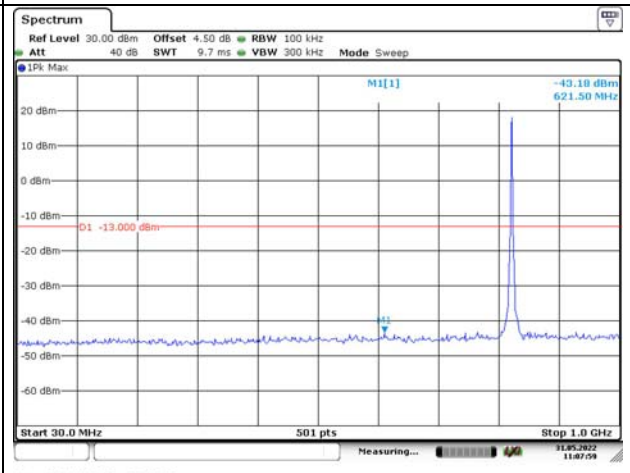
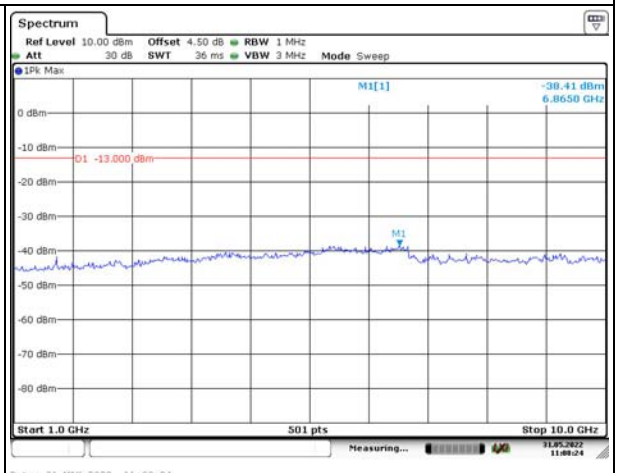
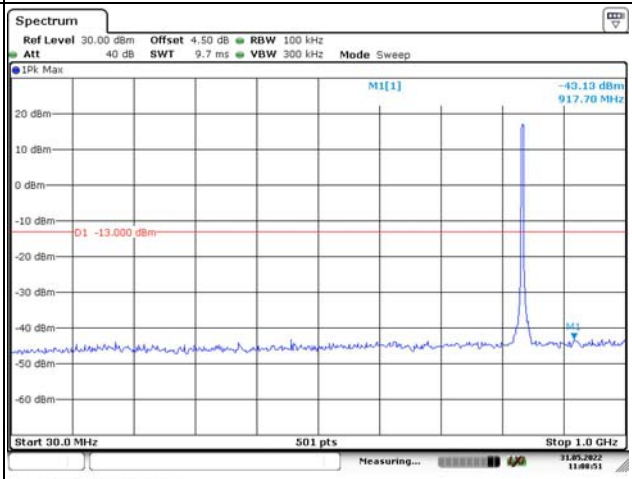
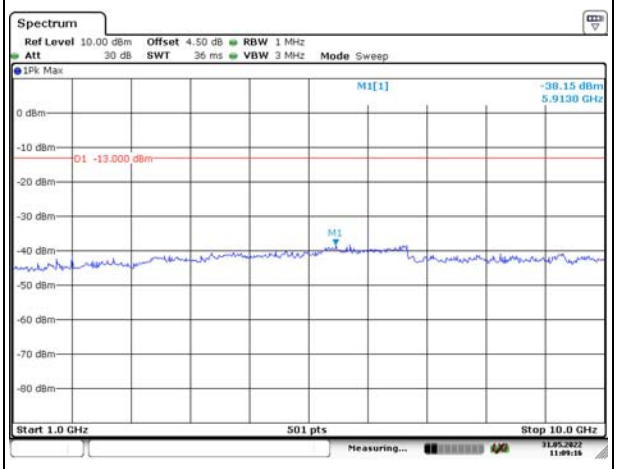
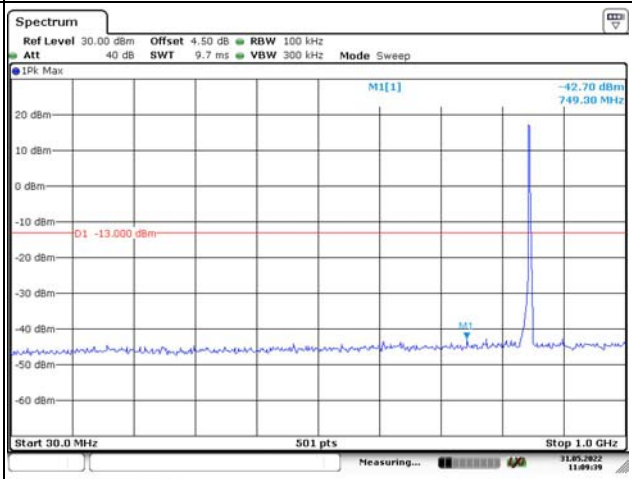
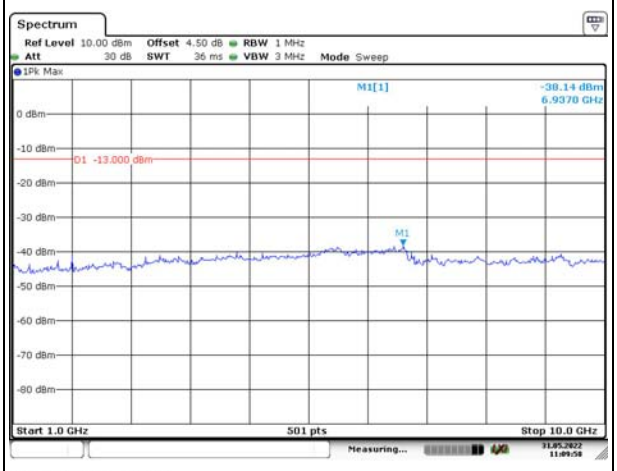
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

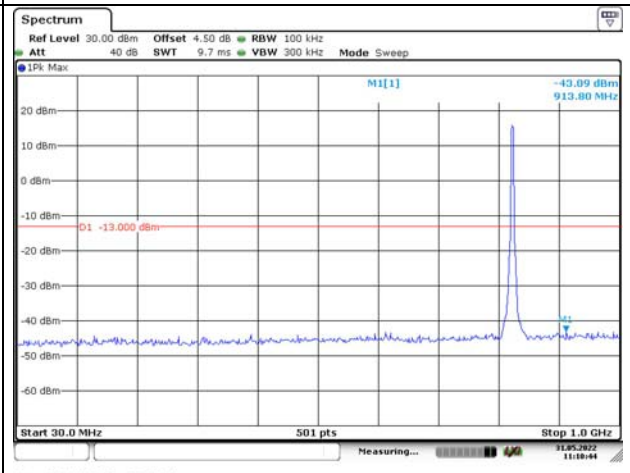
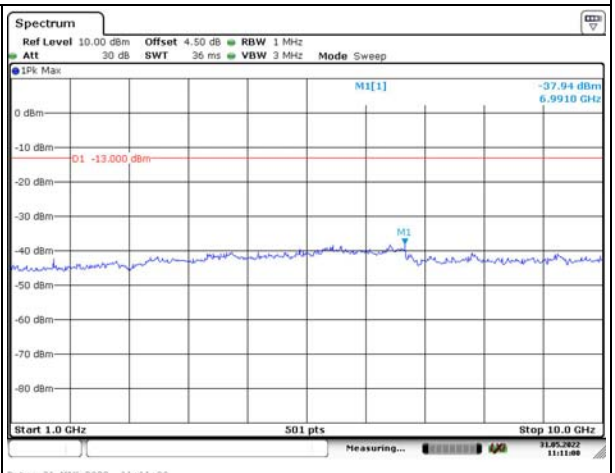
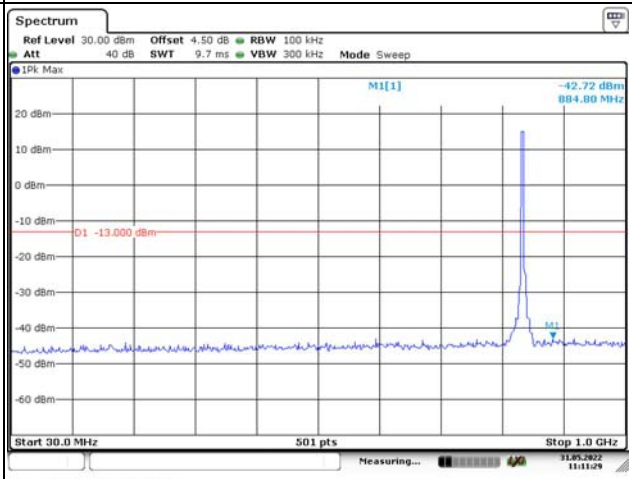
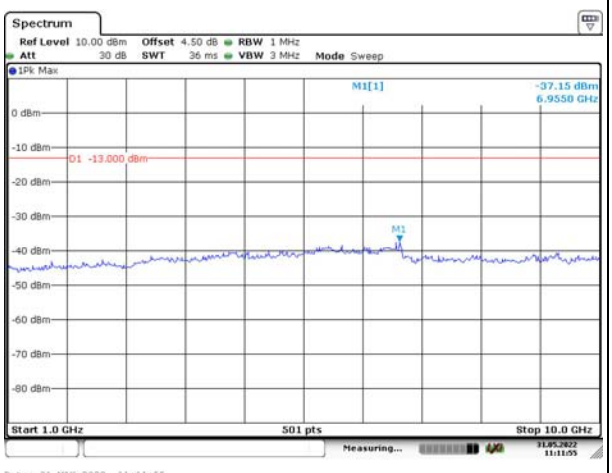
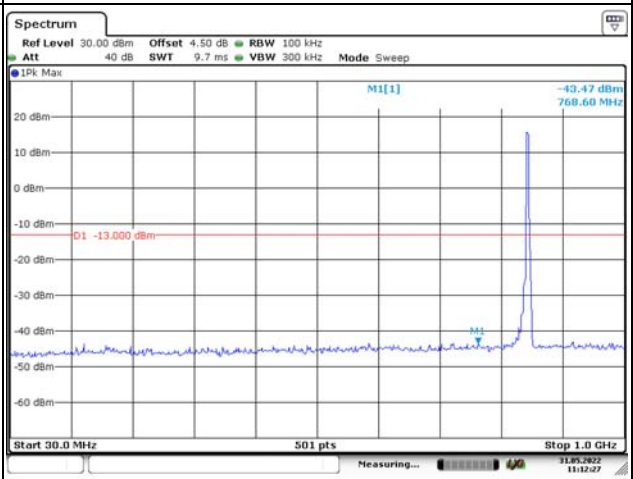
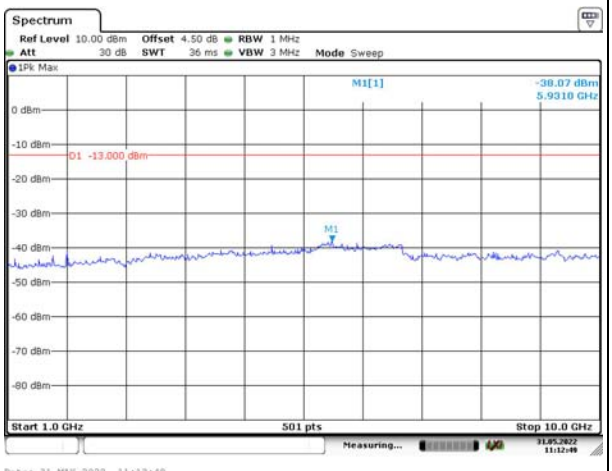
Occupied Bandwidth		
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

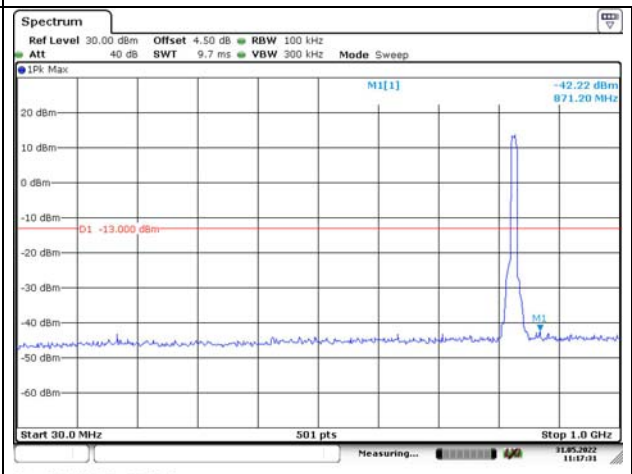
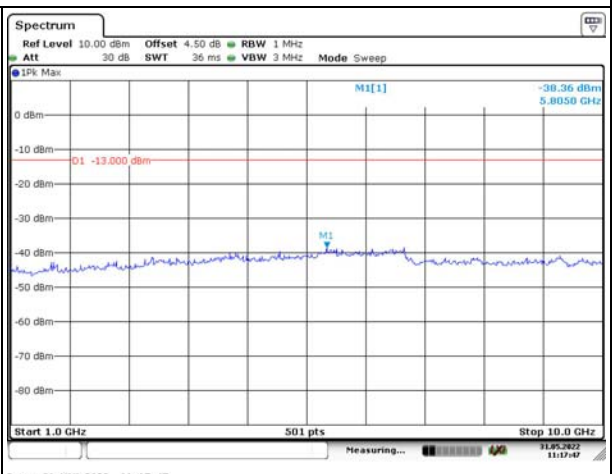
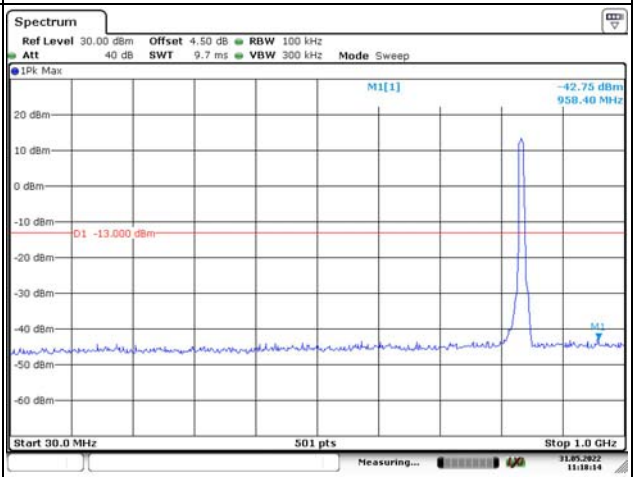
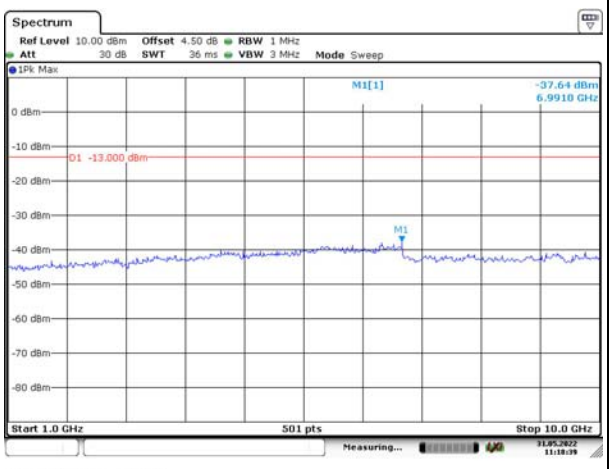
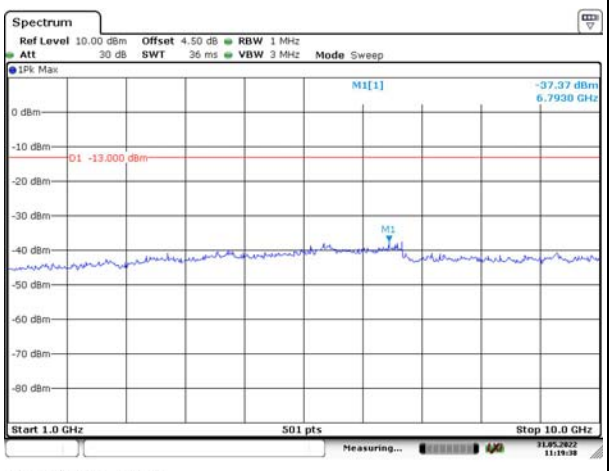
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

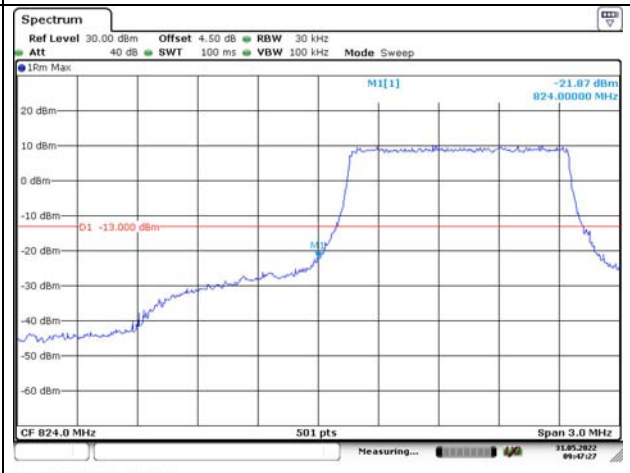
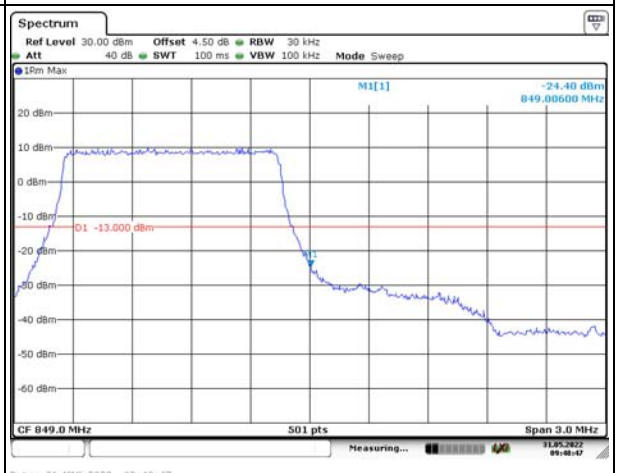
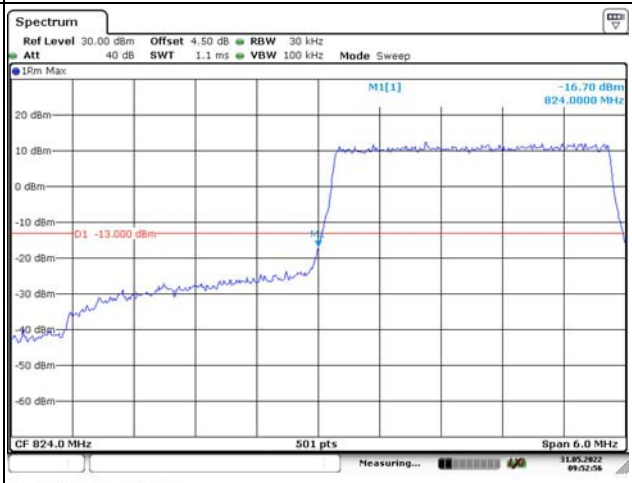
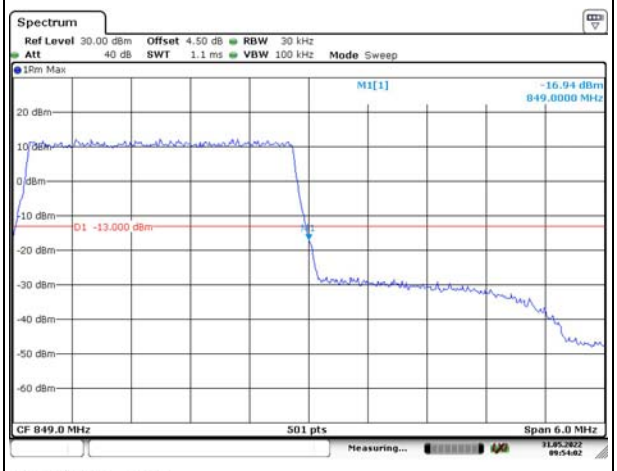
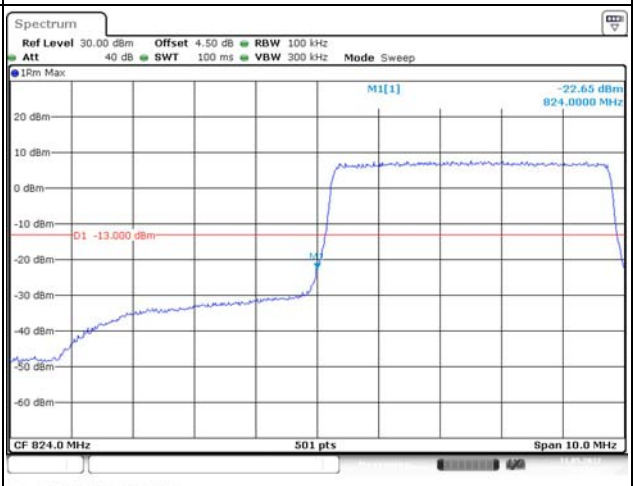
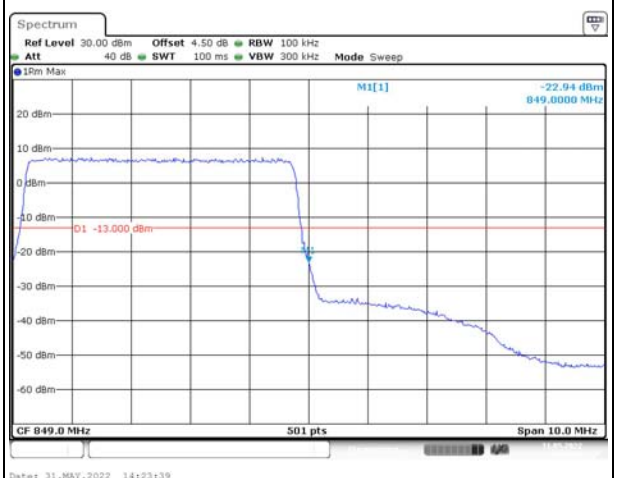
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

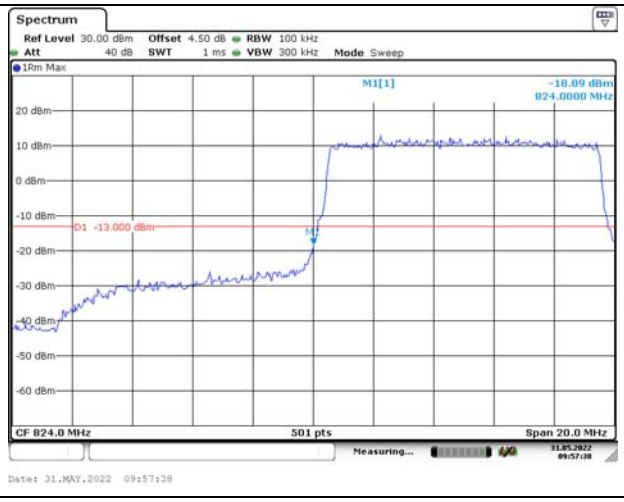
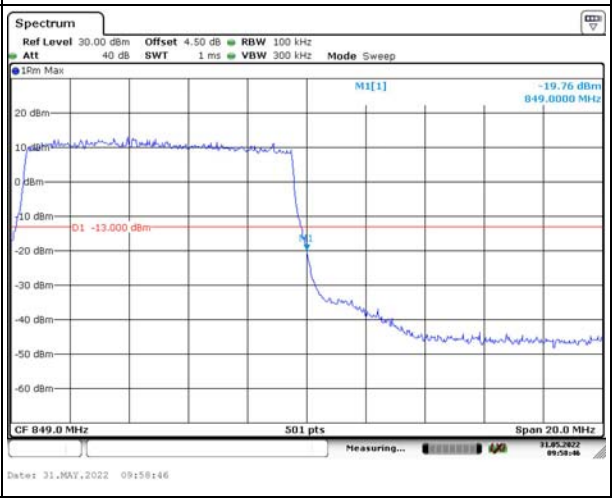
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

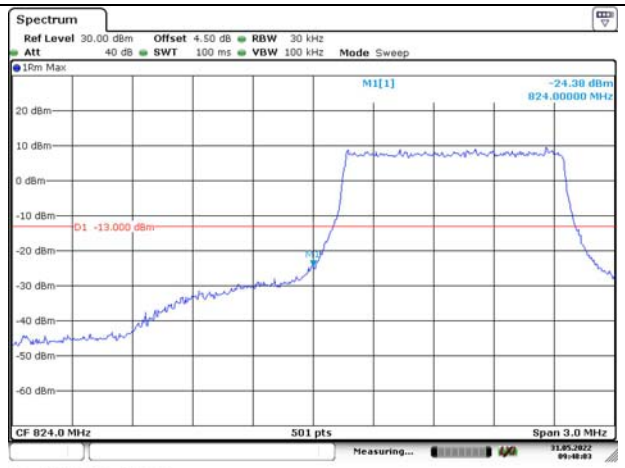
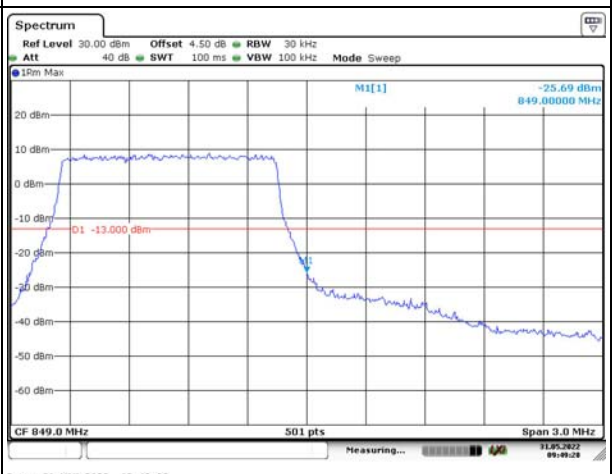
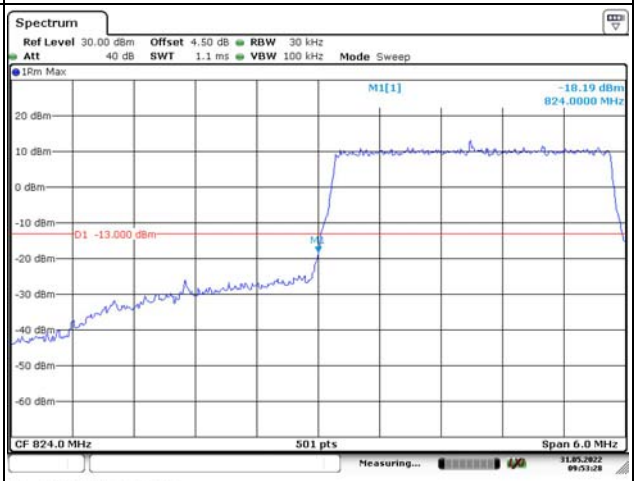
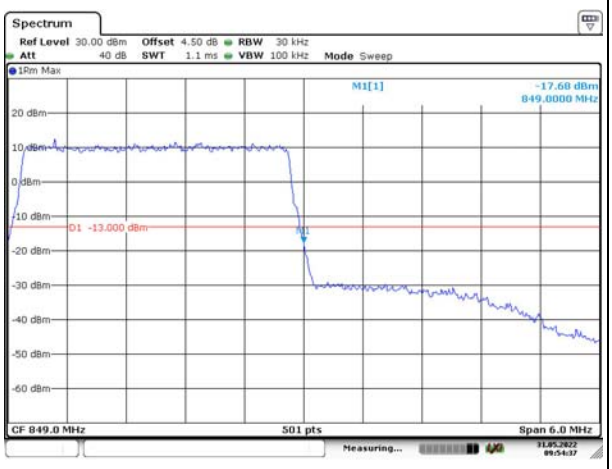
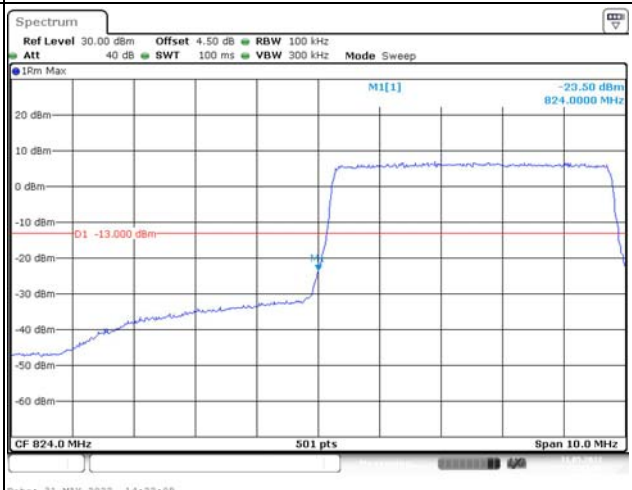
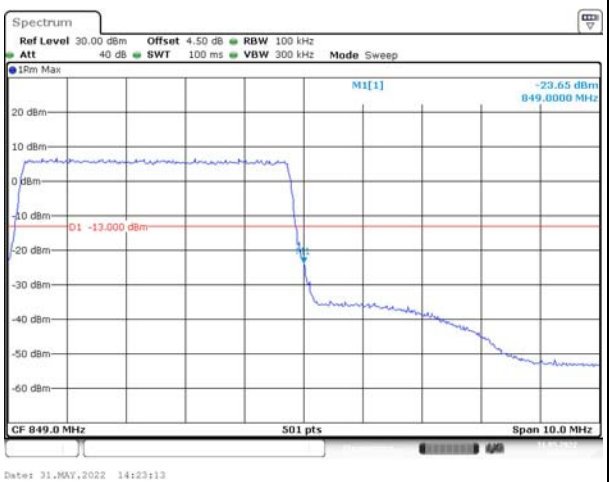
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

