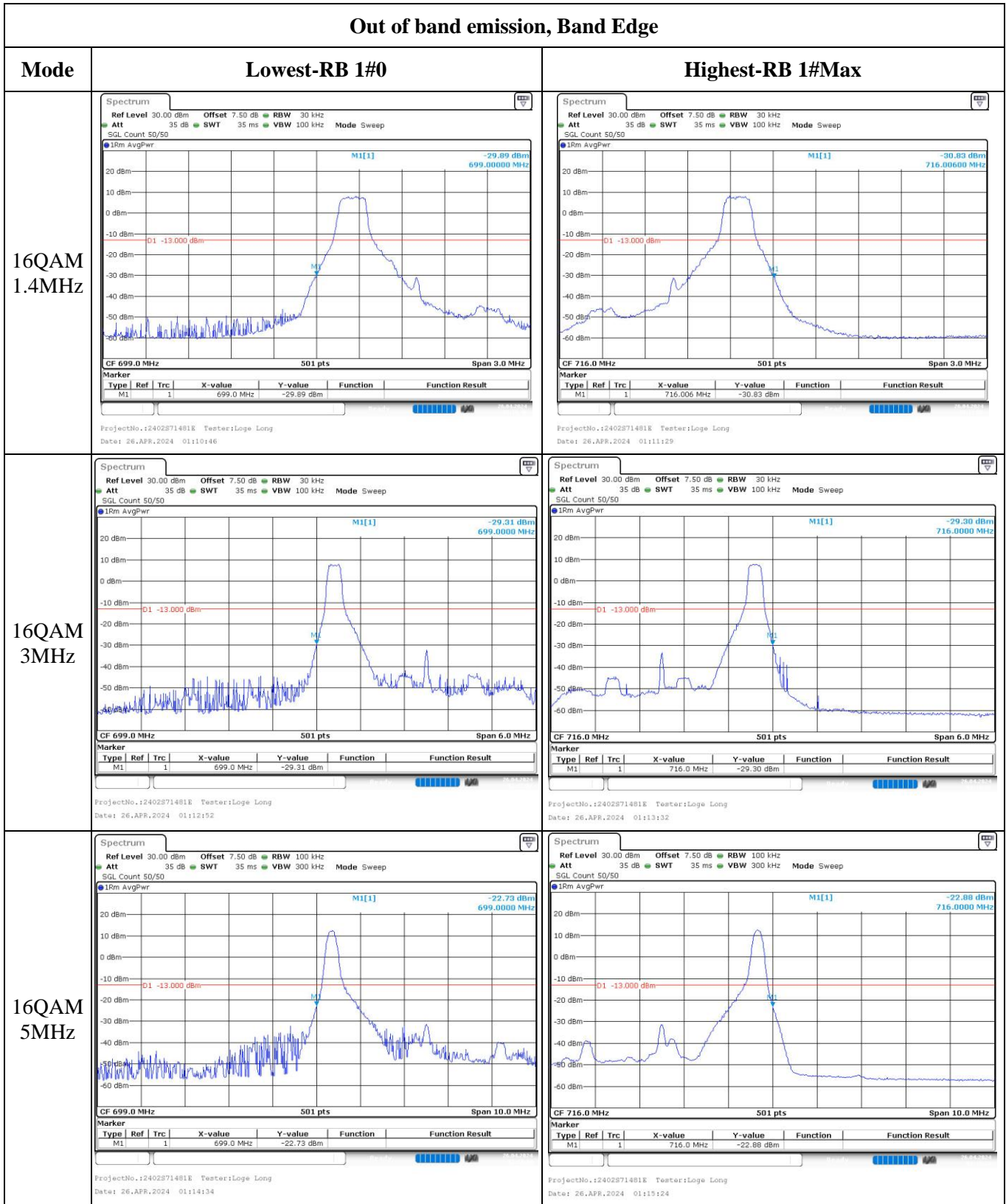
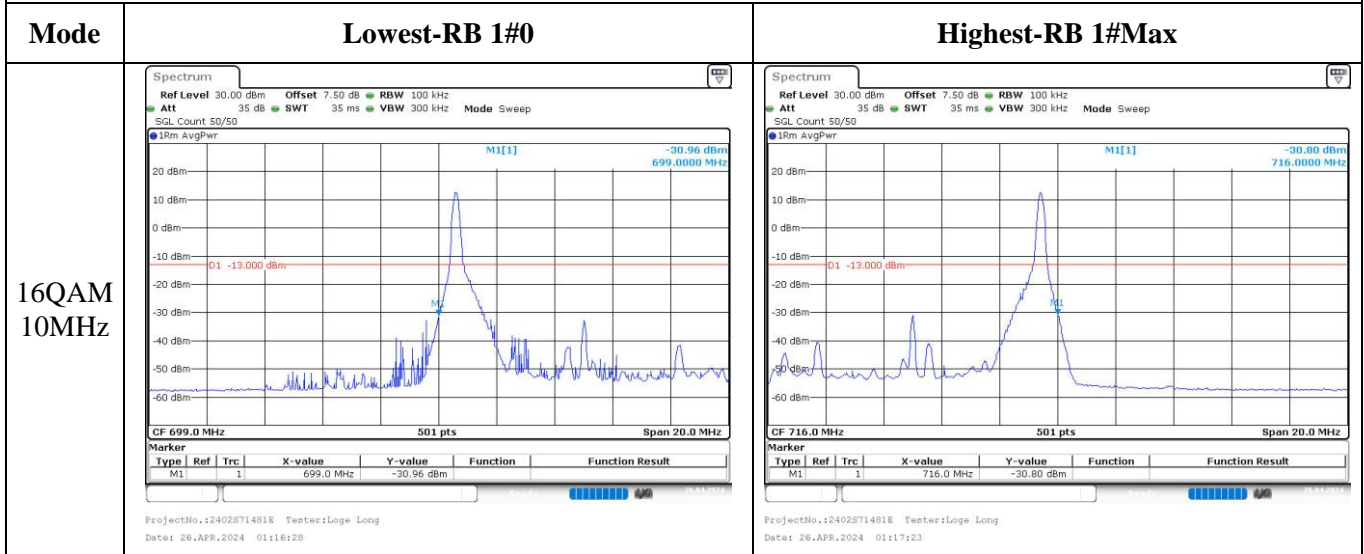