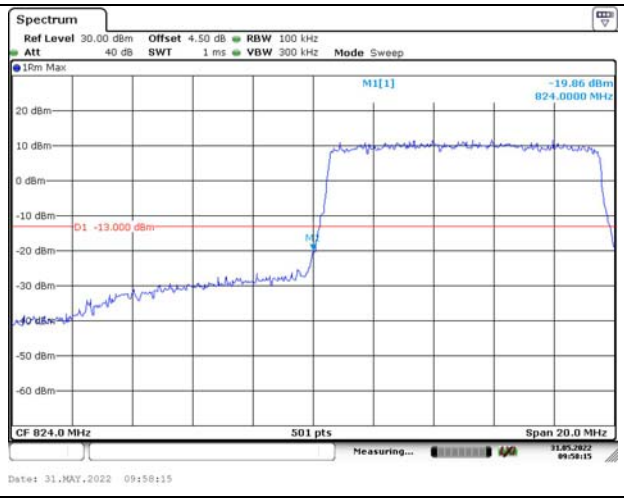
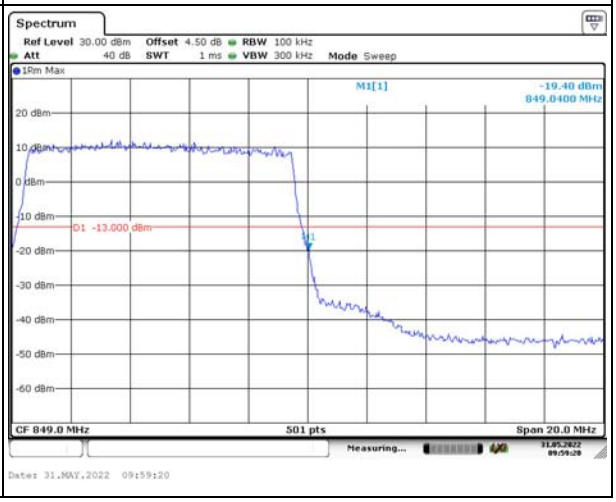
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 1.4MHz		
QPSK 3MHz		
QPSK 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 10MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 10MHz		

4.12 Antenna Port Test Data and Results for Module B LTE Band 5

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/29-2022/7/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	26.6	Relative Humidity: (%)	43	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

EUT Information@ LTE Band 5▲:					
Antenna Gain G_T (dBi):	-7.47	Antenna Gain G_T (dBd):	-9.62	Path Loss L_C (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

Test Data:

FCC§2.1046;§ 22.913 (a)

RF Output Power:

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.52	22.90	22.70	13.48	38.45
	RB1#3	22.84	23.10	22.50		
	RB1#5	22.47	22.84	22.49		
	RB3#0	22.56	22.81	22.75		
	RB3#3	22.57	22.77	22.57		
	RB6#0	21.59	21.81	22.13		
1.4MHz 16QAM	RB1#0	21.47	21.90	21.91	12.5	38.45
	RB1#3	21.53	22.12	21.96		
	RB1#5	21.50	21.96	21.76		
	RB3#0	21.77	21.82	21.86		
	RB3#3	21.85	21.90	21.72		
	RB6#0	20.28	20.58	20.55		
3MHz QPSK	RB1#0	22.63	22.73	22.52	13.25	38.45
	RB1#8	22.67	22.87	22.61		
	RB1#14	22.66	22.86	22.43		
	RB6#0	21.72	21.83	22.24		
	RB6#9	21.71	21.82	21.71		
	RB15#0	21.69	21.78	21.65		
3MHz 16QAM	RB1#0	22.22	21.90	21.99	12.69	38.45
	RB1#8	22.31	21.97	21.97		
	RB1#14	22.04	21.54	21.85		
	RB6#0	20.99	20.44	20.52		
	RB6#9	20.81	20.52	20.62		
	RB15#0	20.73	20.66	20.61		
5MHz QPSK	RB1#0	22.50	22.54	22.13	12.93	38.45
	RB1#13	22.55	22.48	22.26		
	RB1#24	22.54	22.53	21.61		
	RB15#0	21.70	21.73	22.05		
	RB15#10	21.72	21.85	21.60		
	RB25#0	21.71	21.72	21.40		
5MHz 16QAM	RB1#0	21.06	21.38	21.14	11.9	38.45
	RB1#13	21.36	21.18	21.52		
	RB1#24	21.09	21.04	20.93		
	RB15#0	20.59	20.68	20.93		
	RB15#10	20.49	20.50	20.43		
	RB25#0	20.53	20.67	20.42		
10MHz QPSK	RB1#0	21.79	21.86	21.72	13.08	38.45

	RB1#25	22.35	22.70	21.95		
	RB1#49	21.86	21.43	20.95		
	RB25#0	21.98	22.13	21.82		
	RB25#25	21.54	21.67	21.57		
	RB50#0	21.58	21.63	21.60		
10MHz 16QAM	RB1#0	21.10	20.95	20.61	12.34	38.45
	RB1#25	21.96	21.95	21.06		
	RB1#49	21.48	20.66	20.09		
	RB25#0	20.80	21.25	21.03		
	RB25#25	20.58	20.66	20.71		
	RB50#0	20.51	20.63	20.51		
Note: ERP= Conducted Power(dBm) - L_C(dB) + G_T (dBd)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.58	4.62	4.58	13
	RB50#0	5.26	5.38	5.19	13
10MHz 16QAM	RB1#0	5.51	5.61	5.54	13
	RB50#0	6.09	6.28	6.22	13
				Result:	**Pass**

FCC §2.1049, §22.905:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.104	1.098	1.110	1.320	1.308	1.290
1.4MHz 16QAM	1.104	1.092	1.104	1.290	1.278	1.314
3MHz QPSK	2.700	2.700	2.688	2.928	2.940	2.964
3MHz 16QAM	2.700	2.688	2.688	2.940	2.952	2.940
5MHz QPSK	4.520	4.520	4.520	5.000	4.980	5.020
5MHz 16QAM	4.520	4.520	4.520	5.000	5.020	5.060
10MHz QPSK	8.960	8.960	8.960	9.760	9.680	9.600
10MHz 16QAM	8.960	8.960	8.920	9.640	9.720	9.600
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

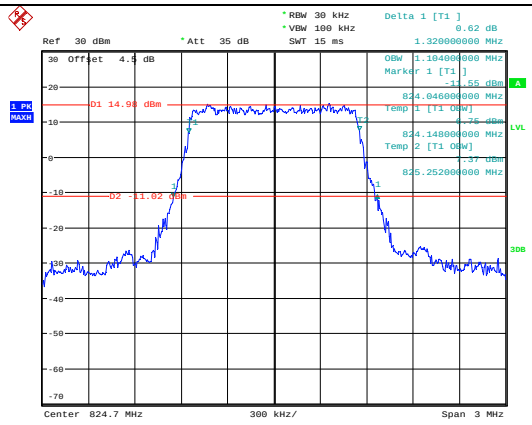
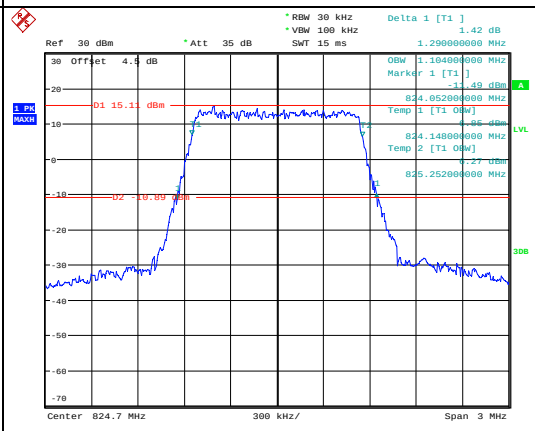
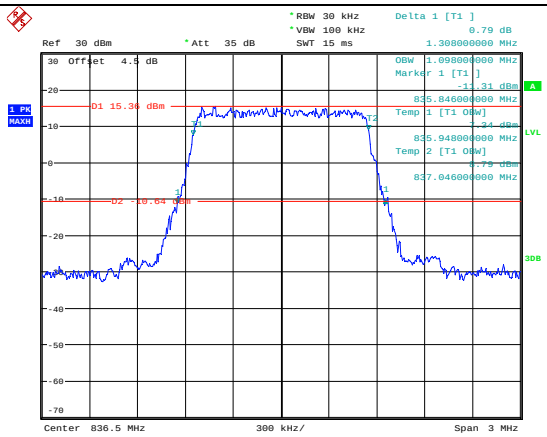
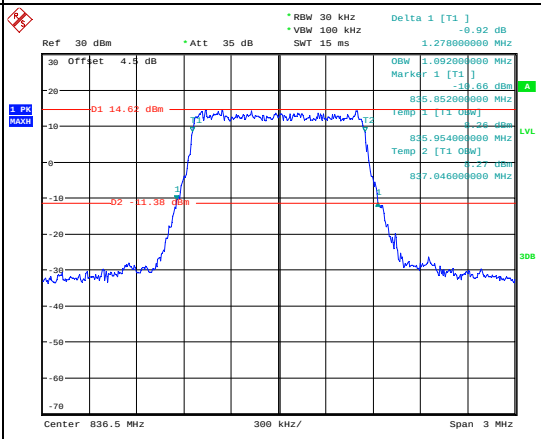
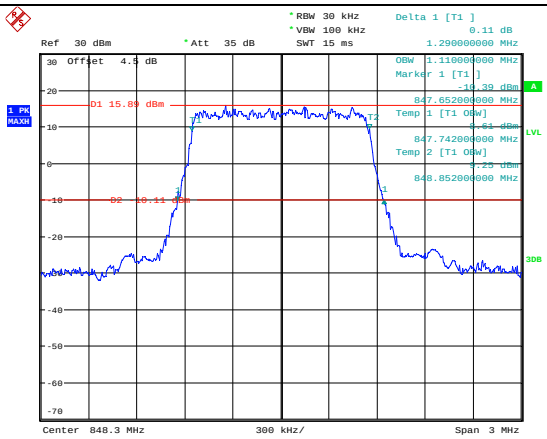
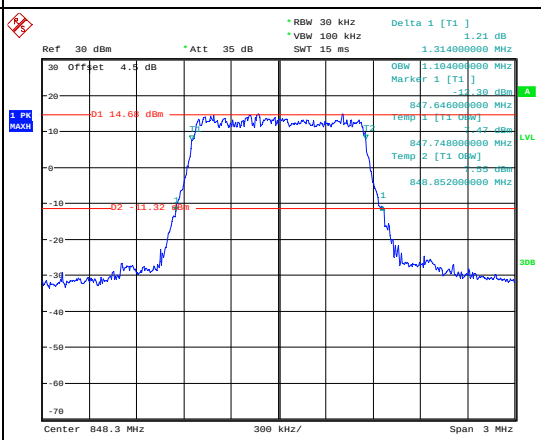
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §22.355: Frequency Stability

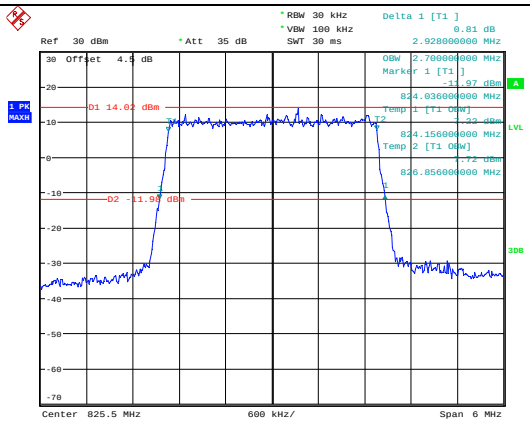
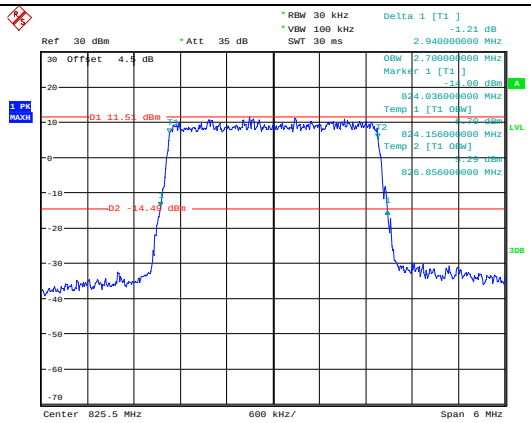
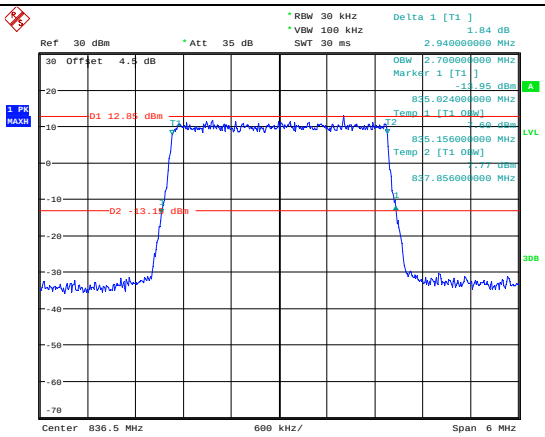
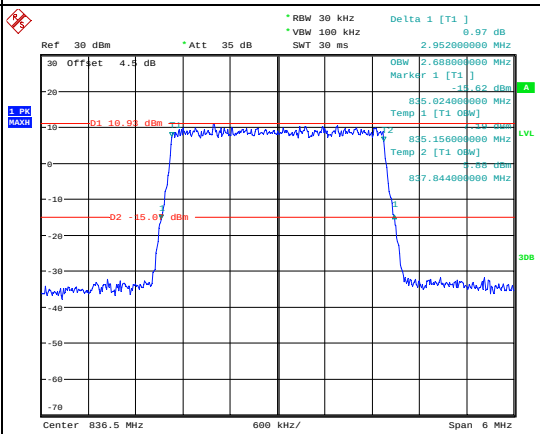
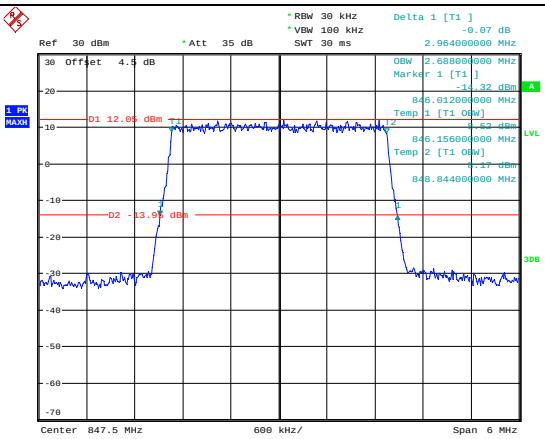
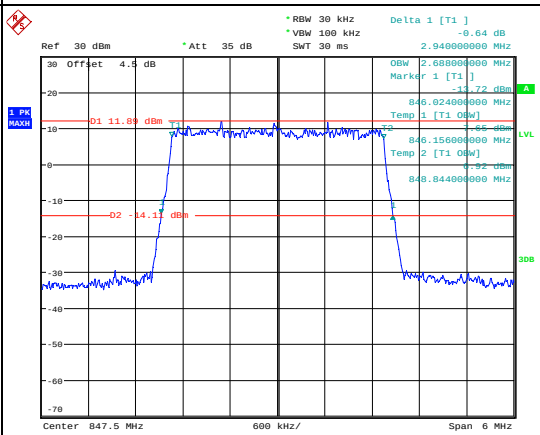
Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	2	0.002	2.5
	-20	3.85	-9	-0.011	2.5
	-10	3.85	3	0.004	2.5
	0	3.85	1	0.001	2.5
	10	3.85	-7	-0.008	2.5
	20	3.85	0	0.000	2.5
	30	3.85	4	0.005	2.5
	40	3.85	-7	-0.008	2.5
	50	3.85	4	0.005	2.5
Frequency Stability vs. Voltage	20	3.5	14	0.017	2.5
	20	4.4	5	0.006	2.5
				Result:	**Pass**

Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	-1	-0.001	2.5
	-20	3.85	6	0.007	2.5
	-10	3.85	-8	-0.010	2.5
	0	3.85	2	0.002	2.5
	10	3.85	-3	-0.004	2.5
	20	3.85	0	0.000	2.5
	30	3.85	-8	-0.010	2.5
	40	3.85	-7	-0.008	2.5
	50	3.85	1	0.001	2.5
Frequency Stability vs. Voltage	20	3.5	4	0.005	2.5
	20	4.4	-2	-0.002	2.5
				Result:	**Pass**

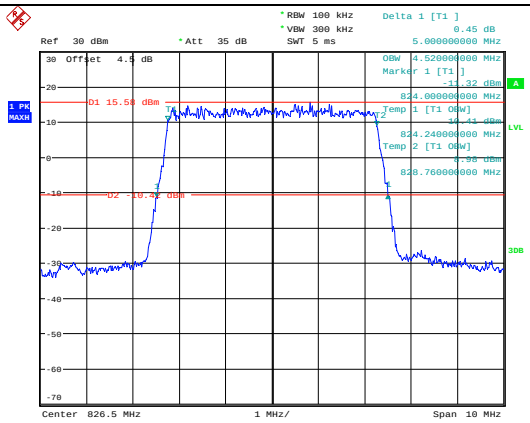
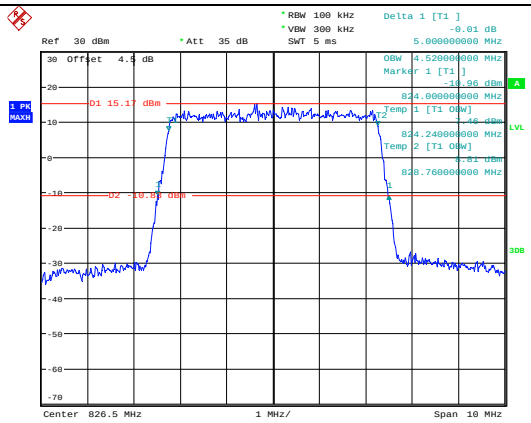
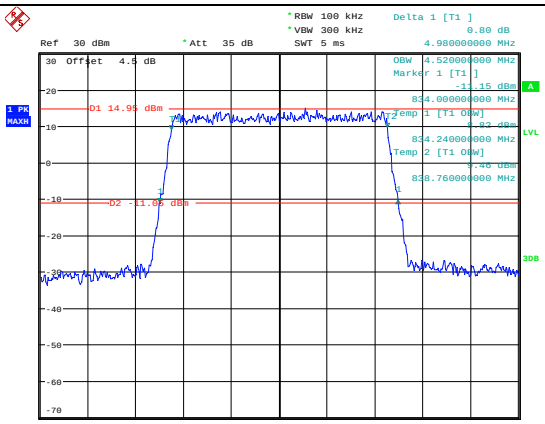
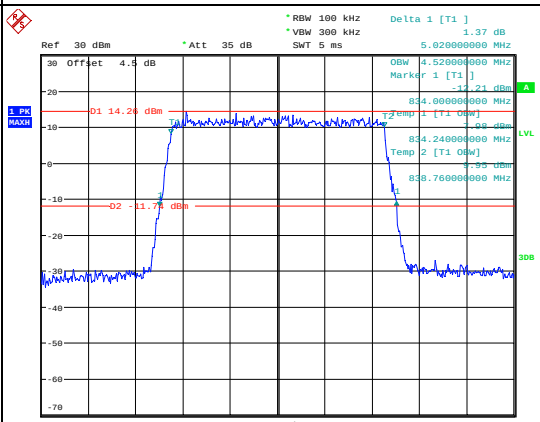
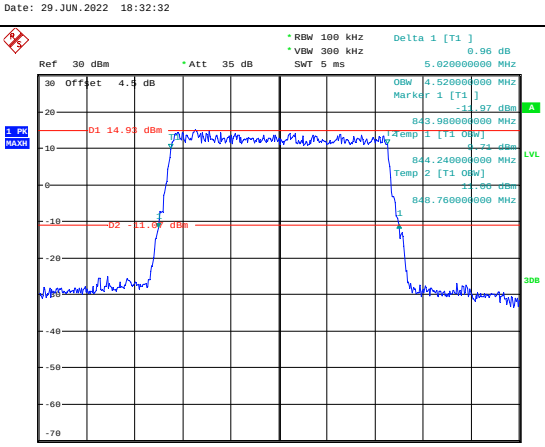
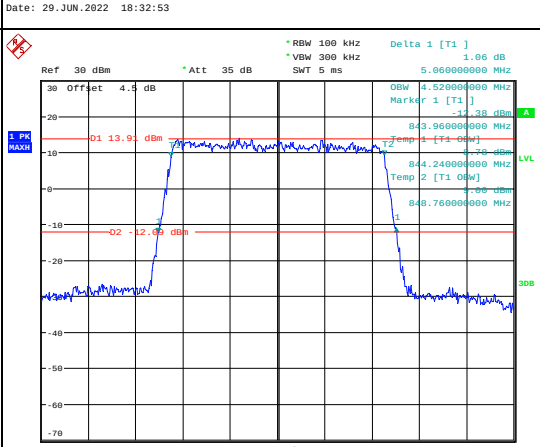
Test Plots:

Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

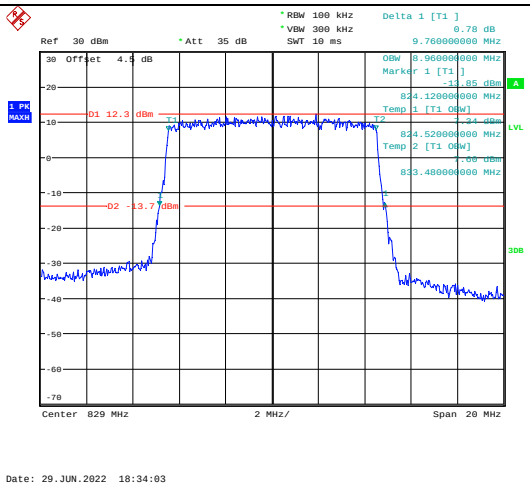
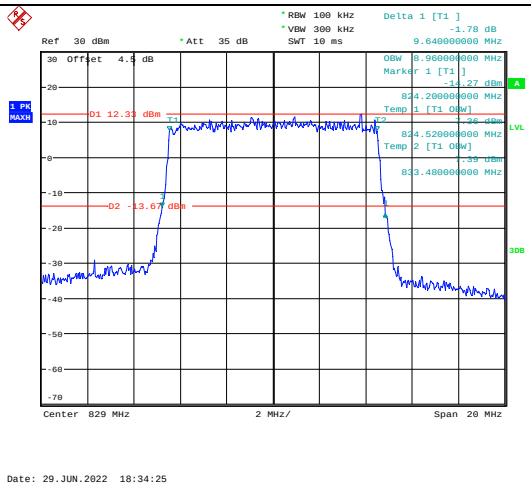
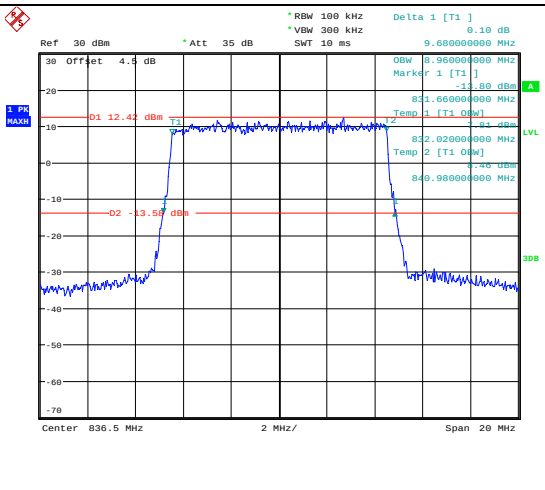
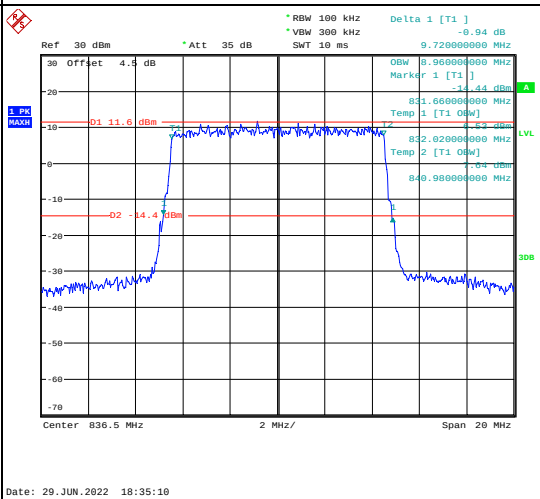
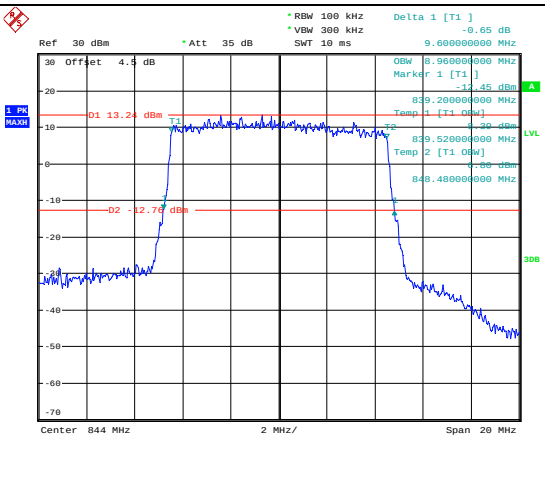
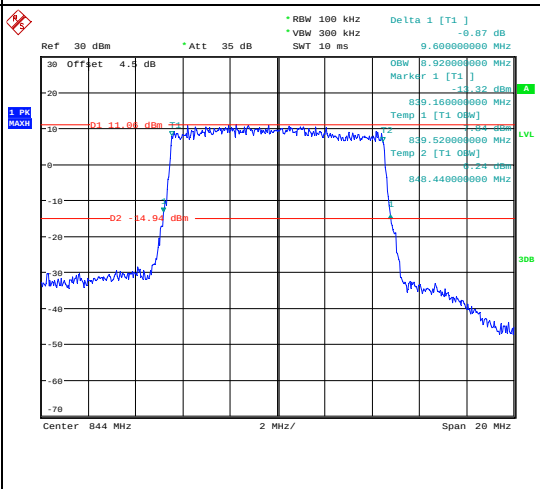
Occupied Bandwidth

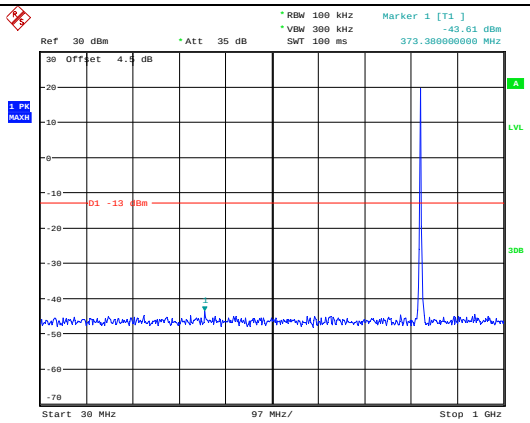
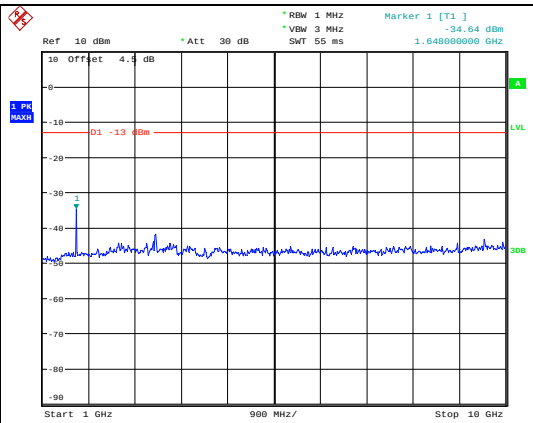
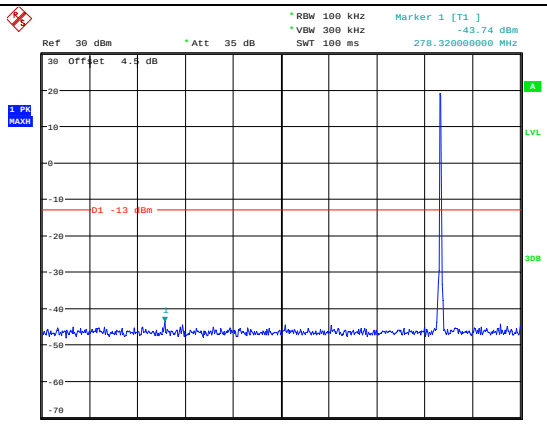
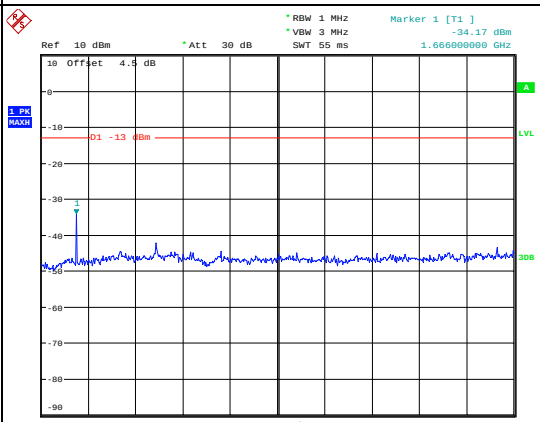
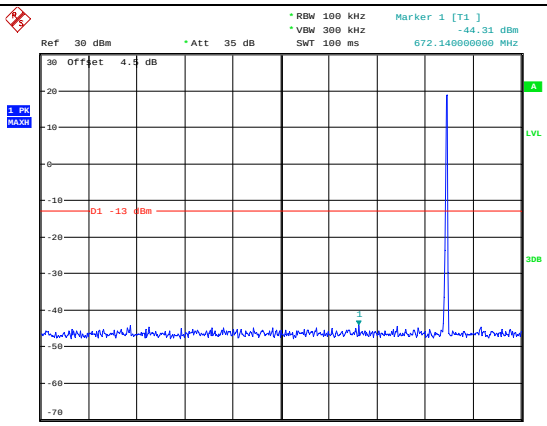
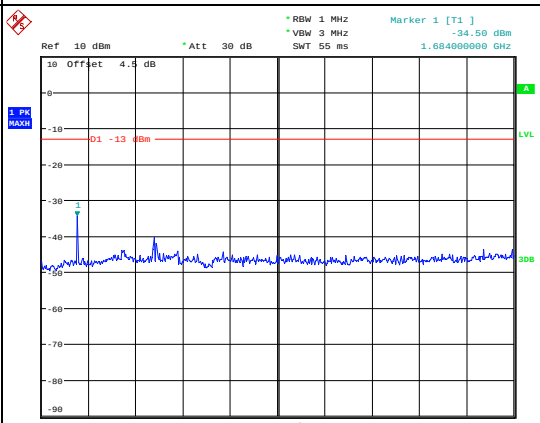
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:29:43	 Date: 29.JUN.2022 18:30:00
Middle	 Date: 29.JUN.2022 18:30:22	 Date: 29.JUN.2022 18:30:43
Highest	 Date: 29.JUN.2022 18:31:04	 Date: 29.JUN.2022 18:31:25

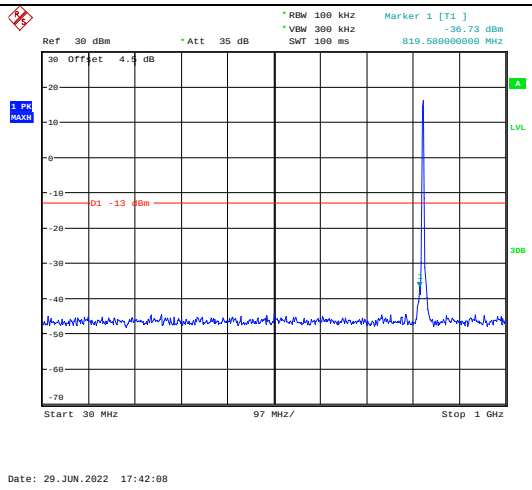
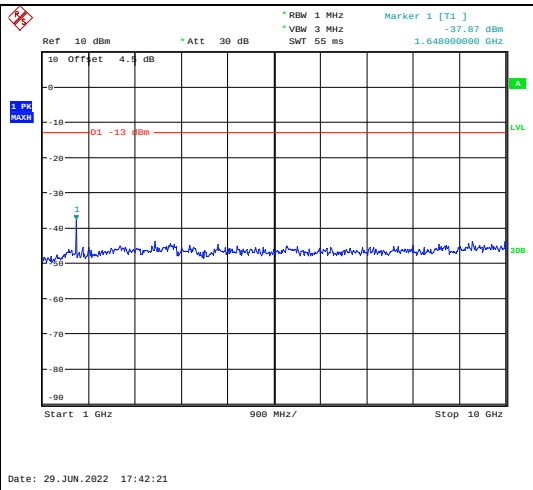
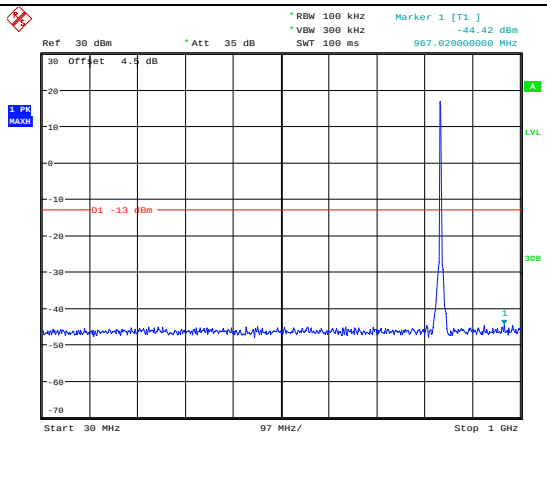
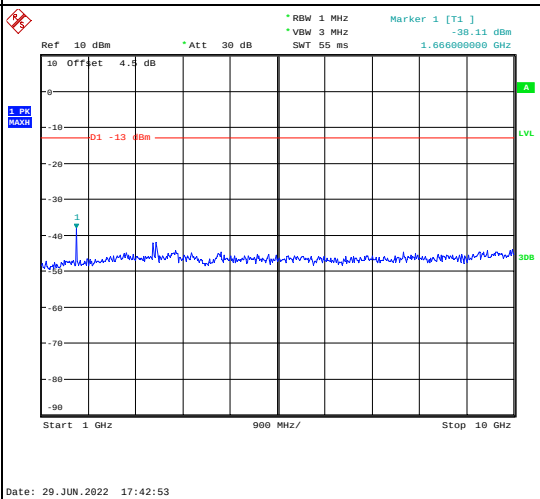
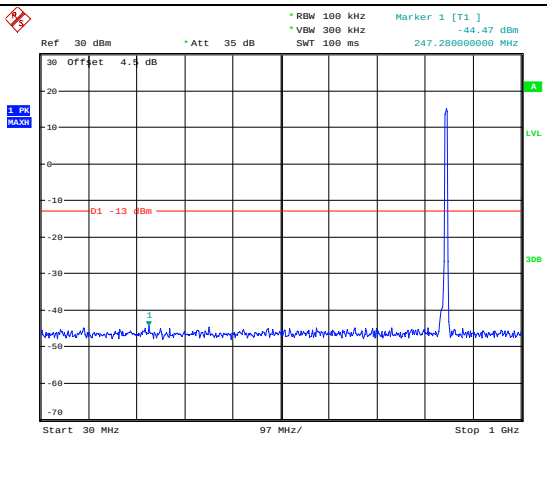
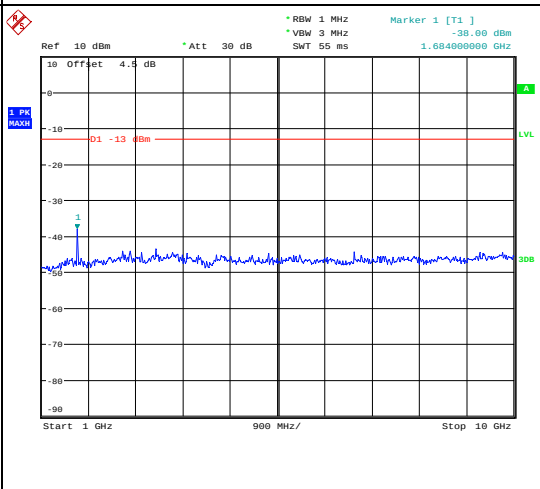
Occupied Bandwidth

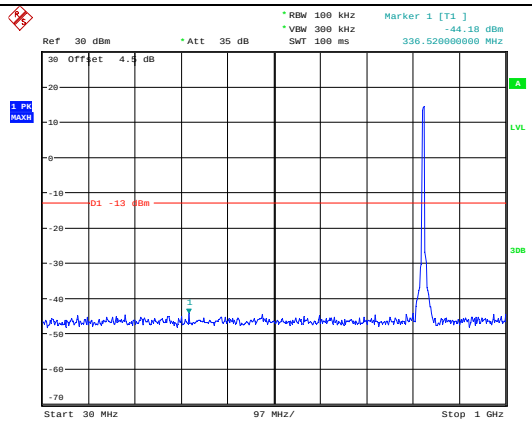
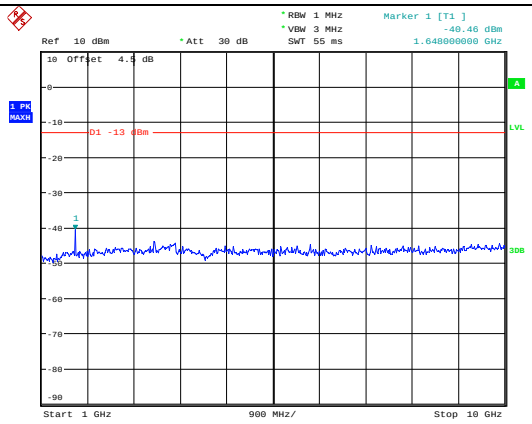
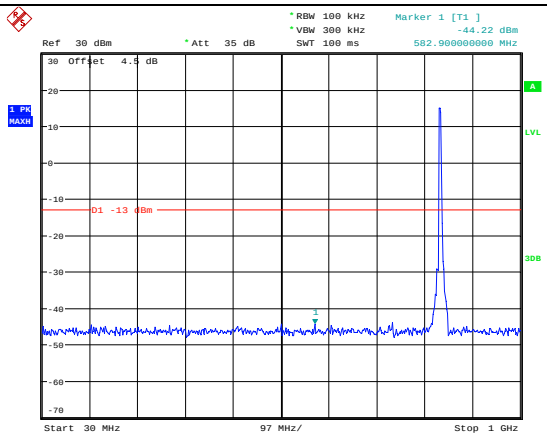
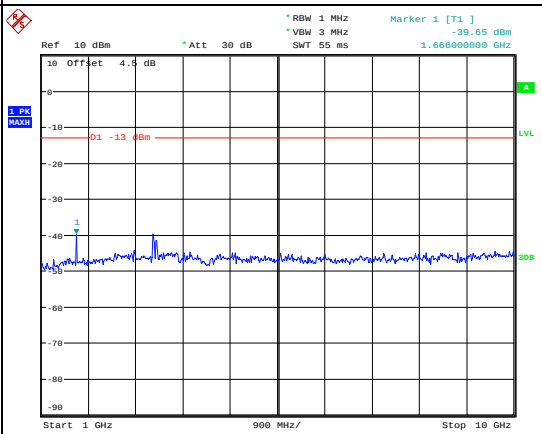
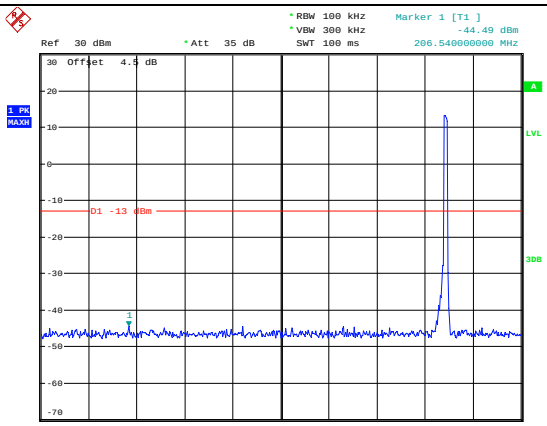
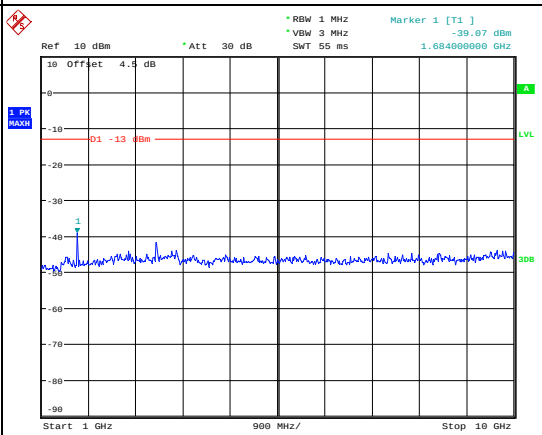
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:31:50	 Date: 29.JUN.2022 18:32:11
Middle	 Date: 29.JUN.2022 18:32:32	 Date: 29.JUN.2022 18:32:53
Highest	 Date: 29.JUN.2022 18:33:15	 Date: 29.JUN.2022 18:33:38

Occupied Bandwidth

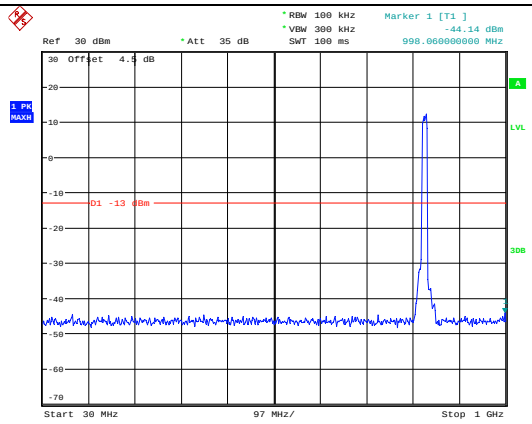
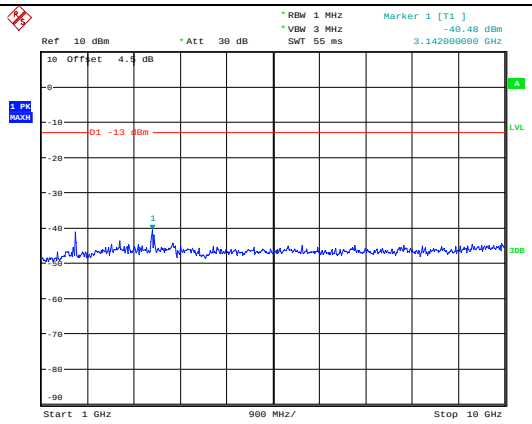
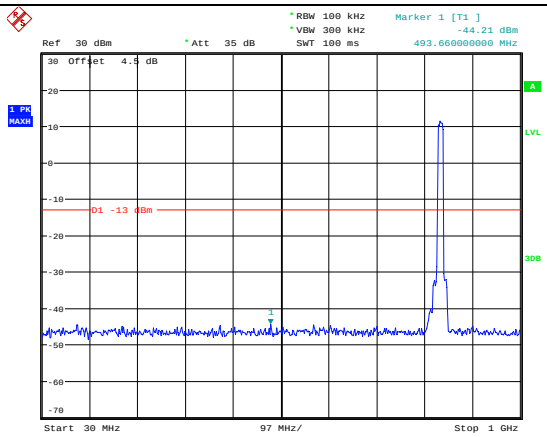
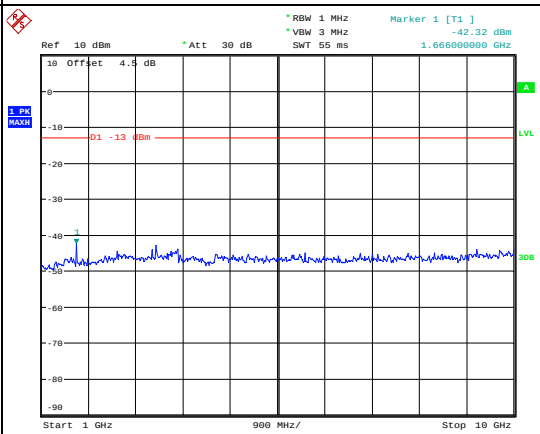
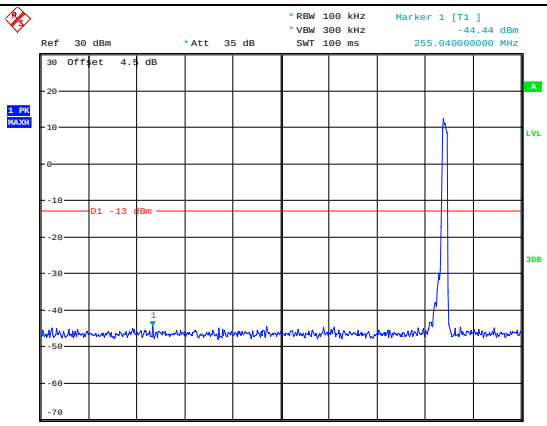
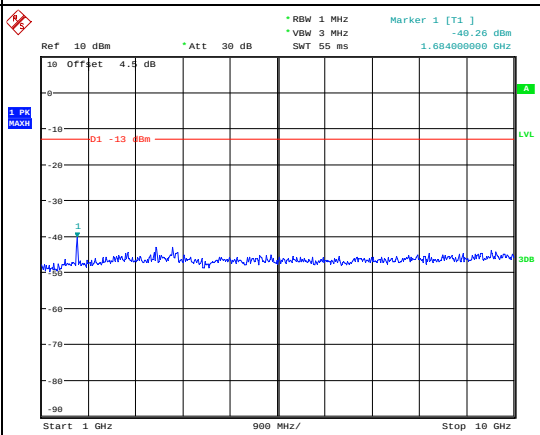
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:34:03	 Date: 29.JUN.2022 18:34:25
Middle	 Date: 29.JUN.2022 18:34:48	 Date: 29.JUN.2022 18:35:10
Highest	 Date: 29.JUN.2022 18:35:36	 Date: 29.JUN.2022 18:35:58

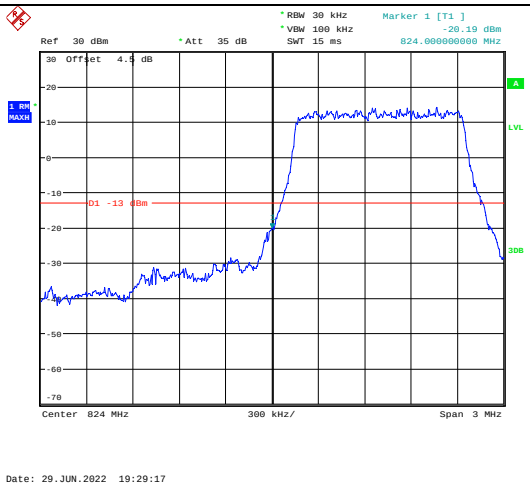
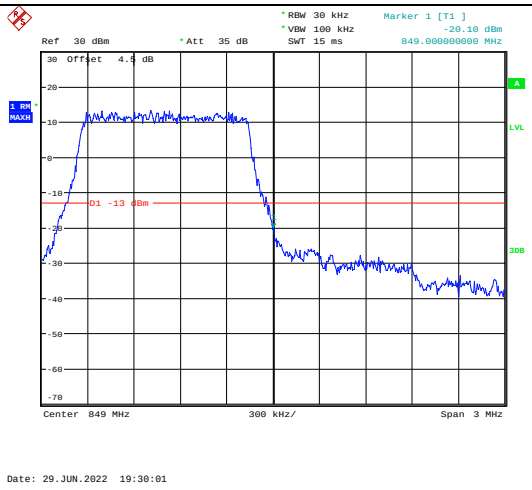
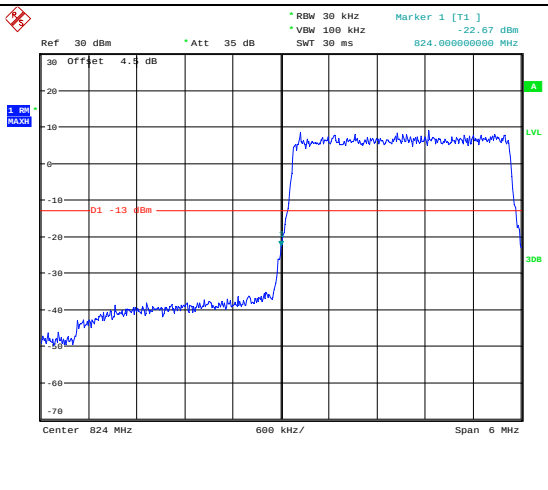
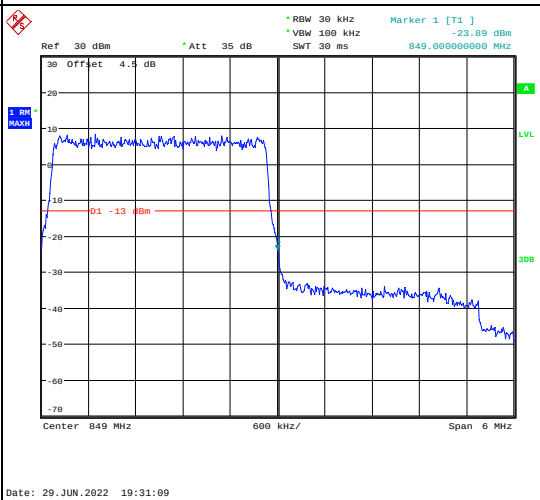
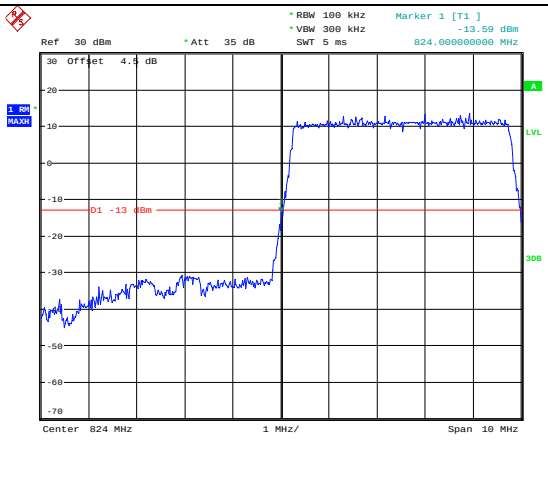
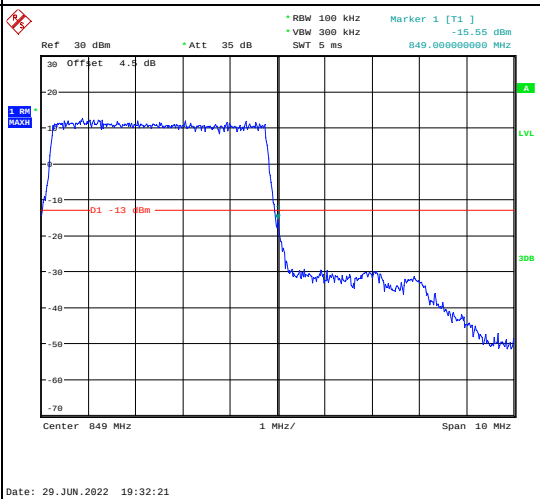
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest	 Date: 29.JUN.2022 17:37:51	 Date: 29.JUN.2022 17:38:04
Middle	 Date: 29.JUN.2022 17:38:21	 Date: 29.JUN.2022 17:38:33
Highest	 Date: 29.JUN.2022 17:38:49	 Date: 29.JUN.2022 17:39:02

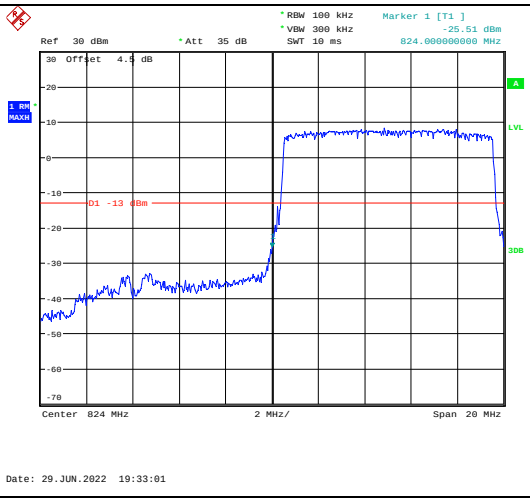
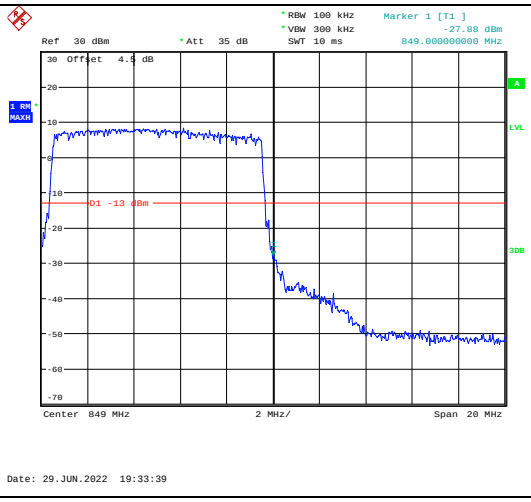
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest	 Date: 29.JUN.2022 17:42:08	 Date: 29.JUN.2022 17:42:21
Middle	 Date: 29.JUN.2022 17:42:40	 Date: 29.JUN.2022 17:42:53
Highest	 Date: 29.JUN.2022 17:43:09	 Date: 29.JUN.2022 17:43:21

Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest	 Date: 29.JUN.2022 17:45:10	 Date: 29.JUN.2022 17:45:22
Middle	 Date: 29.JUN.2022 17:45:42	 Date: 29.JUN.2022 17:45:54
Highest	 Date: 29.JUN.2022 17:46:11	 Date: 29.JUN.2022 17:46:23

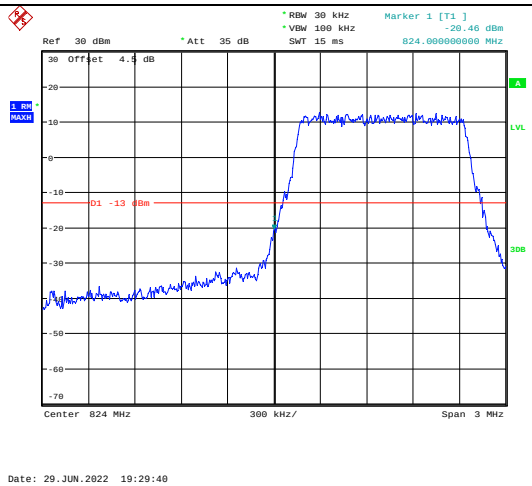
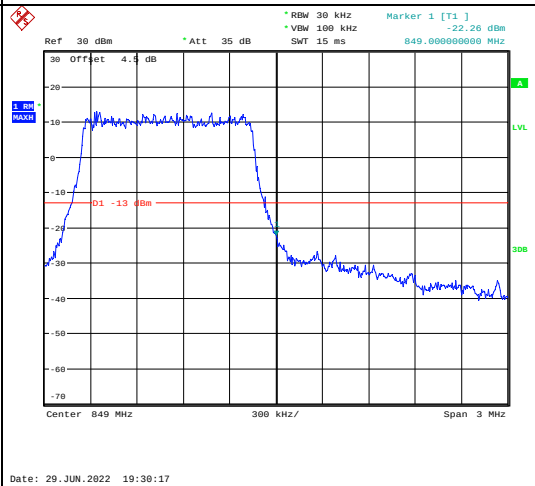
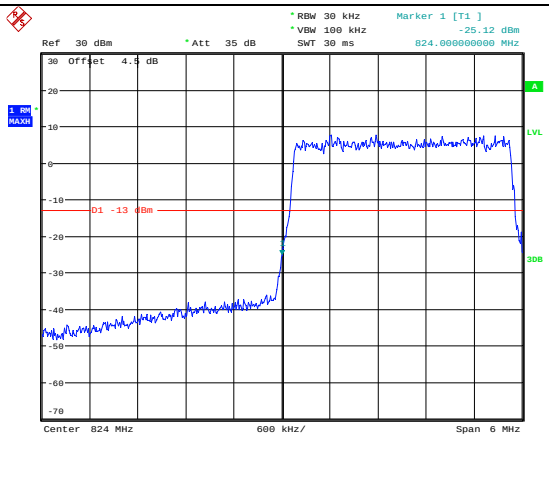
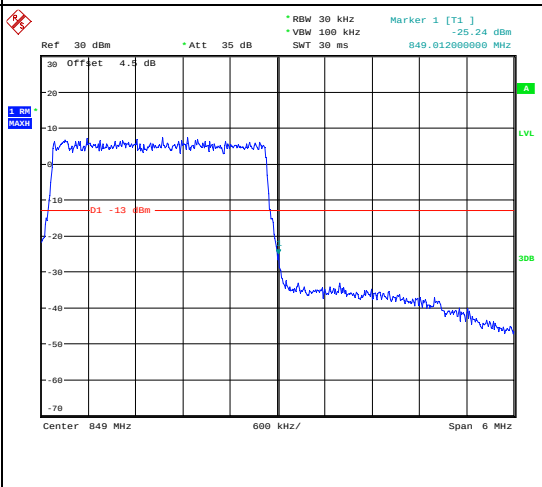
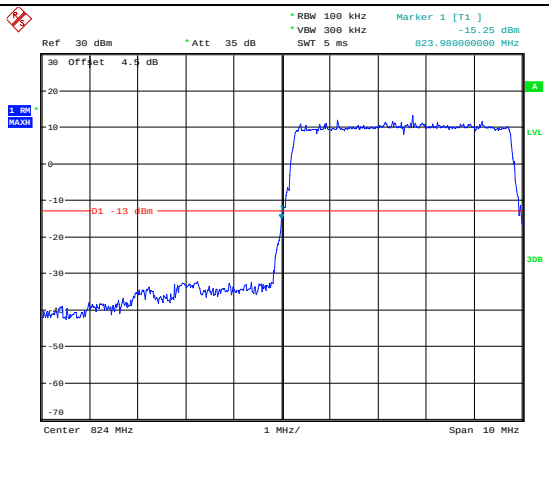
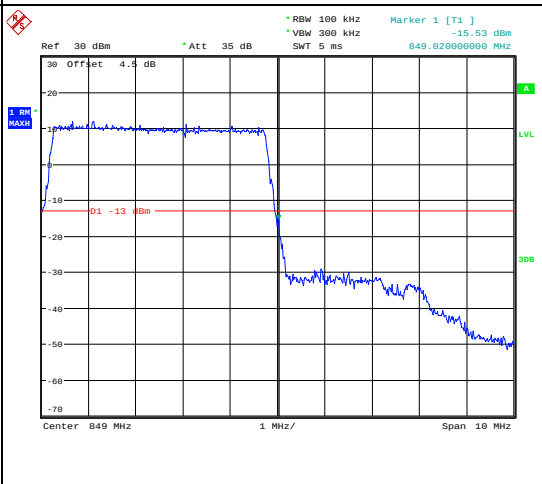
Spurious Emissions at Antenna Terminal

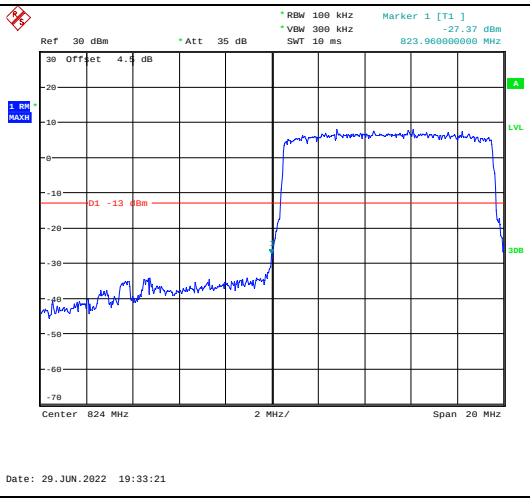
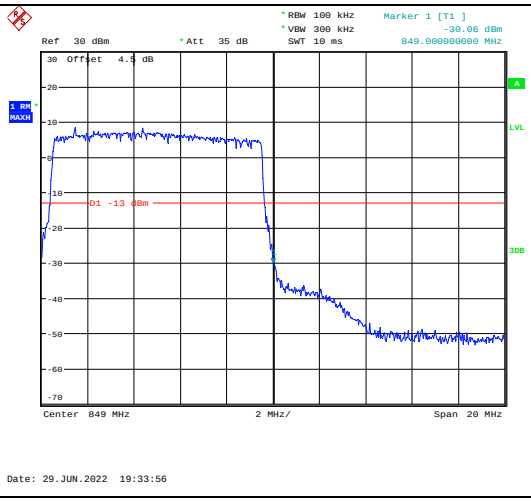
Channel	10MHz Bandwidth QPSK	
Lowest	 Date: 29.JUN.2022 17:46:43	 Date: 29.JUN.2022 17:46:56
Middle	 Date: 29.JUN.2022 17:47:14	 Date: 29.JUN.2022 17:47:26
Highest	 Date: 29.JUN.2022 17:47:44	 Date: 29.JUN.2022 17:47:56

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 1.4MHz		
QPSK 3MHz		
QPSK 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 10MHz		

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 10MHz		

4.13 Antenna Port Test Data and Results for Module A LTE Band 7

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/1-2022/7/15
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.1	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

EUT Information@LTE Band 7▲:					
Antenna Gain G_T (dBi):	-0.16			Path Loss L_C (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2502.5	2535	2567.5
10MHz	2505	2535	2565
15MHz	2507.5	2535	2562.5
20MHz	2510	2535	2560

Test Data:

FCC§2.1046;§ 27.50(h)(2)

RF Output Power:

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	18.03	18.20	18.42	18.26	33
	RB1#13	18.16	18.28	18.24		
	RB1#24	18.07	18.23	18.22		
	RB15#0	17.34	17.49	17.50		
	RB15#10	17.23	17.41	17.50		
	RB25#0	17.30	17.50	17.59		
5MHz 16QAM	RB1#0	17.38	16.98	17.74	17.96	33
	RB1#13	16.90	16.77	18.12		
	RB1#24	16.98	16.54	17.86		
	RB15#0	16.28	16.46	16.45		
	RB15#10	16.29	16.36	16.32		
	RB25#0	16.43	16.52	16.42		
10MHz QPSK	RB1#0	17.84	18.52	18.60	18.68	33
	RB1#25	18.54	18.73	18.84		
	RB1#49	18.31	18.52	18.53		
	RB25#0	17.24	17.58	17.58		
	RB25#25	17.22	17.46	17.53		
	RB50#0	17.18	17.60	17.59		
10MHz 16QAM	RB1#0	17.09	18.13	18.07	18.18	33
	RB1#25	17.20	18.09	18.11		
	RB1#49	17.25	17.77	18.34		
	RB25#0	16.48	16.75	16.78		
	RB25#25	16.32	16.59	16.38		
	RB50#0	16.41	16.59	16.58		
15MHz QPSK	RB1#0	18.21	18.75	18.66	18.62	33
	RB1#38	18.21	18.50	18.78		
	RB1#74	18.37	18.56	18.57		
	RB36#0	17.33	17.68	17.62		
	RB36#39	17.56	17.47	17.59		
	RB75#0	17.33	17.59	17.67		
15MHz 16QAM	RB1#0	17.68	18.11	18.19	18.71	33
	RB1#38	17.60	17.87	18.87		
	RB1#74	17.45	17.95	18.08		
	RB36#0	16.30	16.64	16.74		
	RB36#39	16.64	16.55	16.49		
	RB75#0	16.50	16.59	16.73		
20MHz QPSK	RB1#0	18.00	18.47	18.64	18.88	33

	RB1#50	18.80	18.50	19.04		
	RB1#99	18.39	18.31	18.83		
	RB50#0	17.42	17.69	17.57		
	RB50#50	17.50	17.48	17.59		
	RB100#0	17.49	17.65	17.59		
20MHz 16QAM	RB1#0	18.16	17.71	17.52	19.09	33
	RB1#50	19.25	18.26	17.68		
	RB1#99	19.10	17.25	17.63		
	RB50#0	16.24	16.81	16.63		
	RB50#50	16.57	16.65	16.66		
	RB100#0	16.49	16.74	16.60		
Note: EIRP=Conducted Power(dBm) - L_C(dB) + G_T(dBi)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	4.32	4.64	4.06	13
	RB100#0	4.93	5.04	4.26	13
20MHz 16QAM	RB1#0	5.74	6.00	5.25	13
	RB100#0	6.12	6.17	5.48	13
				Result:	**Pass**

FCC §2.1049, §27.53:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.531	4.531	4.531	5.040	5.040	5.100
5MHz 16QAM	4.531	4.511	4.531	5.020	5.020	5.060
10MHz QPSK	8.942	8.942	8.942	9.800	9.680	10.640
10MHz 16QAM	8.942	8.942	8.981	9.720	9.720	11.320
15MHz QPSK	13.533	13.473	13.473	15.420	14.880	14.820
15MHz 16QAM	13.533	13.473	13.473	18.660	14.820	14.820
20MHz QPSK	17.884	17.884	17.964	19.360	19.440	19.520
20MHz 16QAM	17.884	17.964	17.964	19.520	19.440	19.440
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

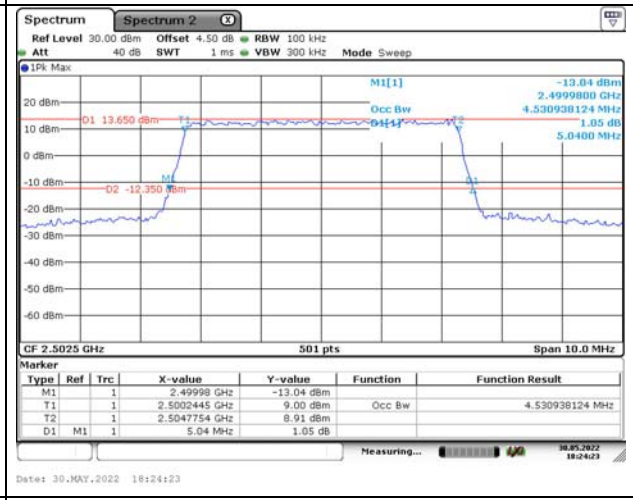
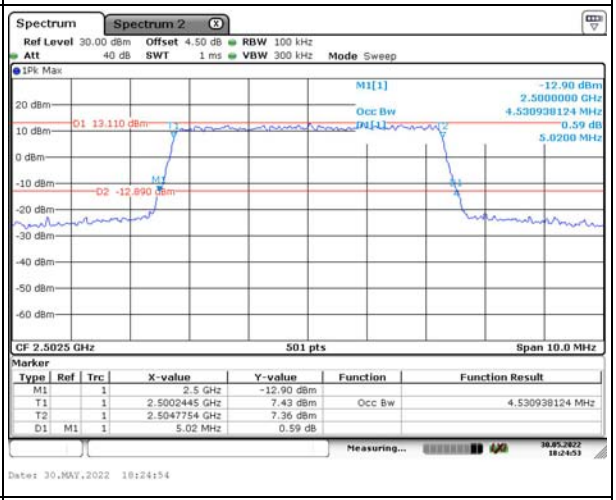
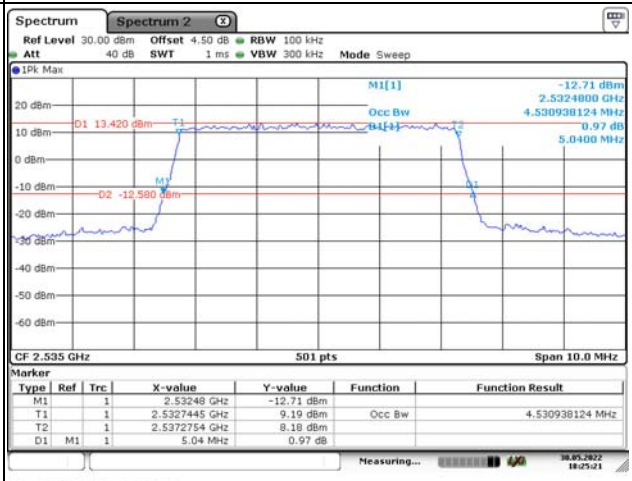
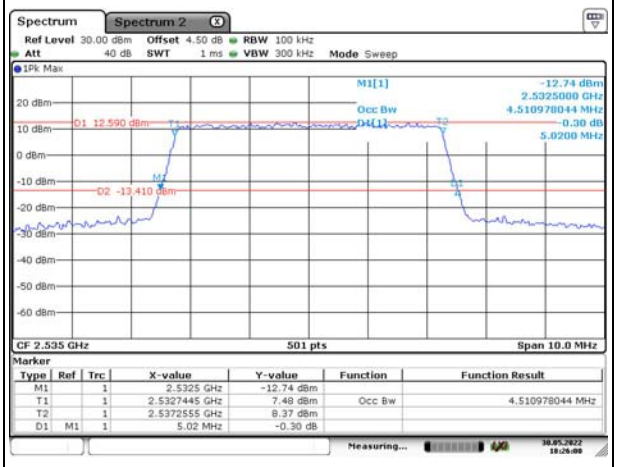
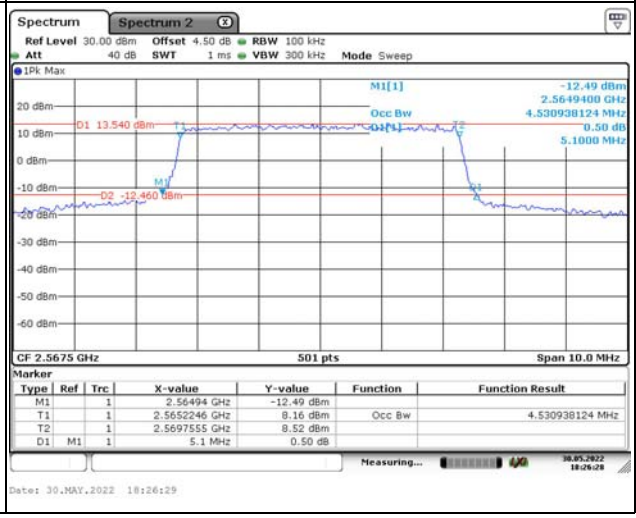
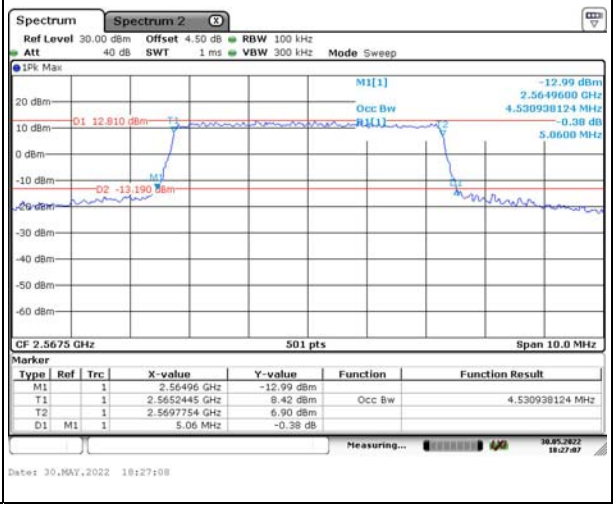
FCC §2.1051, § 27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

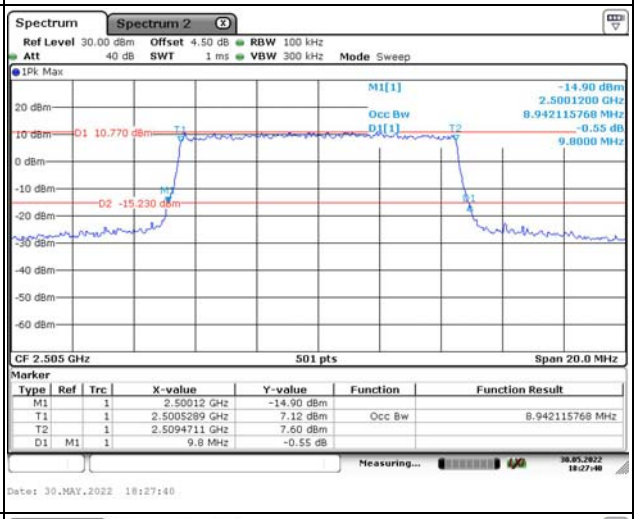
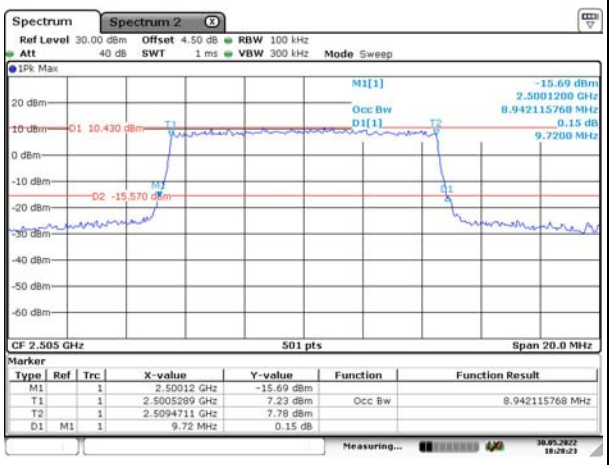
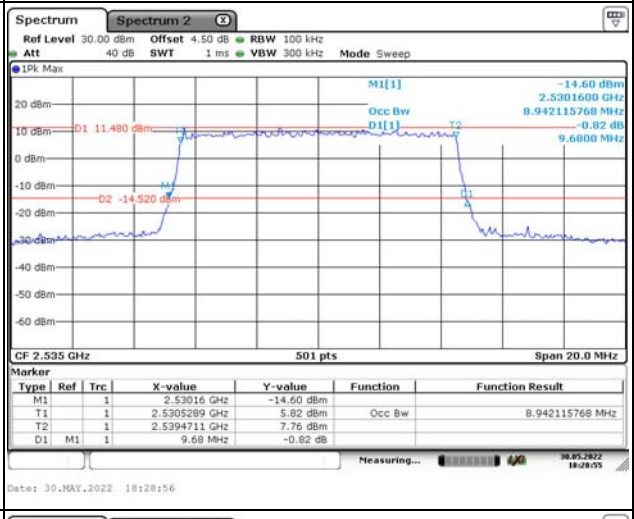
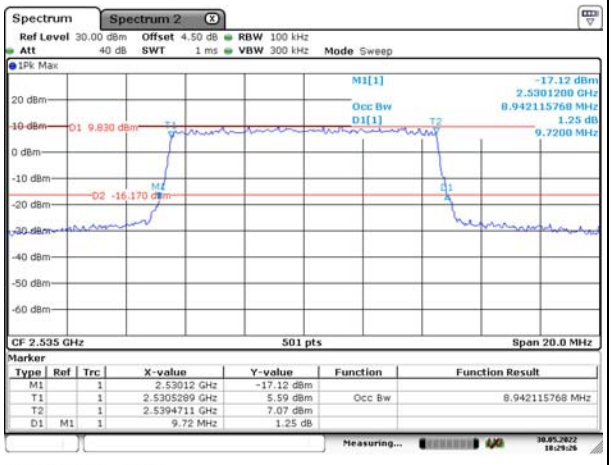
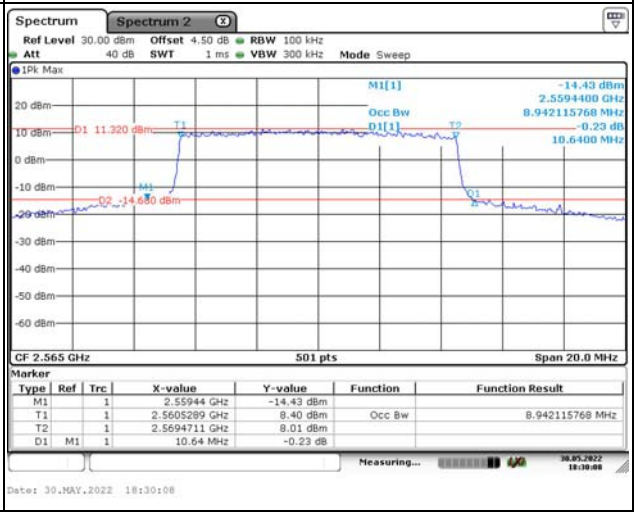
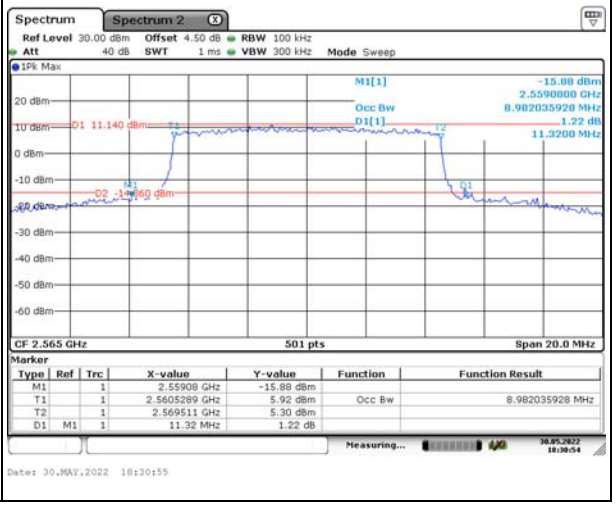
FCC §2.1055, §27.54: Frequency Stability

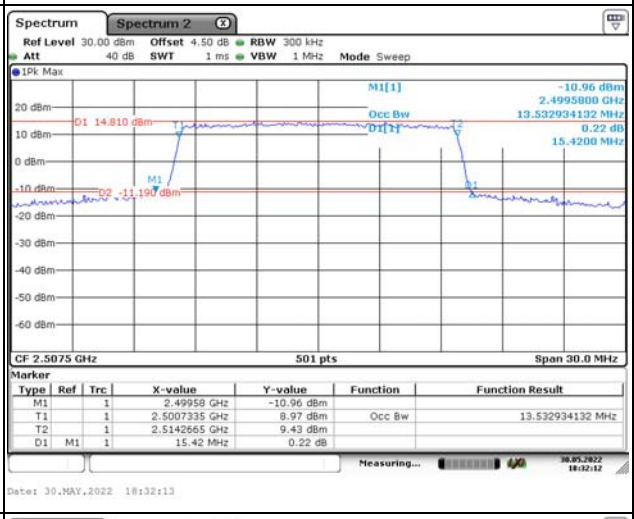
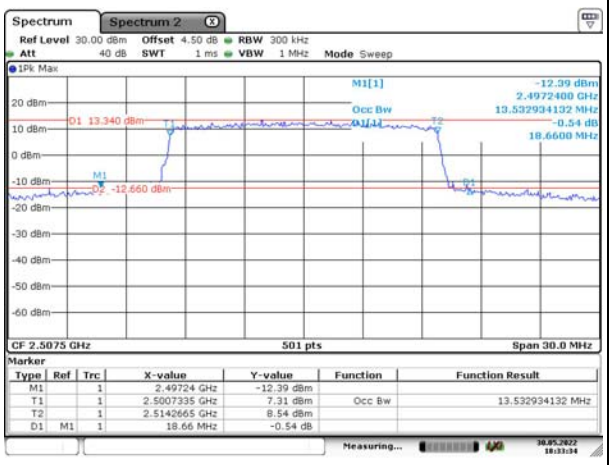
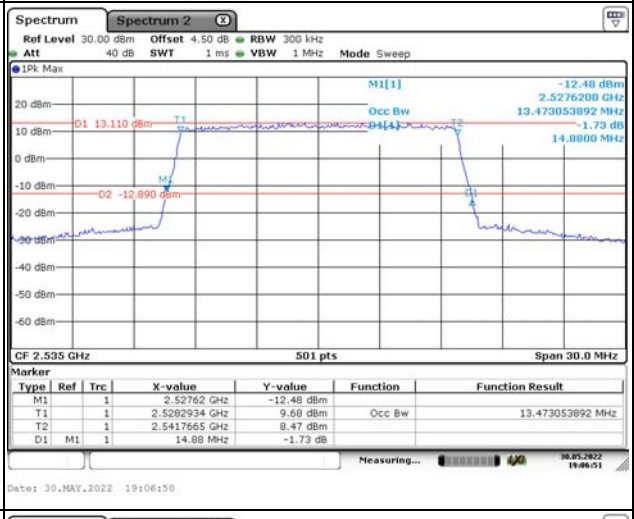
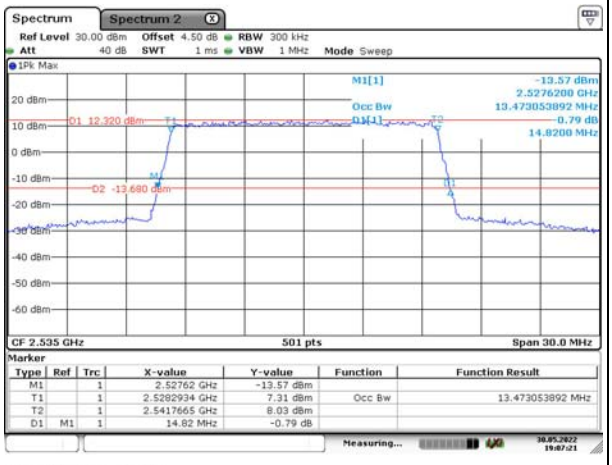
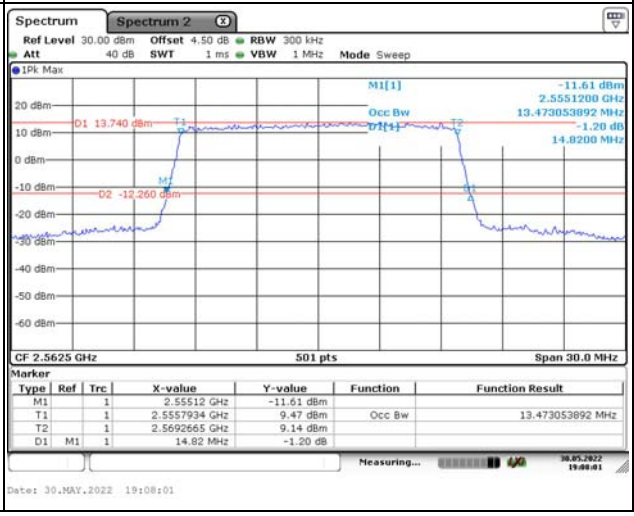
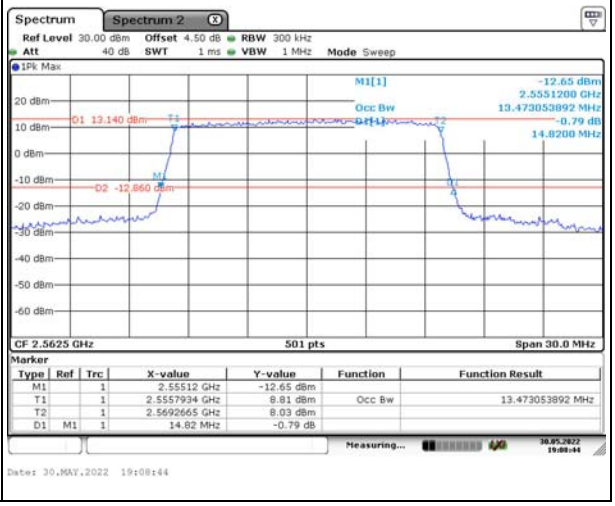
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2500.548	2500.00	2569.459	2570
	-20	3.85	2500.544	2500.00	2569.462	2570
	-10	3.85	2500.545	2500.00	2569.458	2570
	0	3.85	2500.543	2500.00	2569.464	2570
	10	3.85	2500.549	2500.00	2569.457	2570
	20	3.85	2500.543	2500.00	2569.457	2570
	30	3.85	2500.540	2500.00	2569.452	2570
	40	3.85	2500.541	2500.00	2569.454	2570
	50	3.85	2500.543	2500.00	2569.452	2570
Frequency Stability vs. Voltage	20	3.5	2500.539	2500.00	2569.457	2570
	20	4.4	2500.537	2500.00	2569.456	2570
					Result:	**Pass**

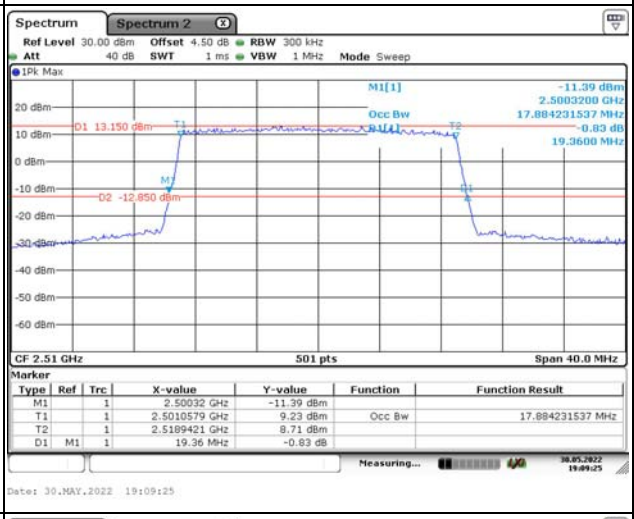
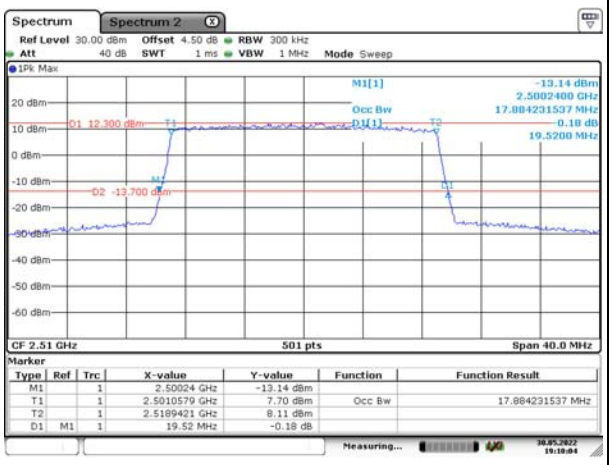
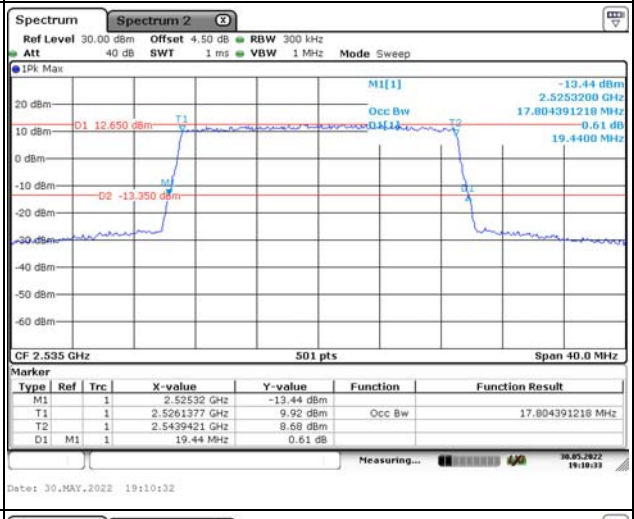
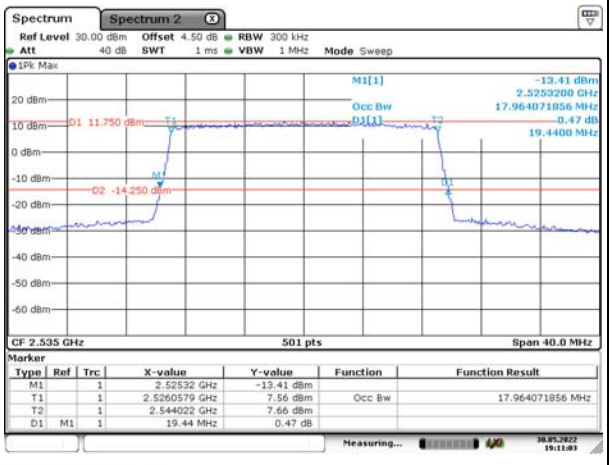
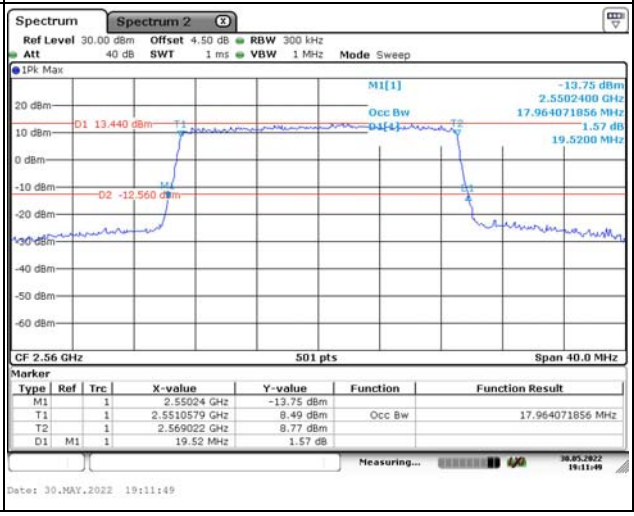
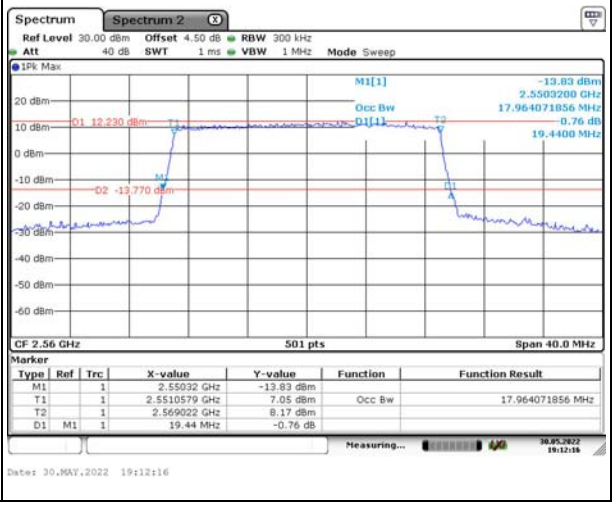
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2500.547	2500.00	2569.459	2570
	-20	3.85	2500.546	2500.00	2569.462	2570
	-10	3.85	2500.549	2500.00	2569.458	2570
	0	3.85	2500.543	2500.00	2569.457	2570
	10	3.85	2500.552	2500.00	2569.465	2570
	20	3.85	2500.543	2500.00	2569.457	2570
	30	3.85	2500.540	2500.00	2569.453	2570
	40	3.85	2500.541	2500.00	2569.450	2570
	50	3.85	2500.543	2500.00	2569.457	2570
Frequency Stability vs. Voltage	20	3.5	2500.538	2500.00	2569.448	2570
	20	4.4	2500.539	2500.00	2569.451	2570
					Result:	**Pass**

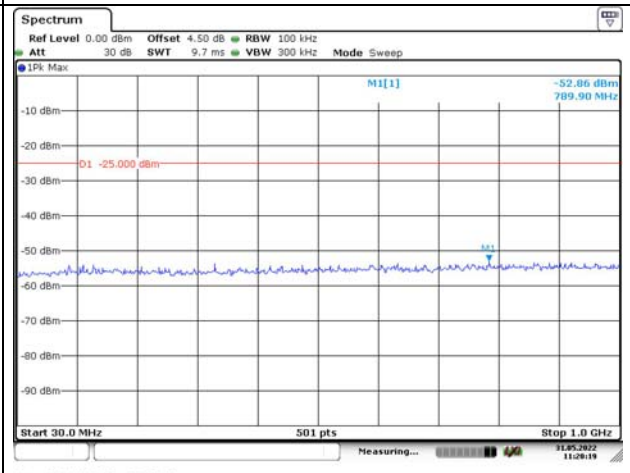
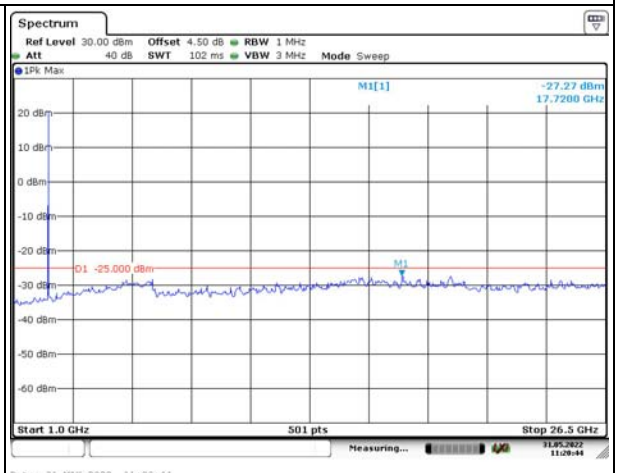
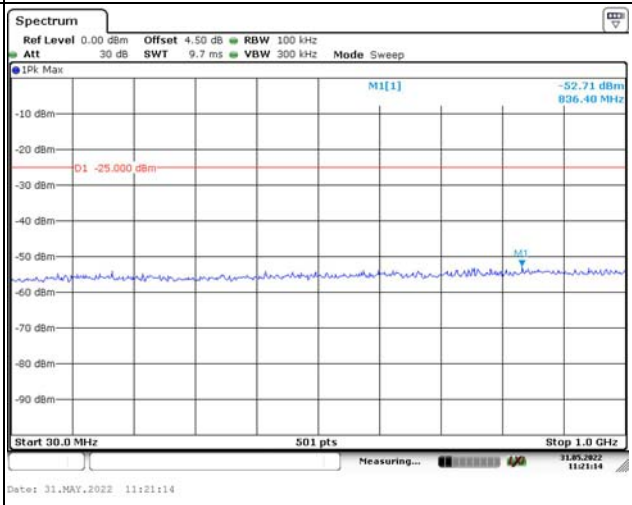
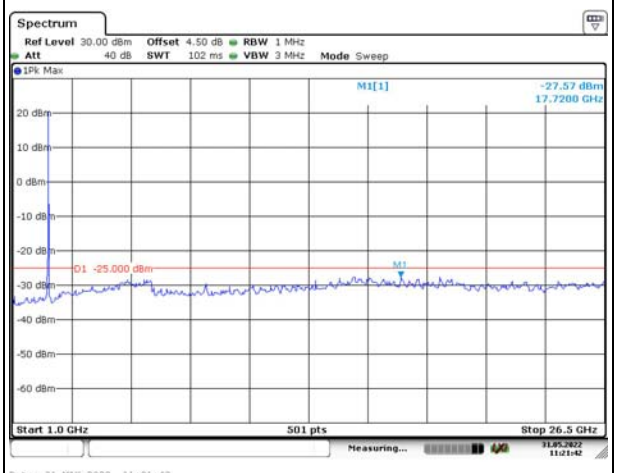
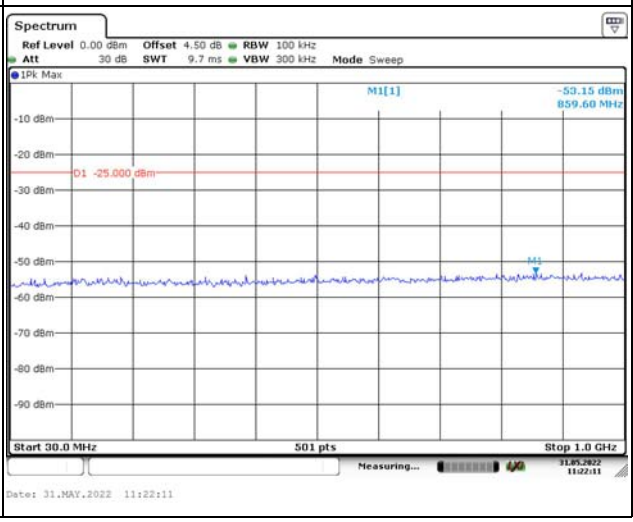
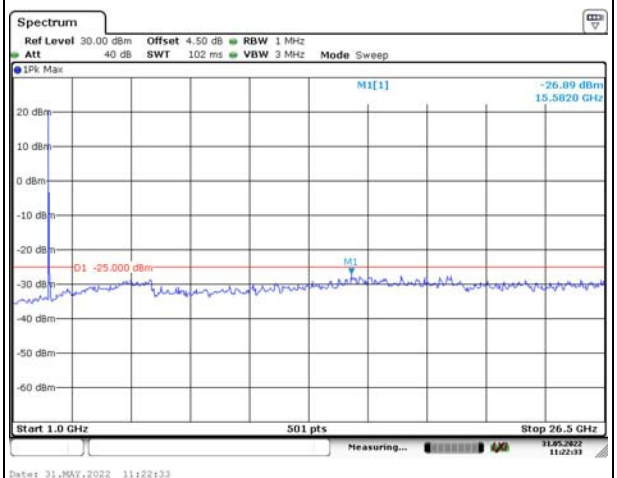
Test Plots:

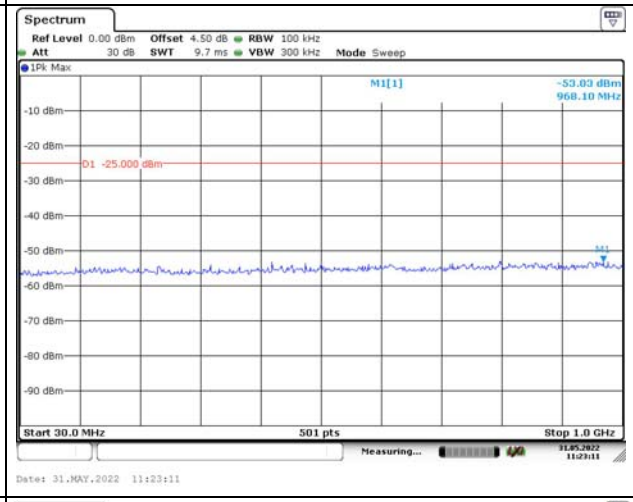
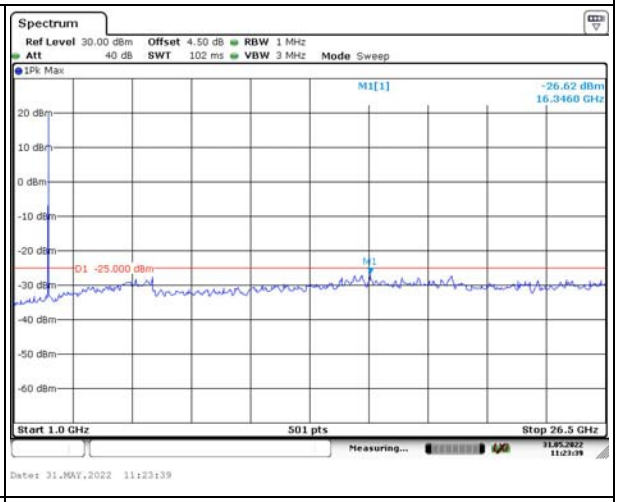
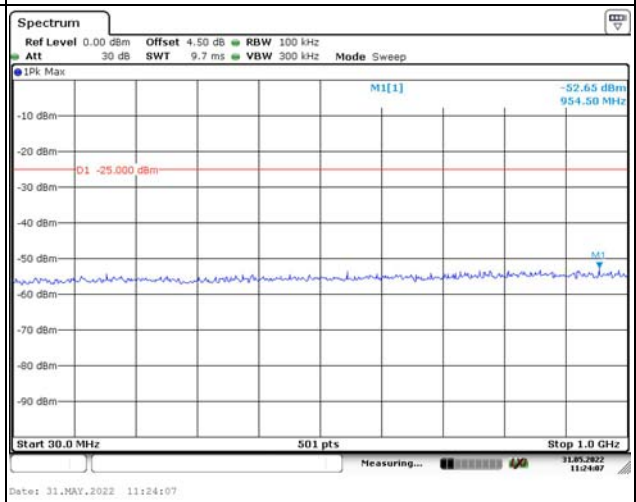
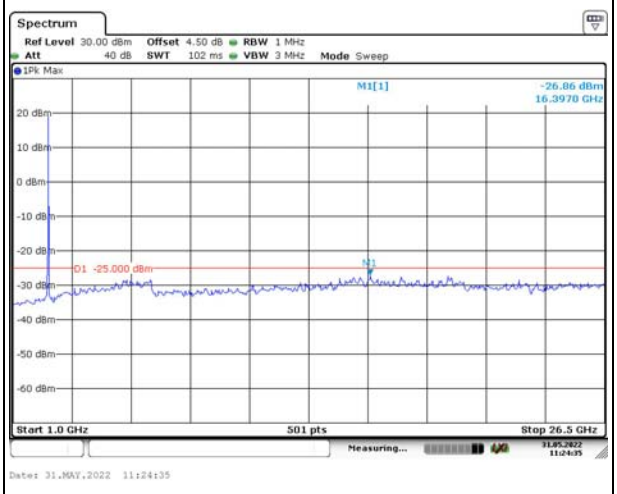
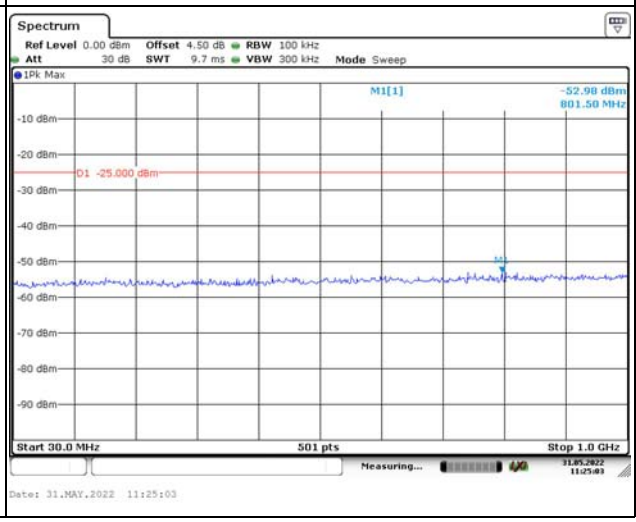
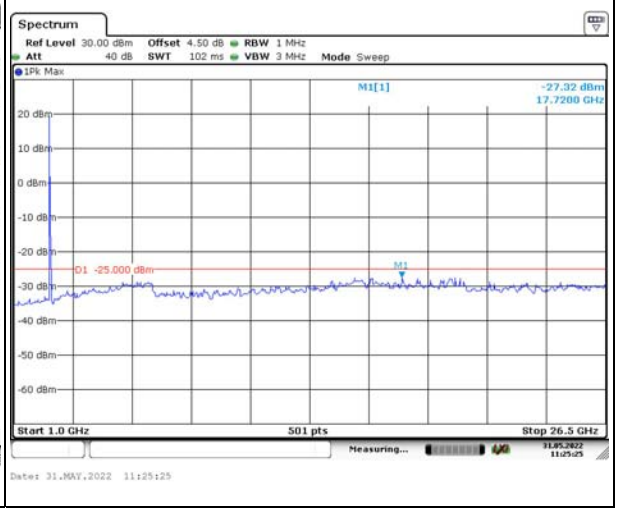
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

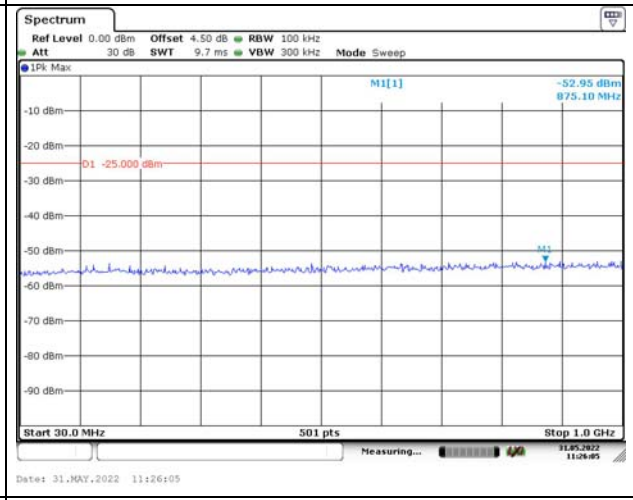
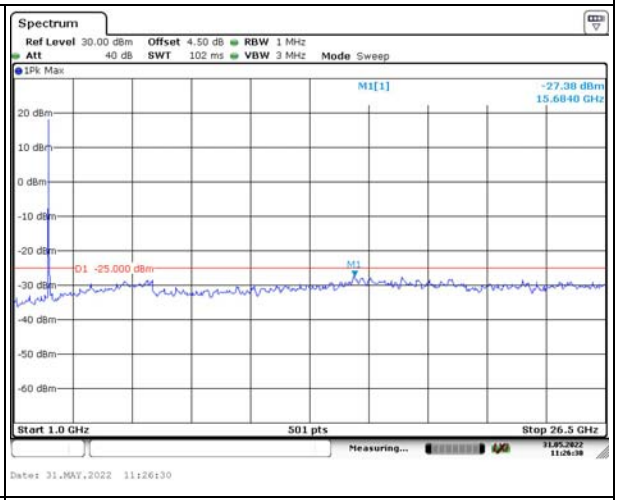
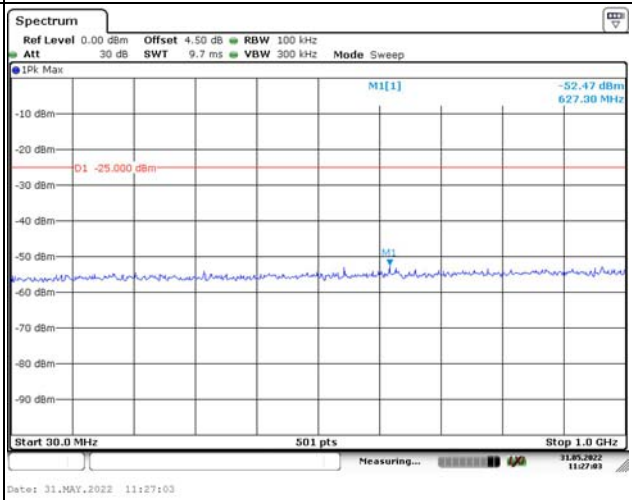
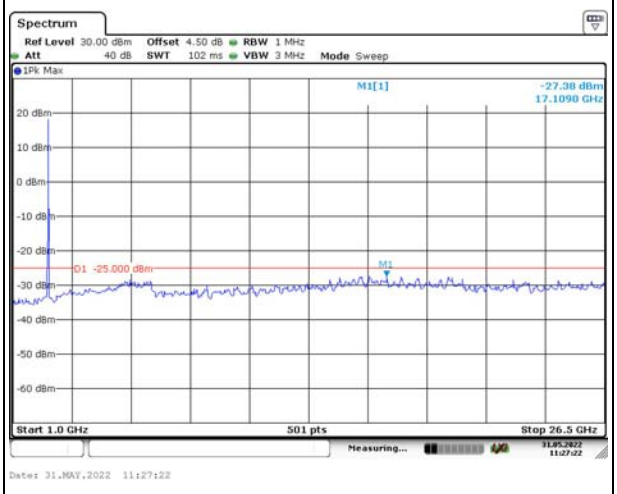
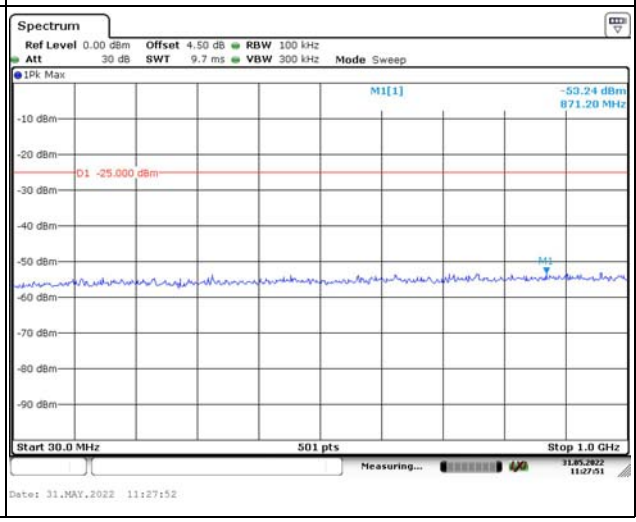
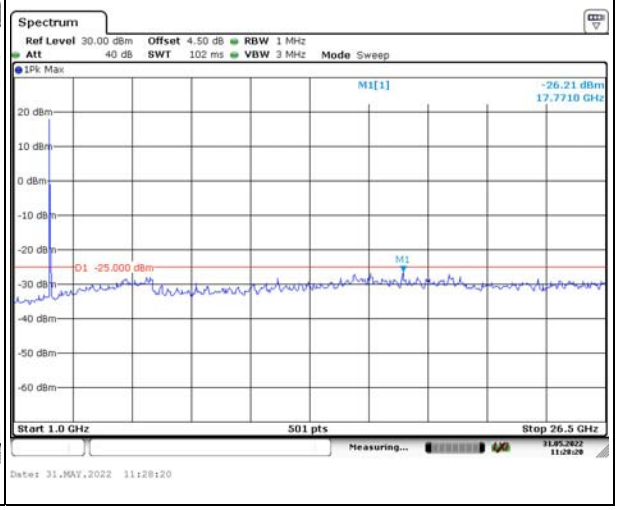
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

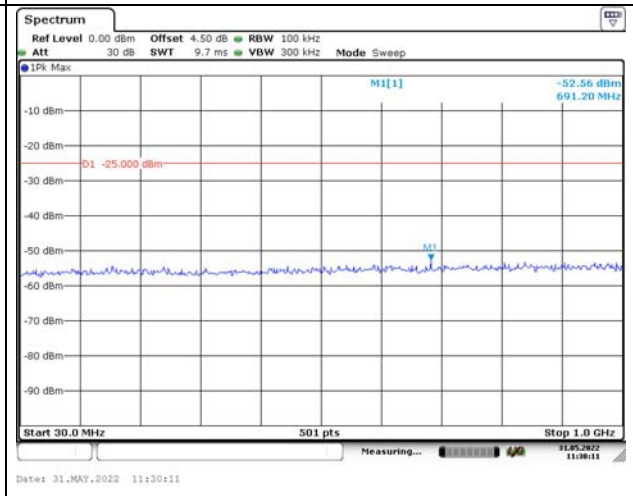
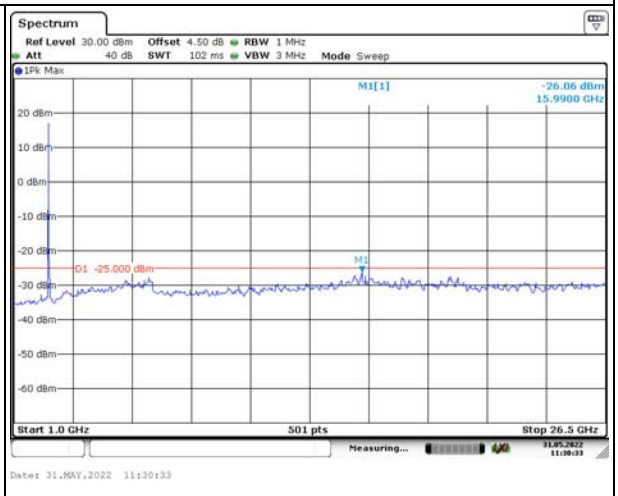
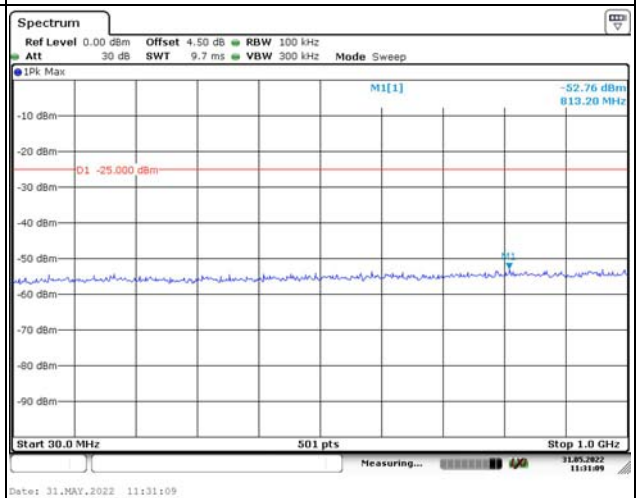
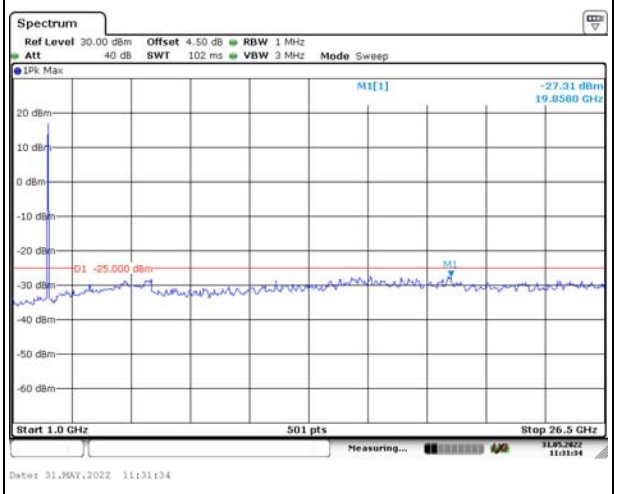
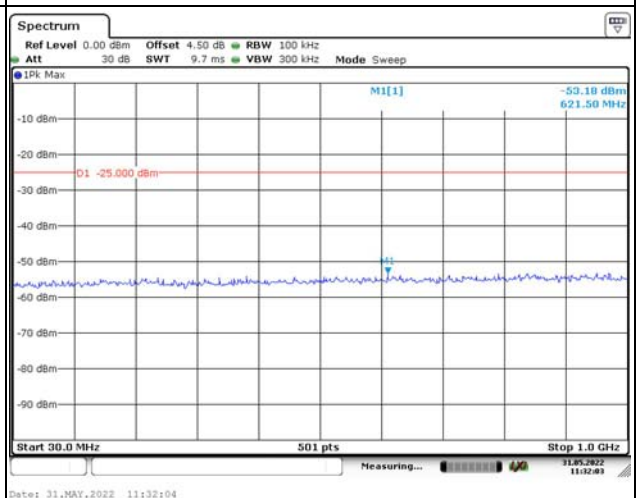
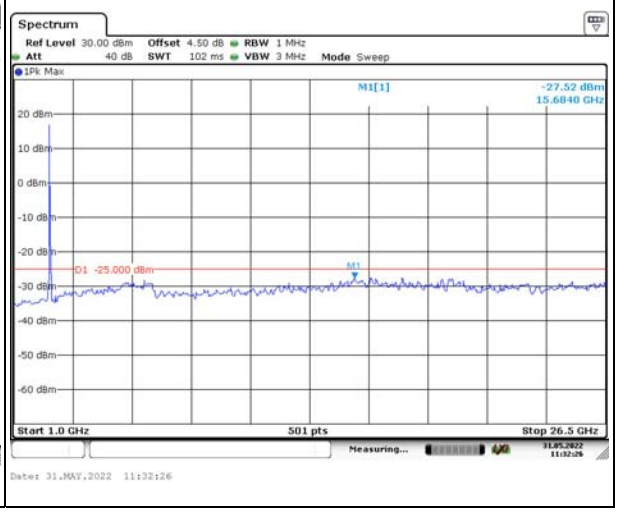
Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

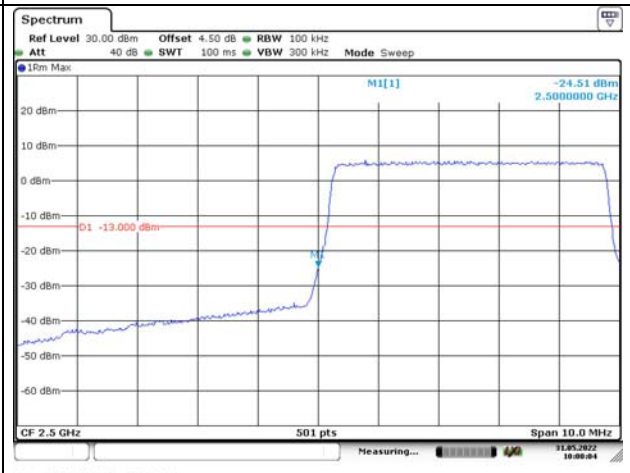
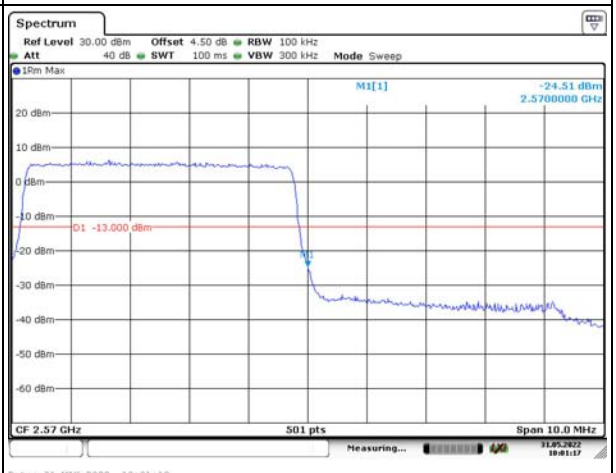
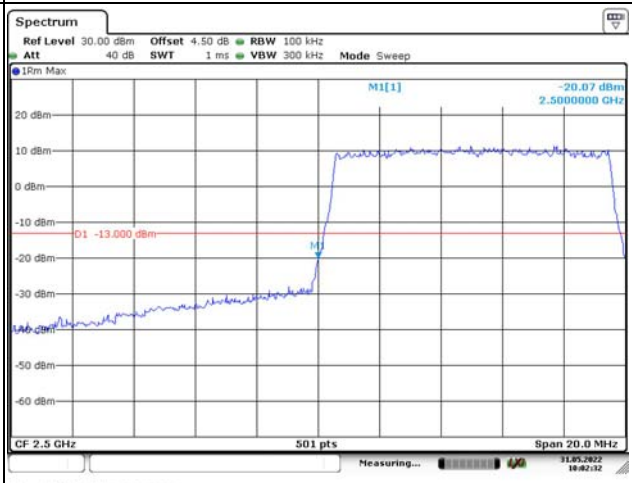
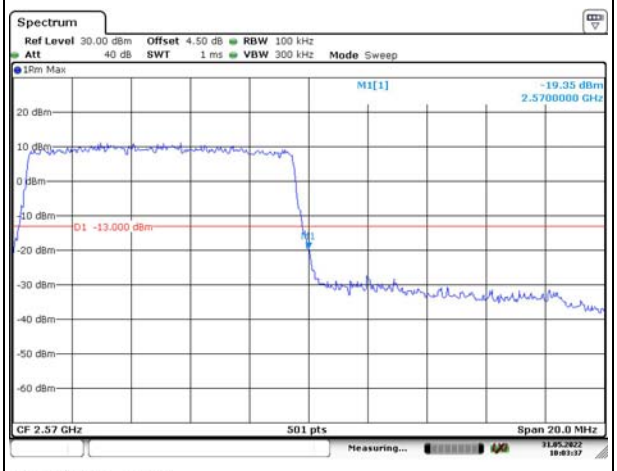
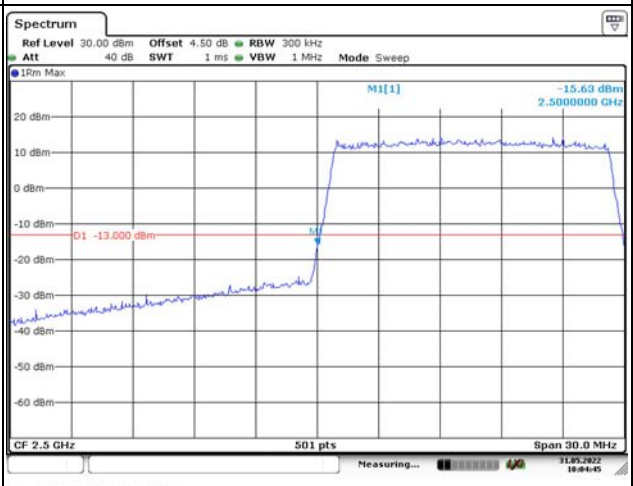
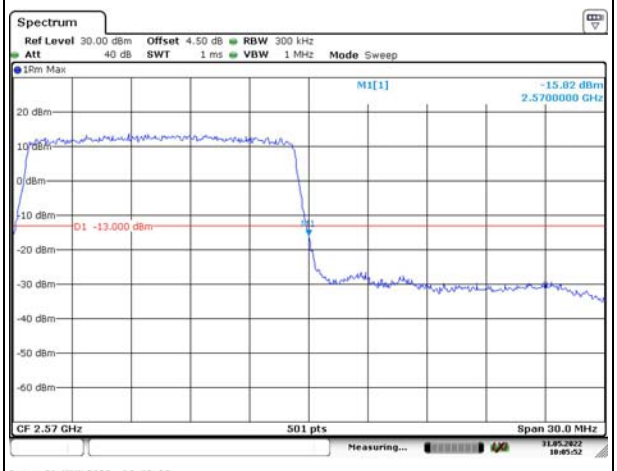
Occupied Bandwidth		
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

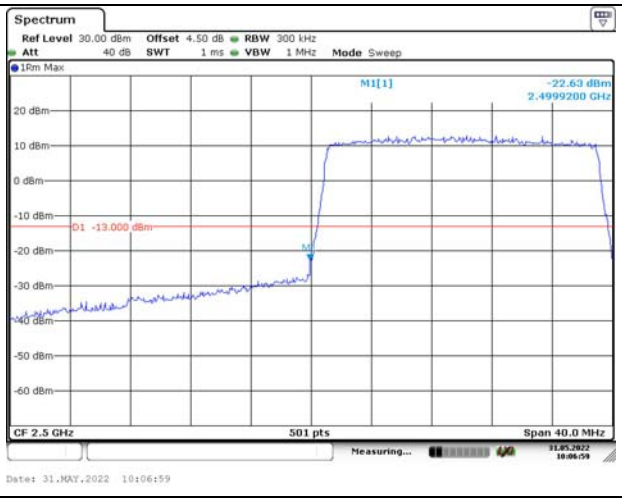
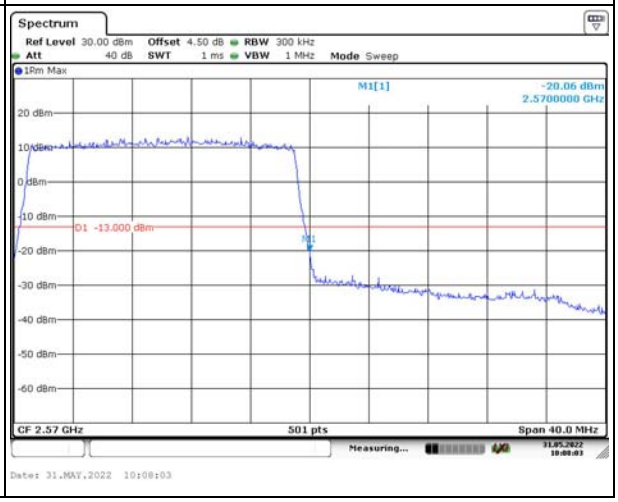
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

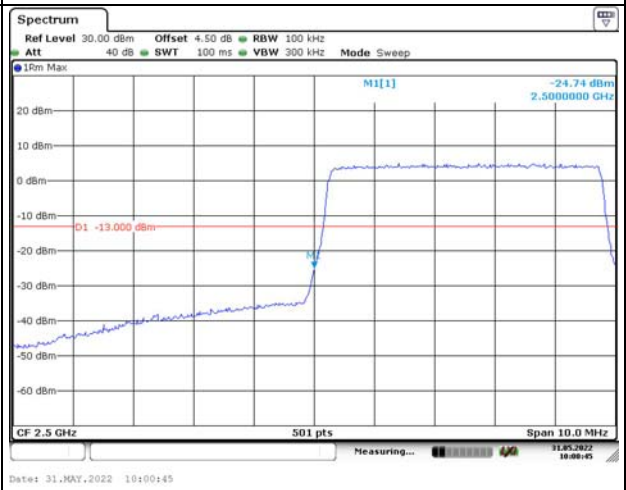
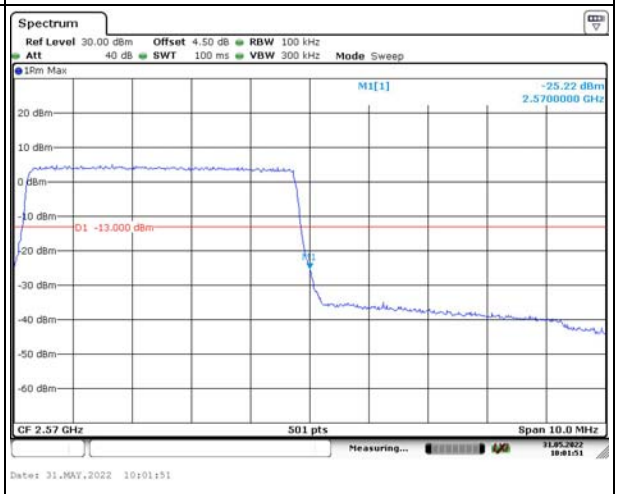
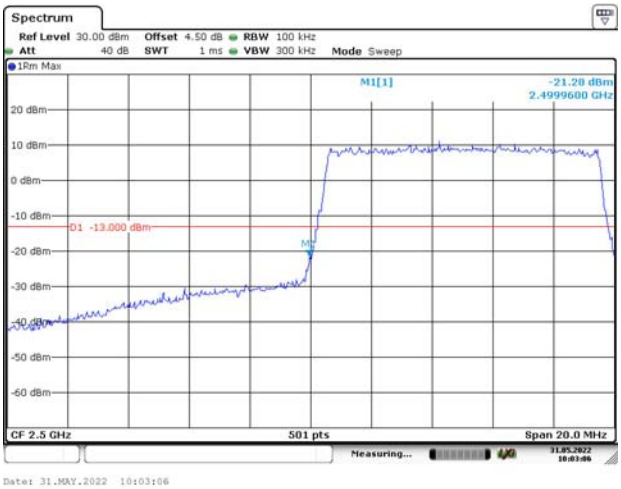
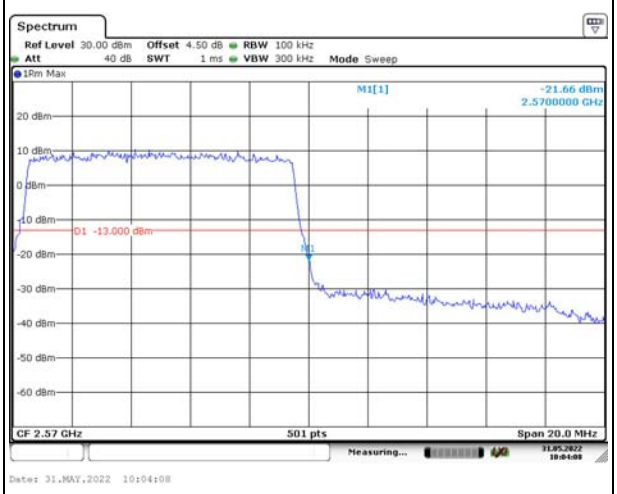
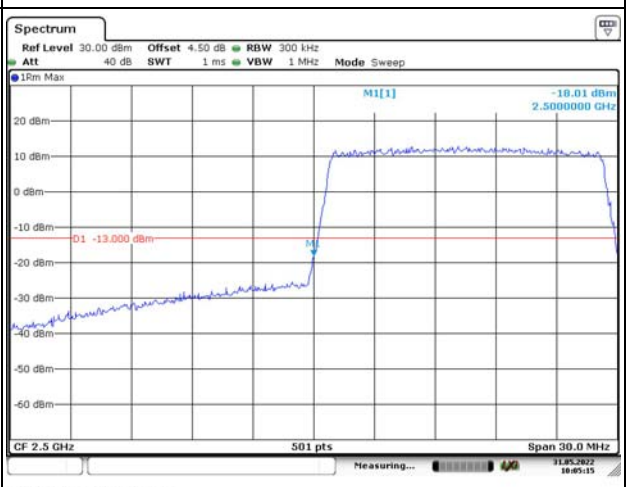
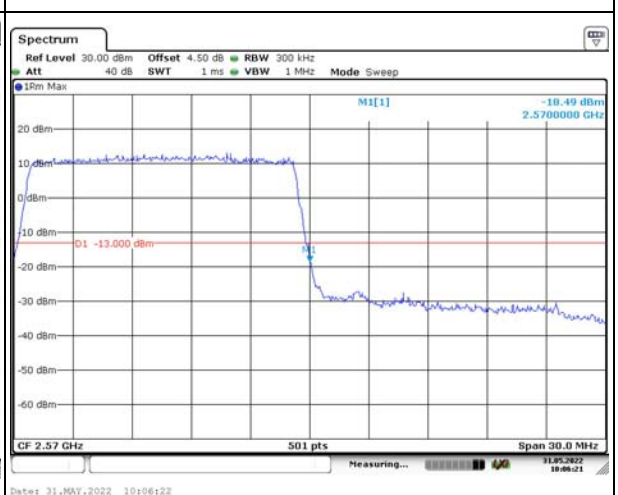
Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

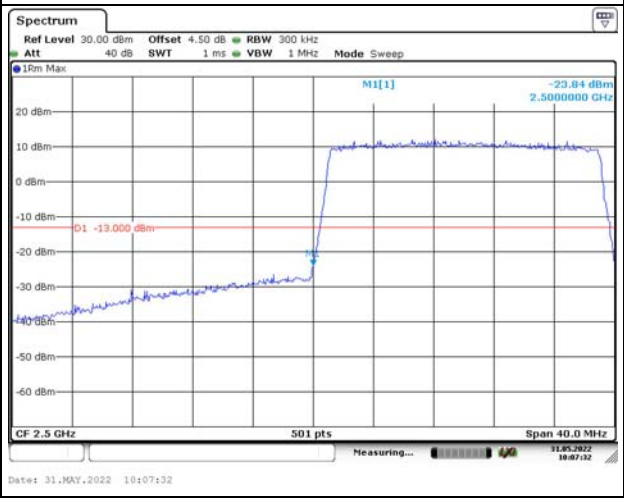
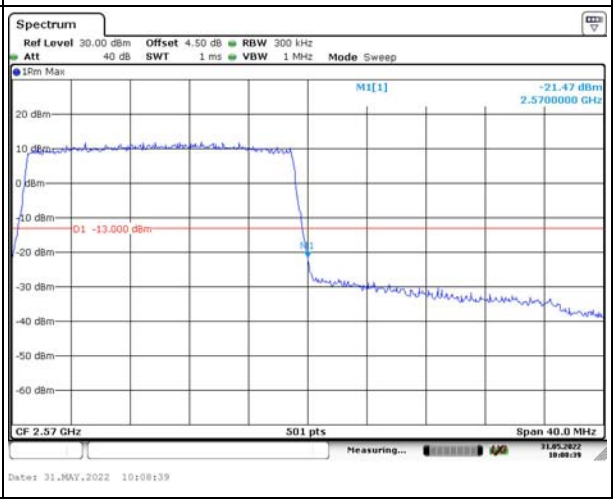
Spurious Emissions at Antenna Terminal		
Channel	**15MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal		
Channel	**20MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 5MHz		
QPSK 10MHz		
QPSK 15MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 20MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 5MHz		
16QAM 10MHz		
16QAM 15MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 20MHz		

4.14 Antenna Port Test Data and Results for Module B LTE Band 7

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/29-2022/7/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	26.6	Relative Humidity: (%)	43	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

EUT Information@LTE Band 7▲:					
Antenna Gain G_T (dBi):	-3.57			Path Loss L_C (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2502.5	2535	2567.5
10MHz	2505	2535	2565
15MHz	2507.5	2535	2562.5
20MHz	2510	2535	2560

Test Data:

FCC§2.1046;§ 27.50(h)(2)						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	19.25	19.14	18.45	15.87	33
	RB1#13	19.44	19.16	18.42		
	RB1#24	19.38	18.81	18.40		
	RB15#0	18.66	18.42	17.70		
	RB15#10	18.78	18.27	17.46		
	RB25#0	18.66	18.34	17.54		
5MHz 16QAM	RB1#0	18.36	18.73	17.31	15.42	33
	RB1#13	18.35	18.99	17.07		
	RB1#24	18.33	18.57	17.19		
	RB15#0	17.66	17.33	16.75		
	RB15#10	17.66	17.26	16.34		
	RB25#0	17.62	17.16	16.59		
10MHz QPSK	RB1#0	19.59	19.48	18.80	16.71	33
	RB1#25	20.28	19.22	18.71		
	RB1#49	19.73	18.48	18.58		
	RB25#0	18.75	18.76	17.85		
	RB25#25	18.82	18.31	17.70		
	RB50#0	18.73	18.47	17.78		
10MHz 16QAM	RB1#0	18.84	19.05	18.11	16.48	33
	RB1#25	20.04	18.85	17.59		
	RB1#49	20.05	17.90	17.45		
	RB25#0	17.84	17.75	17.01		
	RB25#25	18.00	17.12	16.66		
	RB50#0	17.69	17.54	16.73		
15MHz QPSK	RB1#0	19.70	19.47	18.63	16.45	33
	RB1#38	20.02	19.17	18.48		
	RB1#74	19.86	18.72	18.49		
	RB36#0	18.78	18.52	17.79		
	RB36#39	18.90	18.17	17.63		
	RB75#0	18.74	18.47	17.68		
15MHz 16QAM	RB1#0	19.09	19.21	17.73	16.56	33
	RB1#38	20.13	18.96	17.83		
	RB1#74	20.12	18.16	17.25		
	RB36#0	17.79	17.52	16.83		
	RB36#39	17.81	17.03	16.43		
	RB75#0	17.66	17.50	16.65		
20MHz QPSK	RB1#0	19.42	19.32	18.94	16.35	33

	RB1#50	19.92	19.38	19.14		
	RB1#99	19.54	18.82	18.50		
	RB50#0	18.74	18.58	17.96		
	RB50#50	18.81	18.20	17.66		
	RB100#0	18.73	18.51	17.80		
20MHz 16QAM	RB1#0	18.72	18.60	18.71	16.32	33
	RB1#50	19.89	17.92	19.35		
	RB1#99	19.40	17.66	18.41		
	RB50#0	17.76	17.65	16.95		
	RB50#50	17.78	17.19	16.63		
	RB100#0	17.69	17.48	16.79		
Note: EIRP=Conducted Power(dBm) - L_C(dB) + G_T(dBi)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	4.94	4.90	4.90	13
	RB100#0	5.35	5.42	5.26	13
20MHz 16QAM	RB1#0	5.93	5.77	5.80	13
	RB100#0	6.25	6.25	6.22	13
				Result:	**Pass**

FCC §2.1049, §27.53:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.520	4.520	4.520	5.020	5.000	4.960
5MHz 16QAM	4.520	4.520	4.520	4.980	4.980	5.020
10MHz QPSK	8.960	8.960	8.960	9.760	9.640	9.640
10MHz 16QAM	8.960	8.960	8.920	9.720	9.640	9.600
15MHz QPSK	13.560	13.440	13.440	14.820	14.760	14.760
15MHz 16QAM	13.560	13.500	13.440	14.820	14.700	14.580
20MHz QPSK	18.000	17.920	17.840	19.280	19.440	19.280
20MHz 16QAM	17.920	17.920	17.840	19.360	19.280	19.200
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

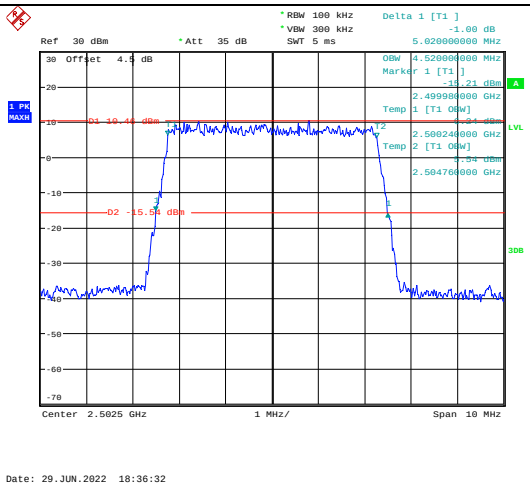
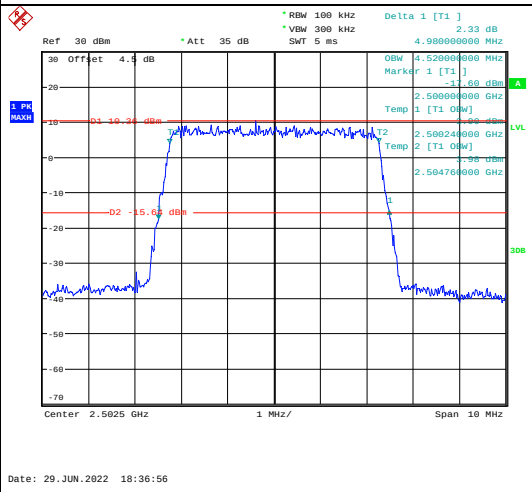
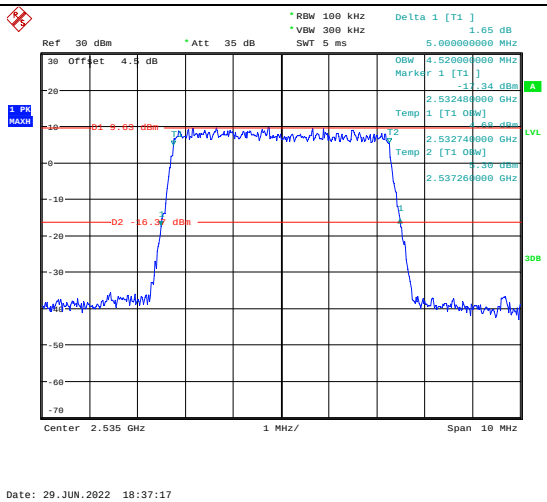
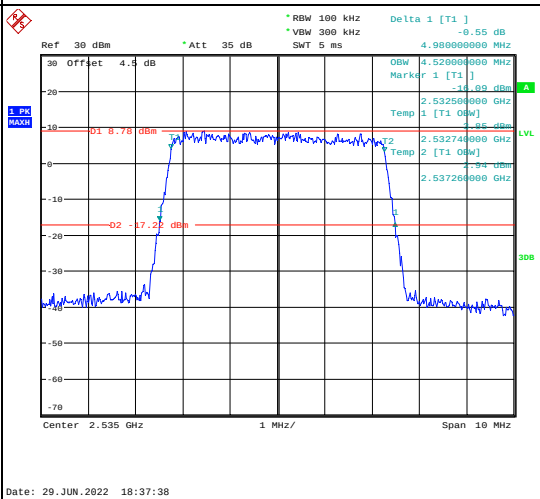
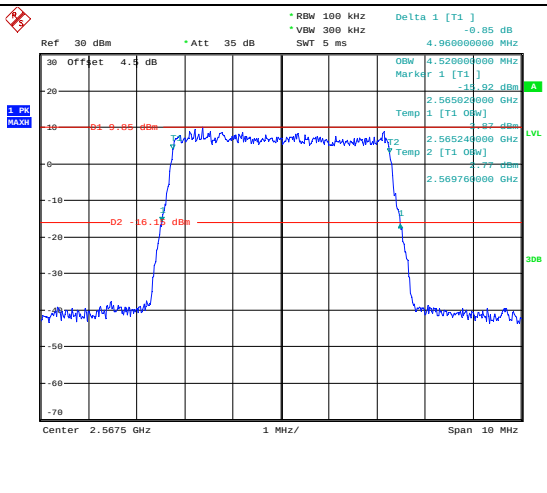
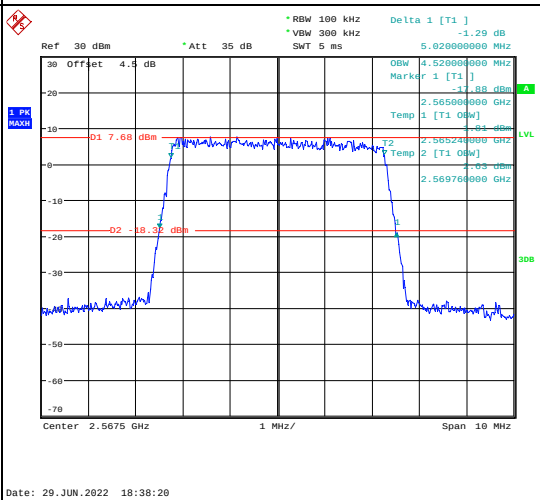
FCC §2.1051, § 27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §27.54: Frequency Stability

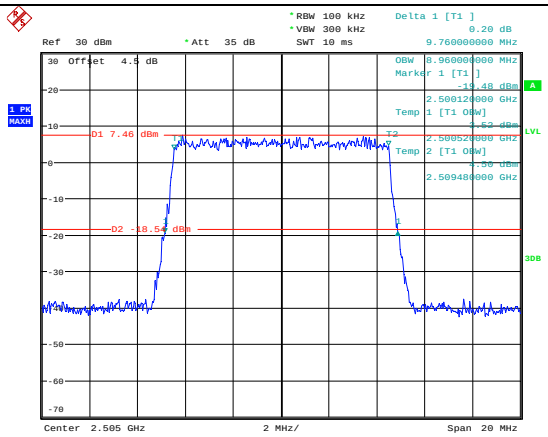
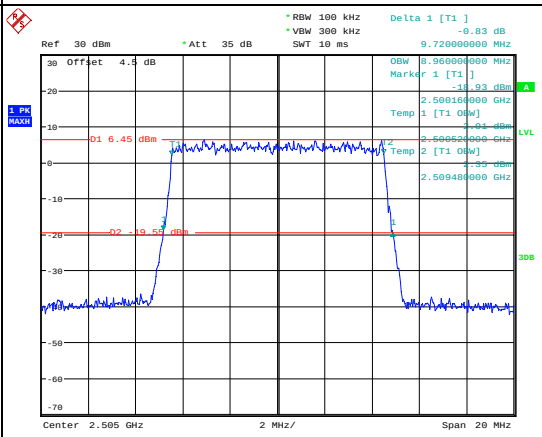
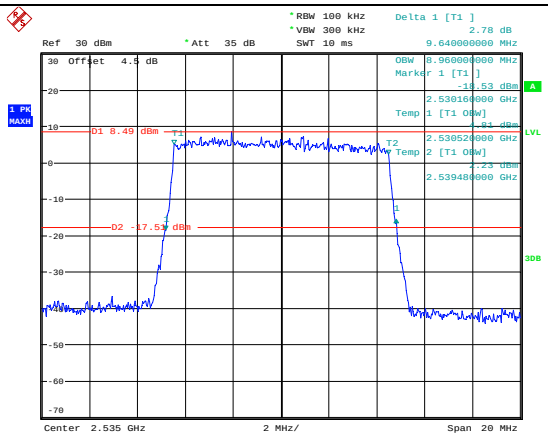
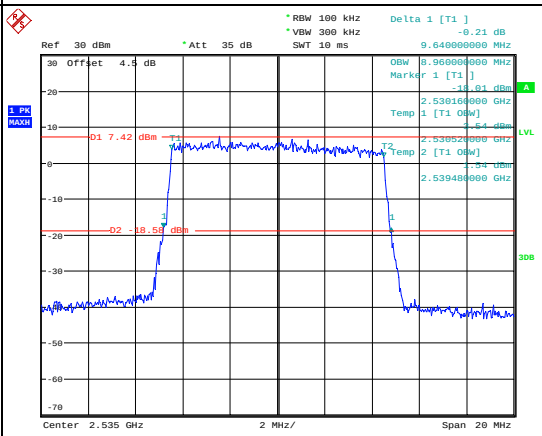
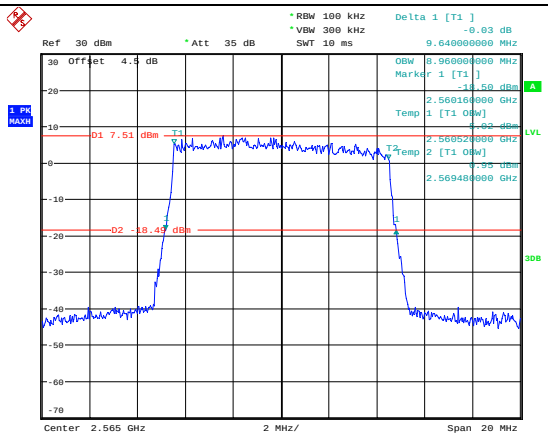
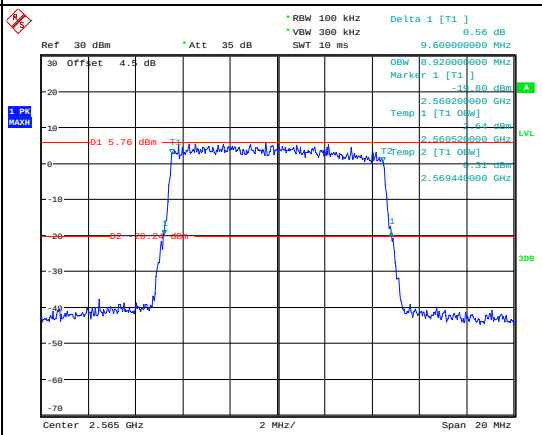
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2500.519	2500.00	2569.458	2570
	-20	3.85	2500.515	2500.00	2569.456	2570
	-10	3.85	2500.514	2500.00	2569.455	2570
	0	3.85	2500.513	2500.00	2569.463	2570
	10	3.85	2500.519	2500.00	2569.461	2570
	20	3.85	2500.513	2500.00	2569.455	2570
	30	3.85	2500.510	2500.00	2569.452	2570
	40	3.85	2500.505	2500.00	2569.450	2570
	50	3.85	2500.511	2500.00	2569.455	2570
Frequency Stability vs. Voltage	20	3.5	2500.513	2500.00	2569.447	2570
	20	4.4	2500.503	2500.00	2569.449	2570
					Result:	**Pass**

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2500.518	2500.00	2569.458	2570
	-20	3.85	2500.515	2500.00	2569.463	2570
	-10	3.85	2500.516	2500.00	2569.461	2570
	0	3.85	2500.522	2500.00	2569.459	2570
	10	3.85	2500.521	2500.00	2569.457	2570
	20	3.85	2500.513	2500.00	2569.455	2570
	30	3.85	2500.510	2500.00	2569.451	2570
	40	3.85	2500.513	2500.00	2569.452	2570
	50	3.85	2500.504	2500.00	2569.455	2570
Frequency Stability vs. Voltage	20	3.5	2500.510	2500.00	2569.450	2570
	20	4.4	2500.512	2500.00	2569.447	2570
					Result:	**Pass**

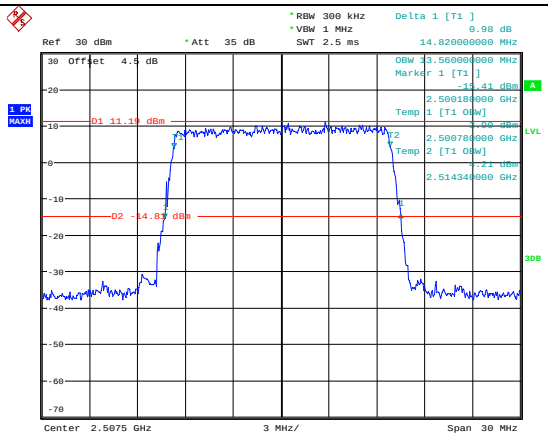
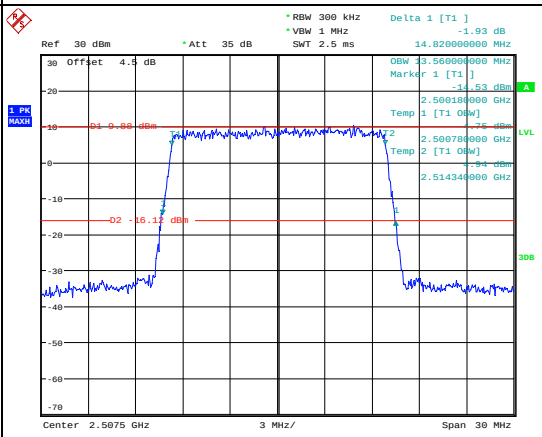
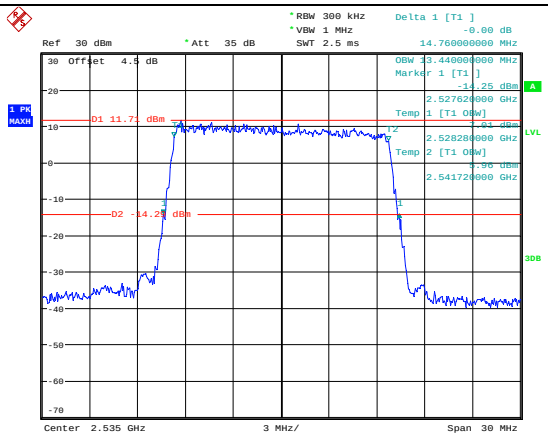
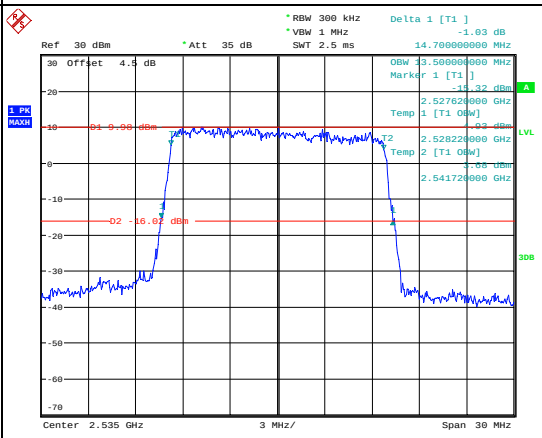
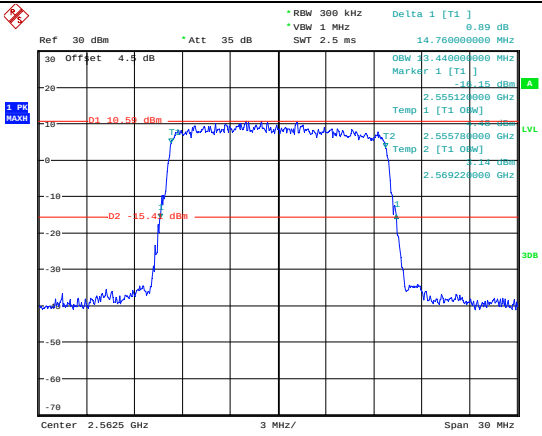
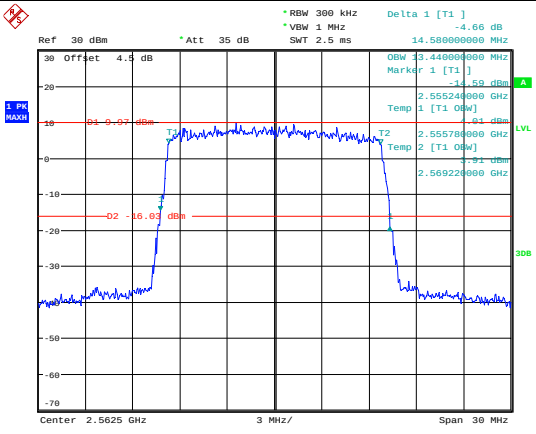
Test Plots:

Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

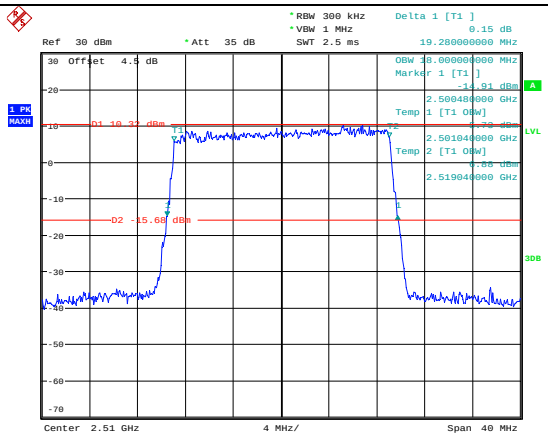
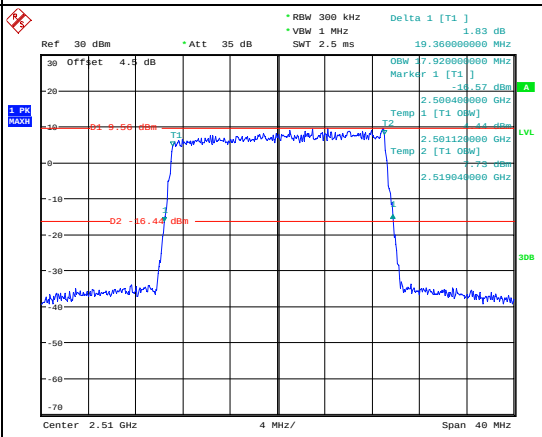
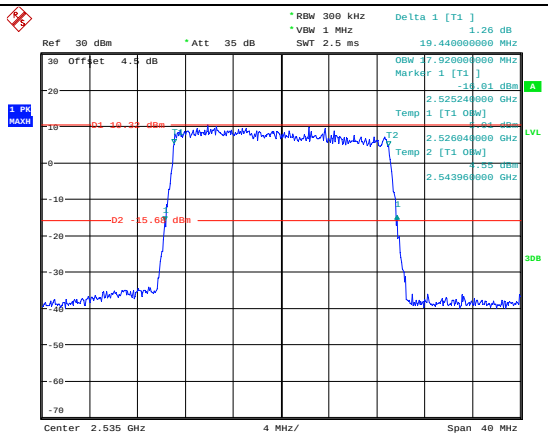
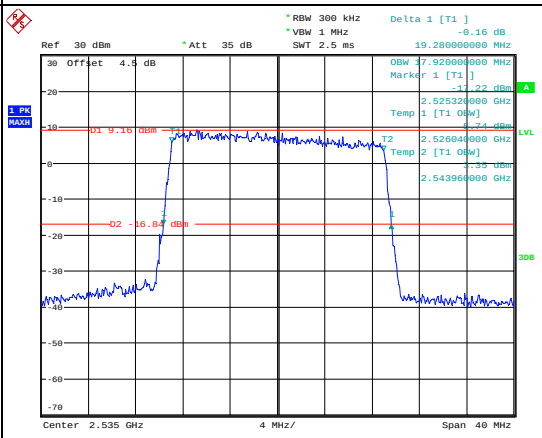
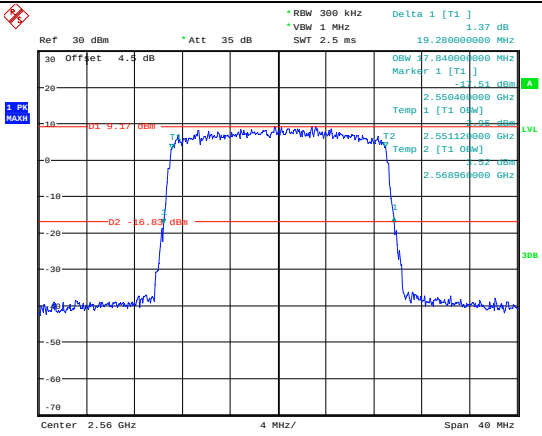
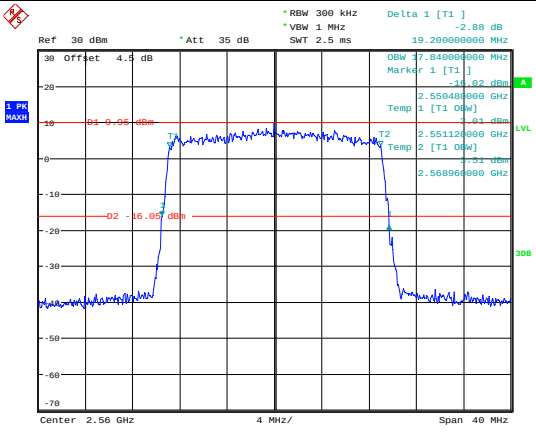
Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:38:46	 Date: 29.JUN.2022 18:39:08
Middle	 Date: 29.JUN.2022 18:39:31	 Date: 29.JUN.2022 18:39:52
Highest	 Date: 29.JUN.2022 18:40:16	 Date: 29.JUN.2022 18:40:37

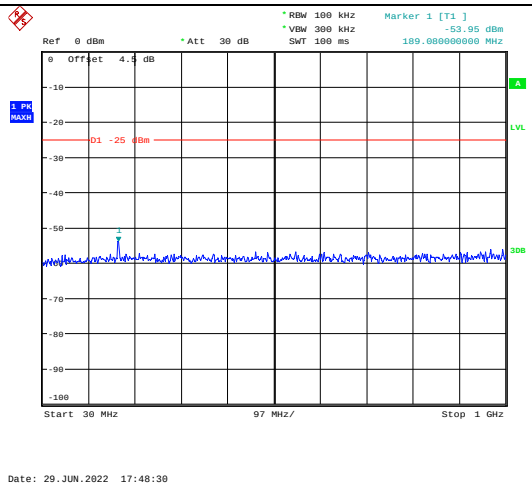
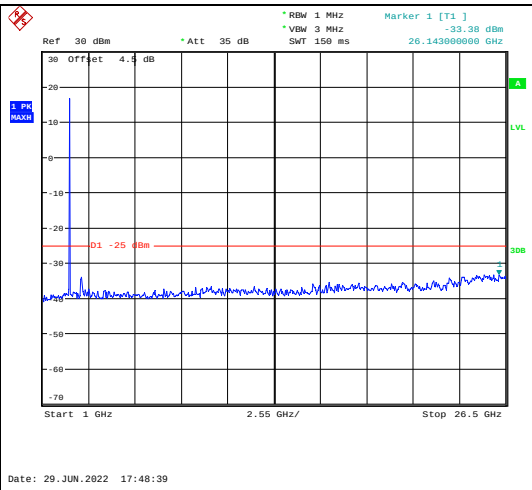
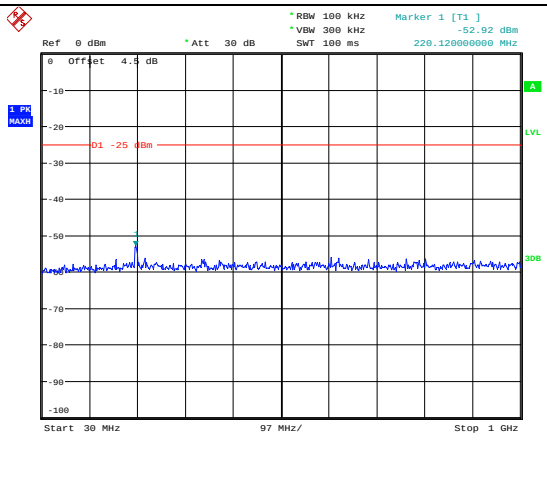
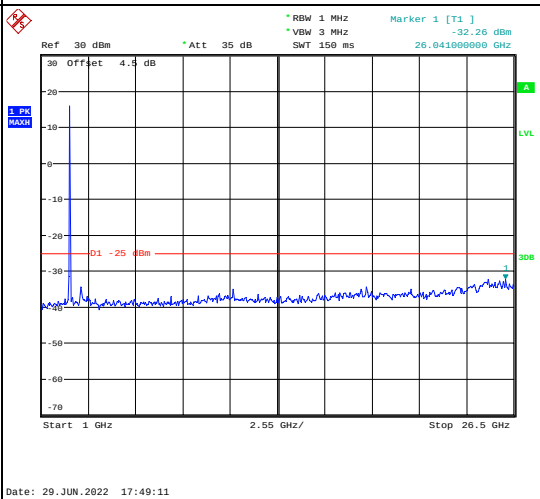
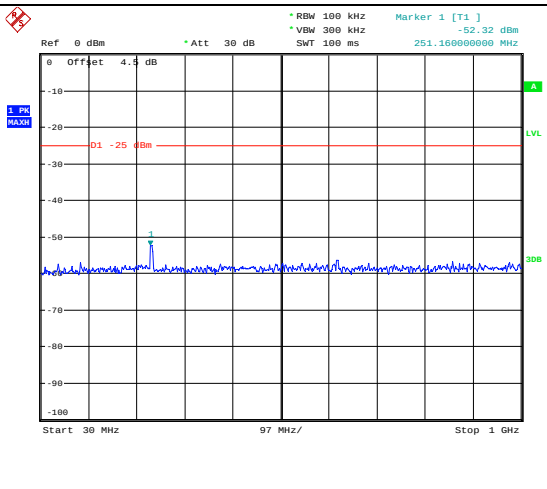
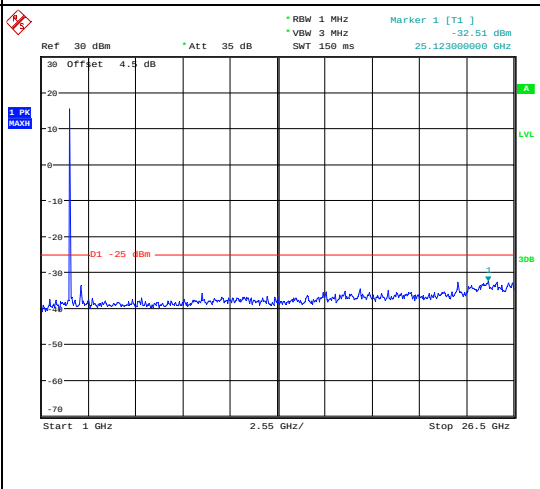
Occupied Bandwidth

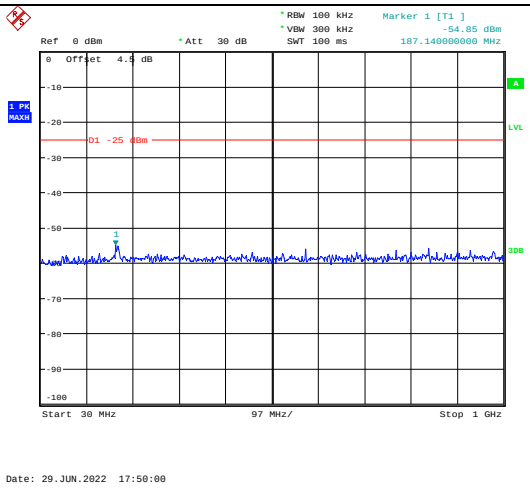
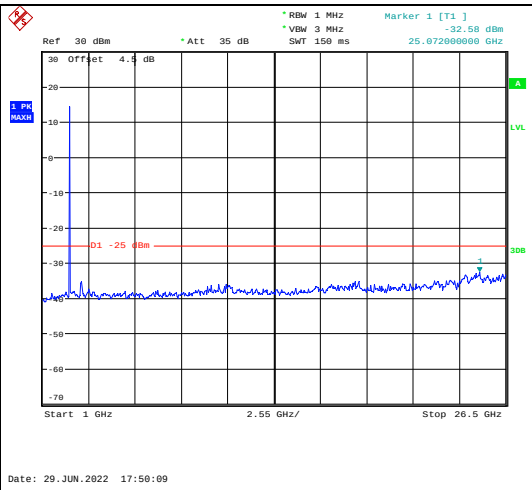
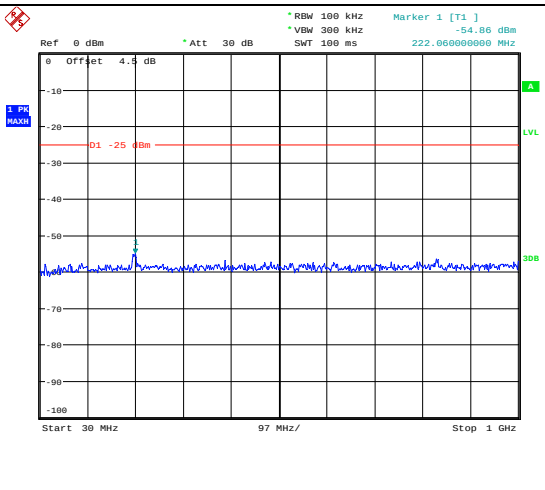
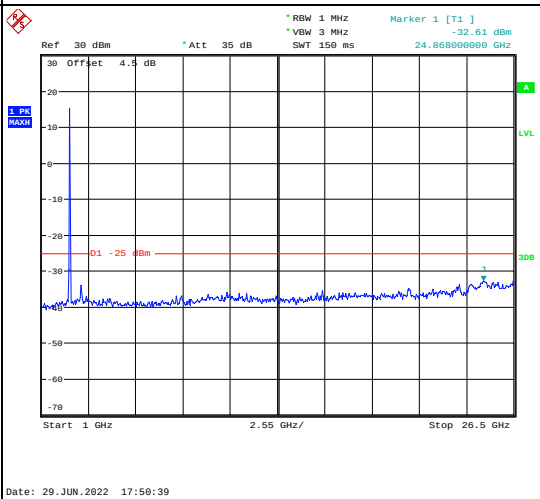
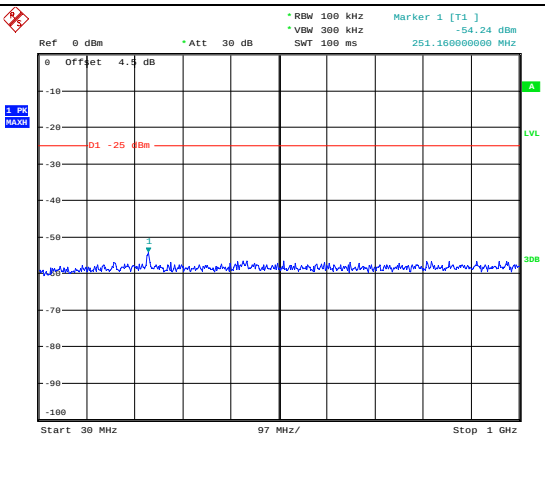
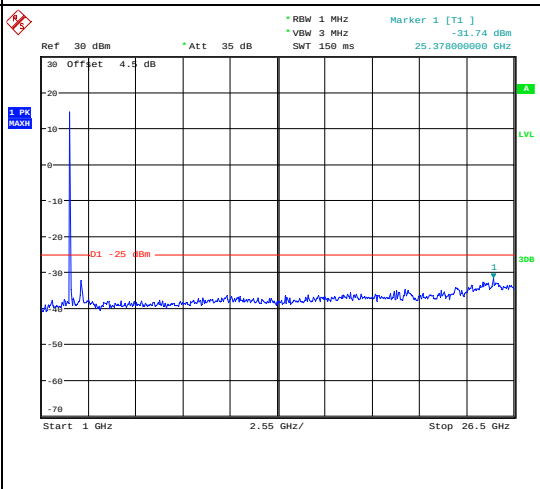
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

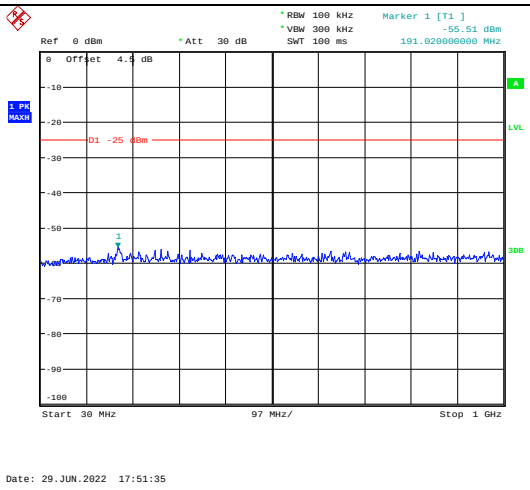
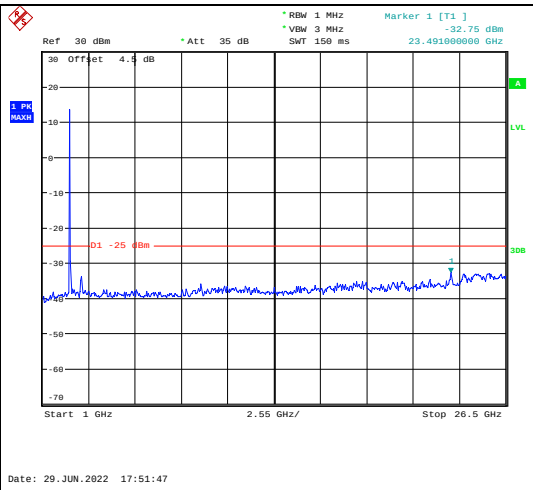
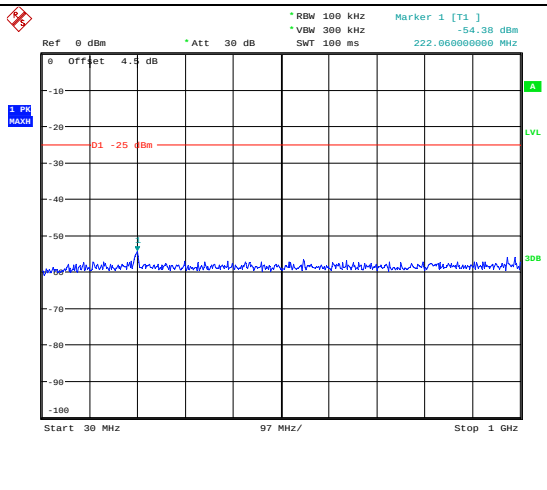
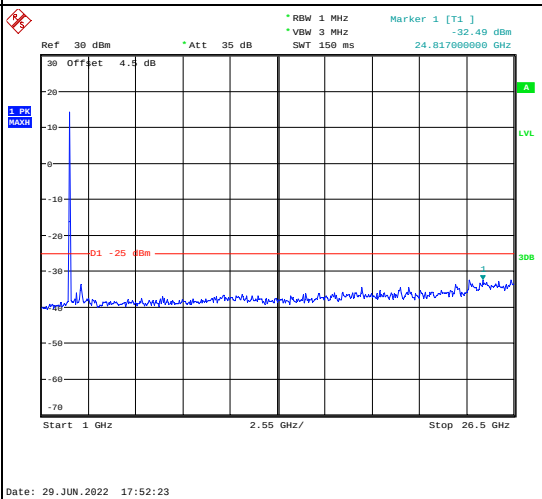
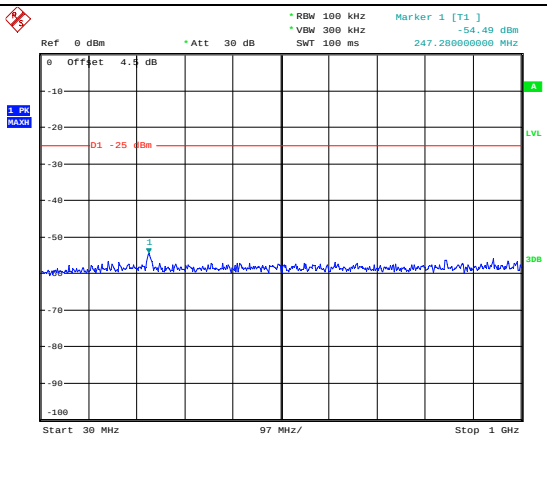
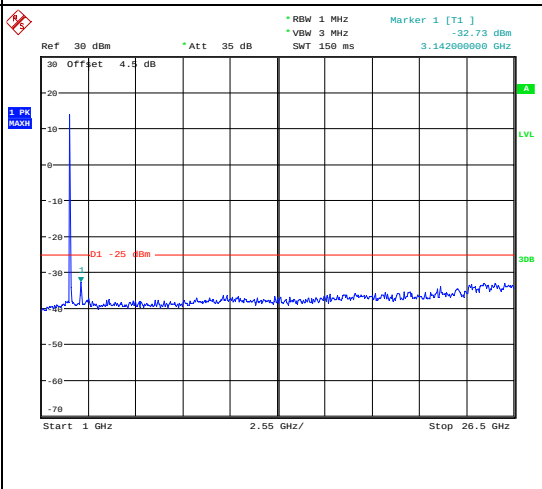
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

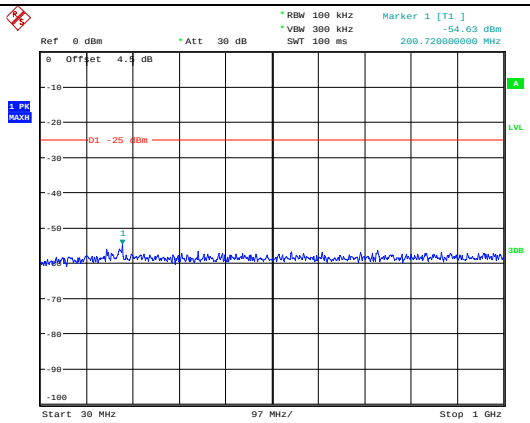
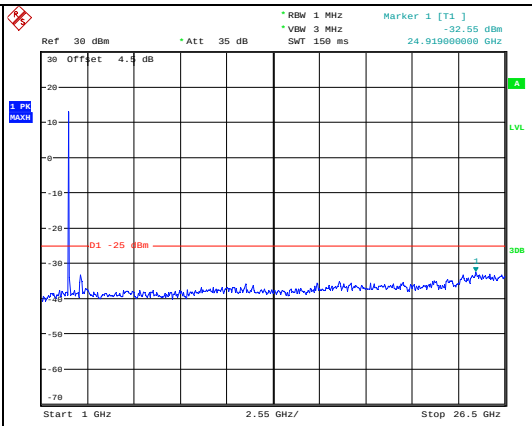
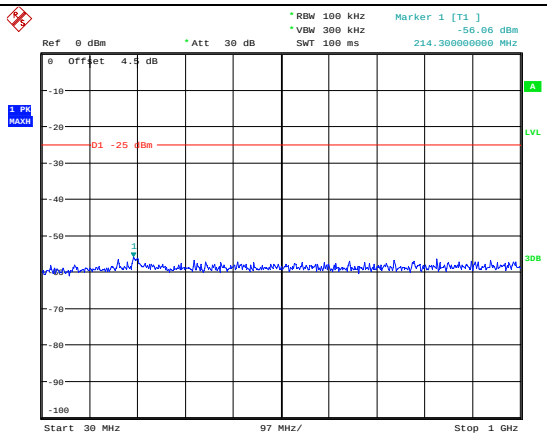
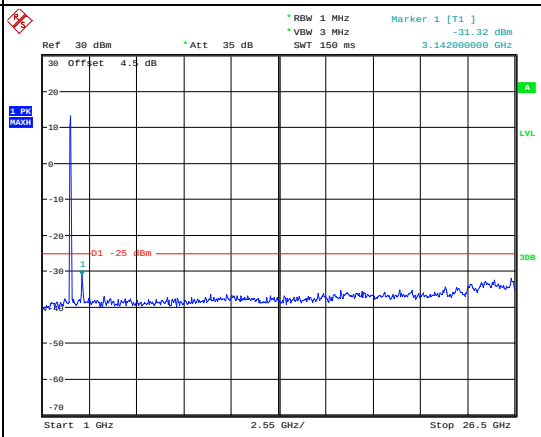
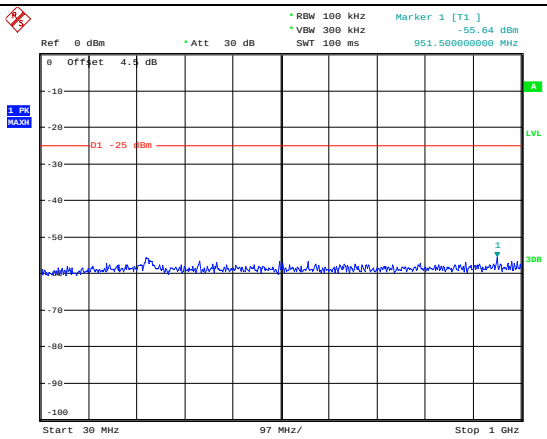
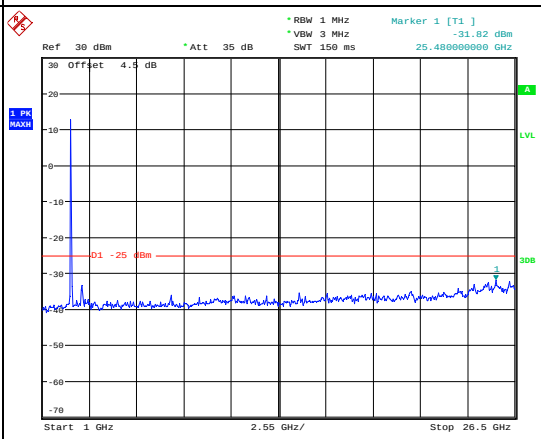
Spurious Emissions at Antenna Terminal

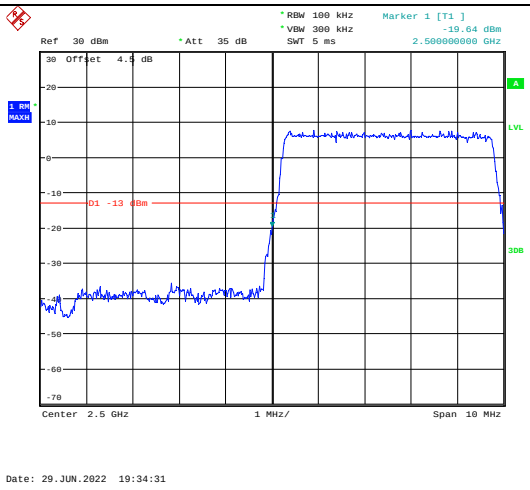
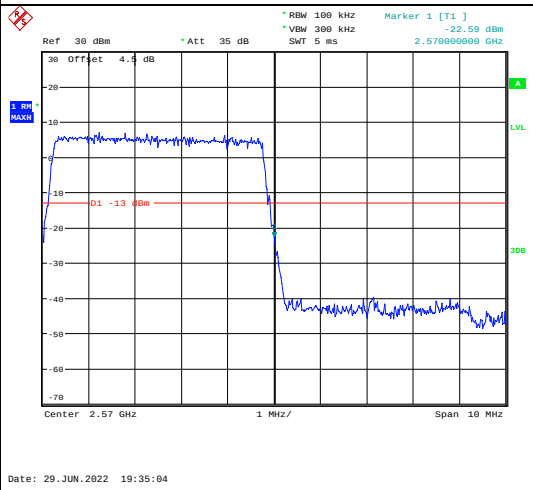
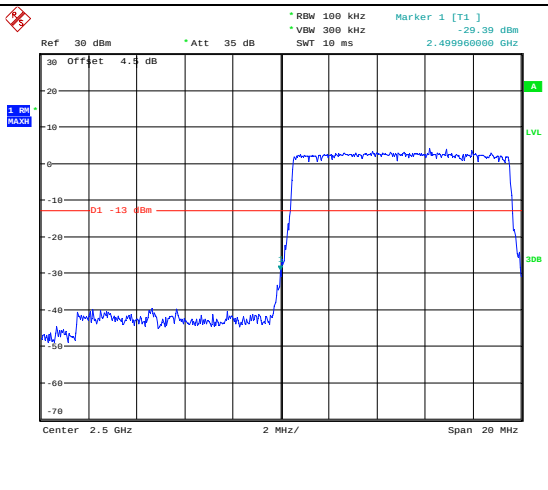
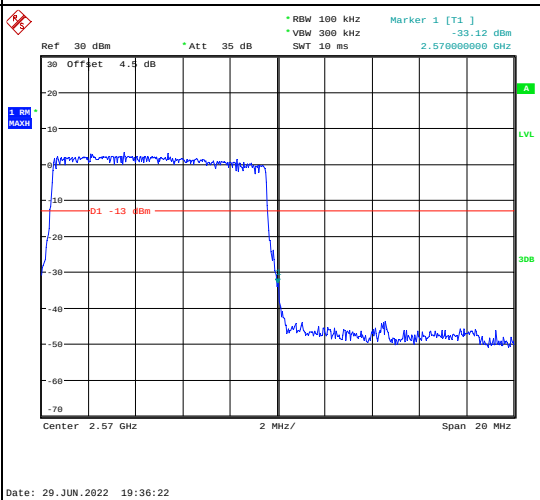
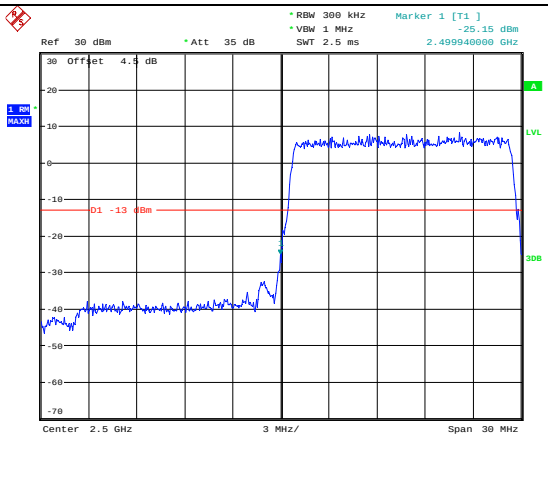
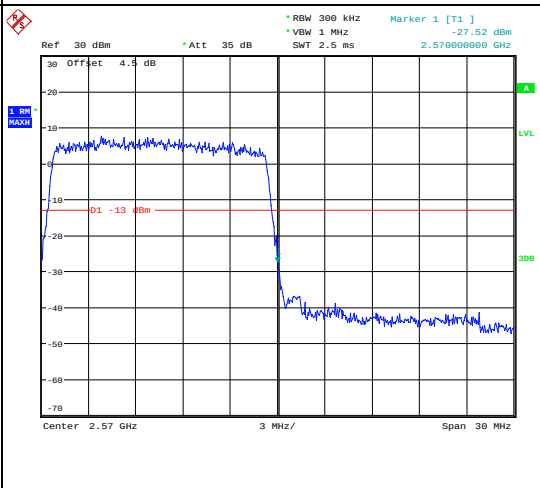
Channel	5MHz Bandwidth QPSK	
Lowest		
Middle		
Highest		

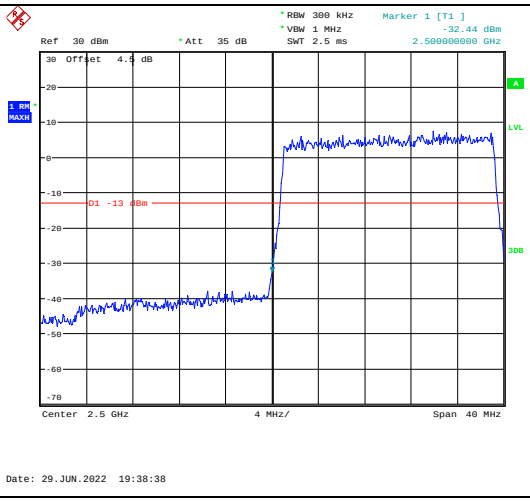
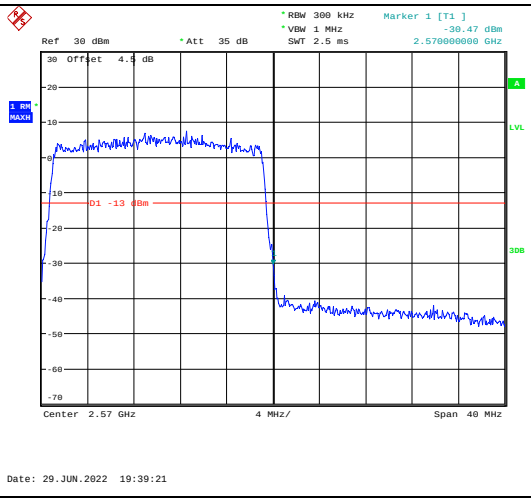
Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest	 Date: 29.JUN.2022 17:50:00	 Date: 29.JUN.2022 17:50:09
Middle	 Date: 29.JUN.2022 17:50:27	 Date: 29.JUN.2022 17:50:39
Highest	 Date: 29.JUN.2022 17:50:59	 Date: 29.JUN.2022 17:51:12

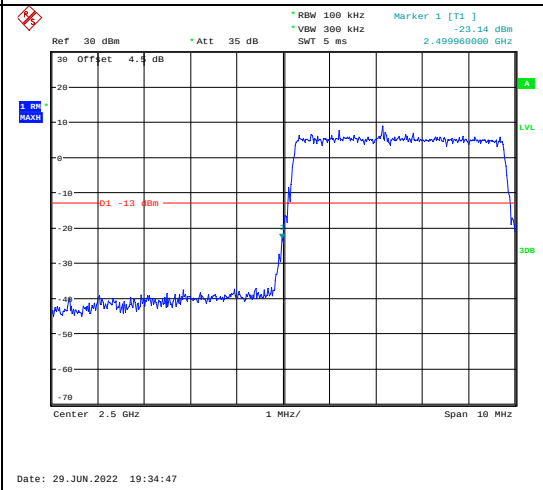
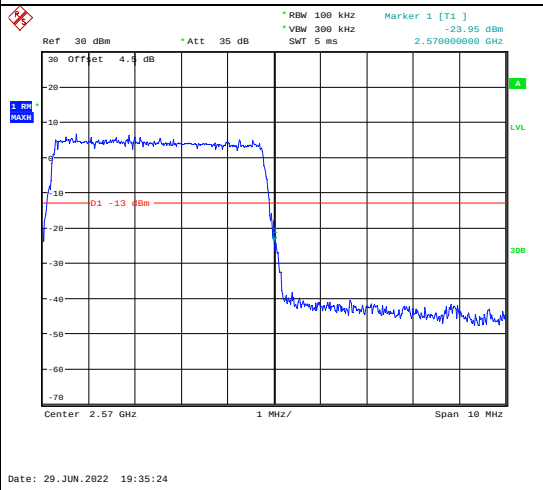
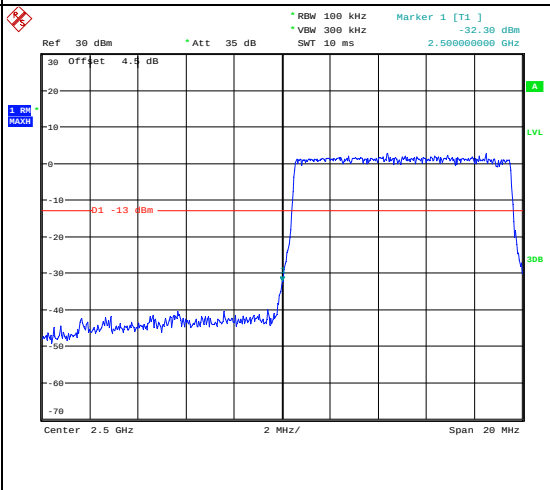
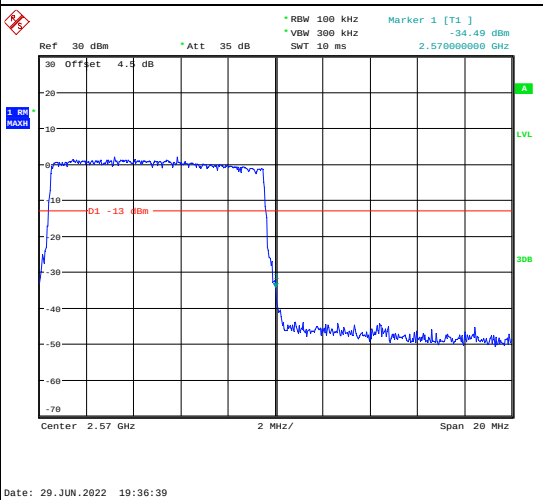
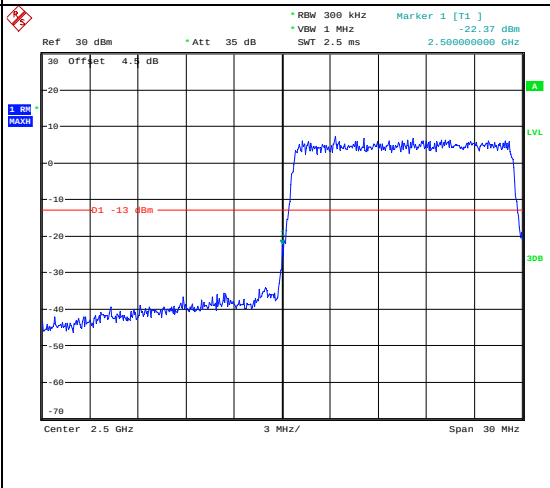
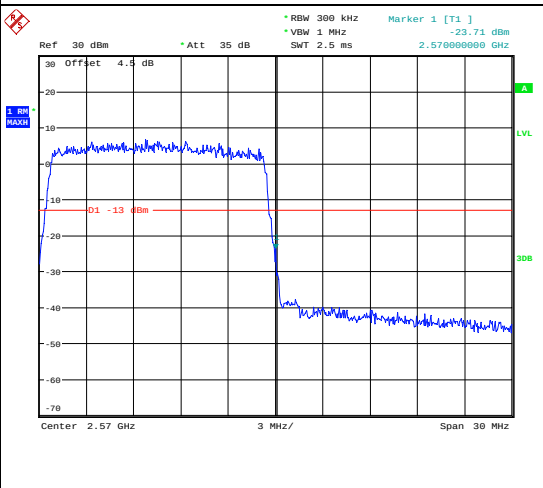
Spurious Emissions at Antenna Terminal

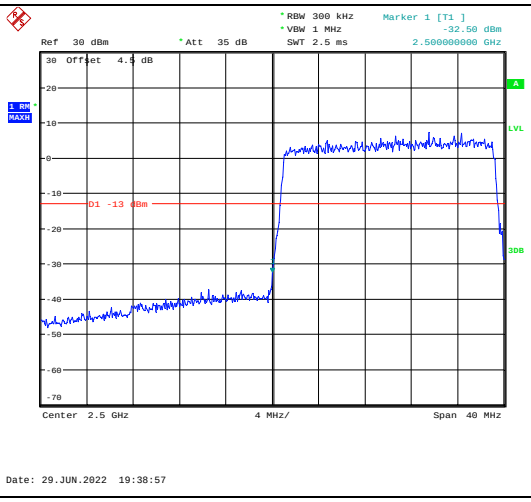
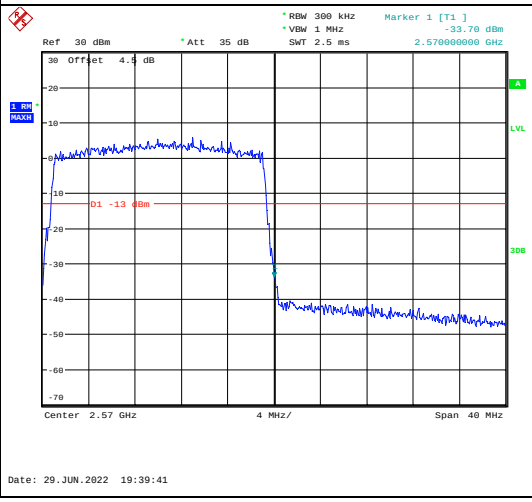
Channel	15MHz Bandwidth QPSK	
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal		
Channel	**20MHz Bandwidth QPSK**	
Lowest	 Date: 29.JUN.2022 17:53:24	 Date: 29.JUN.2022 17:53:36
Middle	 Date: 29.JUN.2022 17:53:56	 Date: 29.JUN.2022 17:54:08
Highest	 Date: 29.JUN.2022 17:54:28	 Date: 29.JUN.2022 17:54:40

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 5MHz		
QPSK 10MHz		
QPSK 15MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 20MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 5MHz		
16QAM 10MHz		
16QAM 15MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 20MHz		

4.15 Antenna Port Test Data and Results for Module A LTE Band 12

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/1-2022/7/15
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.1	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:					
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*					

EUT Information@ LTE Band 12▲:					
Antenna Gain G_T (dBi):	-4.5	Antenna Gain G_T (dBd):	-6.65	Path Loss L_C (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:			
Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

Test Data:

FCC§2.1046;§ 27.50(c) (10)						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.66	22.42	22.28	16.28	34.77
	RB1#3	22.93	22.64	22.54		
	RB1#5	22.86	22.57	22.36		
	RB3#0	22.56	22.30	22.37		
	RB3#3	22.65	22.43	22.38		
	RB6#0	21.46	21.36	21.36		
1.4MHz 16QAM	RB1#0	21.71	21.55	21.37	15.28	34.77
	RB1#3	21.76	21.51	21.57		
	RB1#5	21.93	21.54	21.48		
	RB3#0	21.48	21.20	21.09		
	RB3#3	21.73	21.37	21.33		
	RB6#0	20.62	20.19	20.25		
3MHz QPSK	RB1#0	22.69	22.33	22.17	16.64	34.77
	RB1#8	22.97	22.38	22.47		
	RB1#14	22.88	22.39	23.29		
	RB6#0	21.63	21.28	21.34		
	RB6#9	21.73	21.56	21.40		
	RB15#0	21.62	21.35	21.33		
3MHz 16QAM	RB1#0	21.32	21.39	21.15	15.03	34.77
	RB1#8	21.68	21.32	21.64		
	RB1#14	21.46	21.60	21.56		
	RB6#0	20.62	20.20	20.25		
	RB6#9	20.67	20.68	20.31		
	RB15#0	20.60	20.30	20.30		
5MHz QPSK	RB1#0	22.40	22.10	22.24	16.33	34.77
	RB1#13	22.63	22.98	22.25		
	RB1#24	22.11	22.29	22.54		
	RB15#0	21.78	21.31	21.30		
	RB15#10	21.67	21.47	21.32		
	RB25#0	21.71	21.35	21.31		
5MHz 16QAM	RB1#0	21.53	21.15	21.32	15.46	34.77
	RB1#13	22.02	22.11	21.33		
	RB1#24	21.16	21.50	21.58		
	RB15#0	20.73	20.27	20.29		
	RB15#10	20.65	20.52	20.28		
	RB25#0	20.61	20.28	20.27		
10MHz QPSK	RB1#0	22.61	21.95	22.13	16.41	34.77

	RB1#25	22.31	23.04	22.64		
	RB1#49	23.06	21.60	22.41		
	RB25#0	21.52	21.43	21.72		
	RB25#25	21.32	21.37	21.34		
	RB50#0	21.43	21.35	21.40		
10MHz 16QAM	RB1#0	21.49	21.02	21.19	15.55	34.77
	RB1#25	21.30	22.20	21.84		
	RB1#49	21.29	20.65	21.57		
	RB25#0	20.48	20.35	20.39		
	RB25#25	20.28	20.35	20.26		
	RB50#0	20.32	20.27	20.33		
Note: ERP= Conducted Power(dBm) - L_C(dB) + G_T(dBd)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.87	5.07	4.78	13
	RB50#0	5.48	4.93	5.25	13
10MHz 16QAM	RB1#0	6.09	6.14	5.83	13
	RB50#0	6.52	6.17	6.35	13
				Result:	**Pass**

FCC §2.1049, §27.53:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.096	1.096	1.102	1.296	1.296	1.308
1.4MHz 16QAM	1.102	1.096	1.102	1.320	1.314	1.314
3MHz QPSK	2.683	2.695	2.695	2.940	2.940	2.940
3MHz 16QAM	2.683	2.695	2.695	2.964	2.952	2.952
5MHz QPSK	4.511	4.491	4.531	5.000	5.000	5.060
5MHz 16QAM	4.511	4.491	4.531	5.020	5.000	5.040
10MHz QPSK	8.981	8.862	8.981	9.760	9.680	9.680
10MHz 16QAM	8.981	8.901	8.942	9.760	9.640	9.680
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §27.54: Frequency Stability

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	699.546	699.00	715.518	716.00
	-20	3.85	699.547	699.00	715.519	716.00
	-10	3.85	699.544	699.00	715.522	716.00
	0	3.85	699.549	699.00	715.518	716.00
	10	3.85	699.545	699.00	715.517	716.00
	20	3.85	699.543	699.00	715.515	716.00
	30	3.85	699.540	699.00	715.512	716.00
	40	3.85	699.541	699.00	715.511	716.00
	50	3.85	699.543	699.00	715.515	716.00
Frequency Stability vs. Voltage	20	3.5	699.538	699.00	715.512	716.00
	20	4.4	699.539	699.00	715.509	716.00
					Result:	**Pass**

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	699.548	699.00	715.492	716.00
	-20	3.85	699.546	699.00	715.488	716.00
	-10	3.85	699.547	699.00	715.487	716.00
	0	3.85	699.551	699.00	715.494	716.00
	10	3.85	699.547	699.00	715.489	716.00
	20	3.85	699.543	699.00	715.486	716.00
	30	3.85	699.541	699.00	715.481	716.00
	40	3.85	699.538	699.00	715.483	716.00
	50	3.85	699.537	699.00	715.485	716.00
Frequency Stability vs. Voltage	20	3.5	699.543	699.00	715.486	716.00
	20	4.4	699.540	699.00	715.480	716.00
					Result:	**Pass**