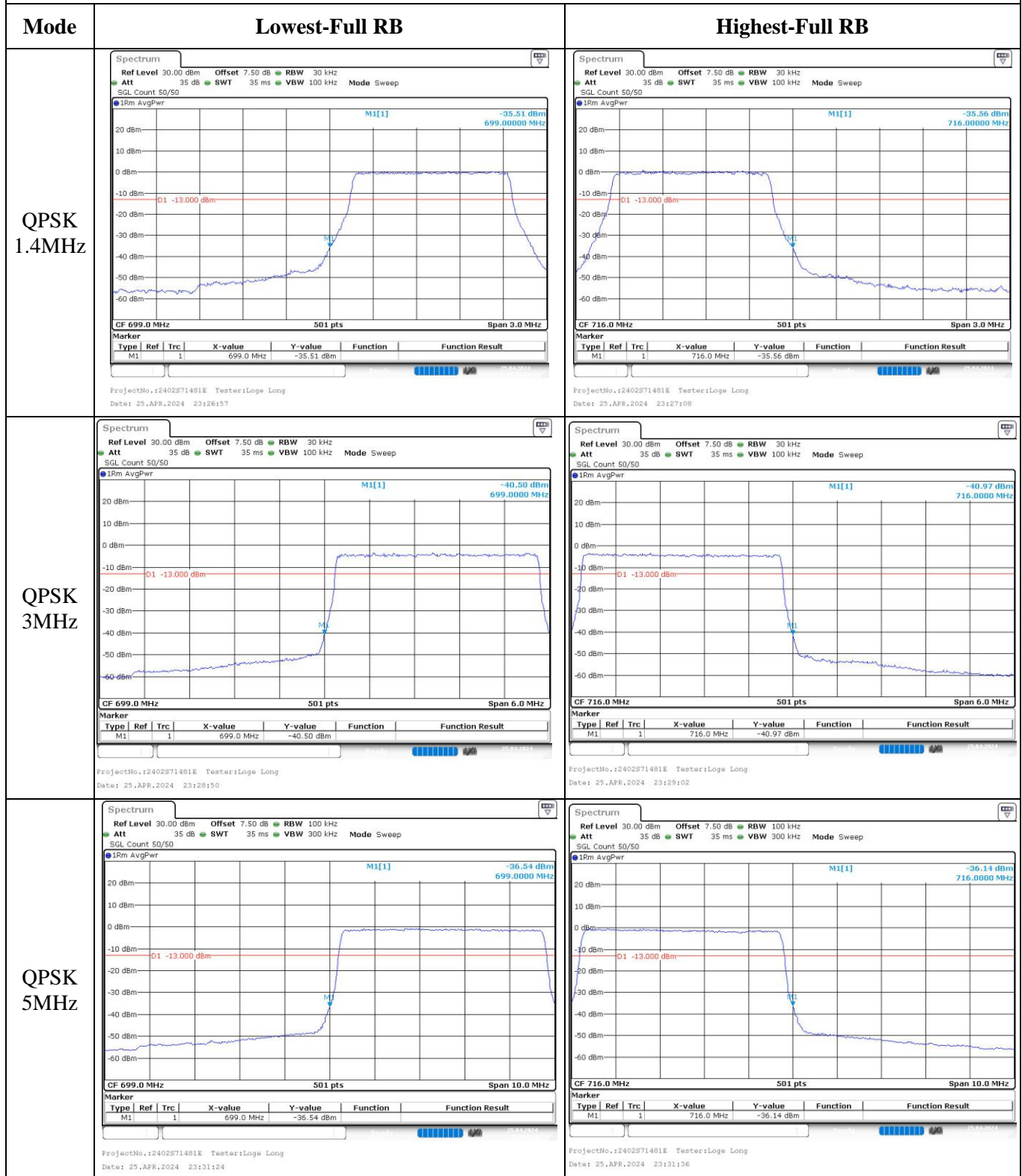
Out of band emission, Band Edge



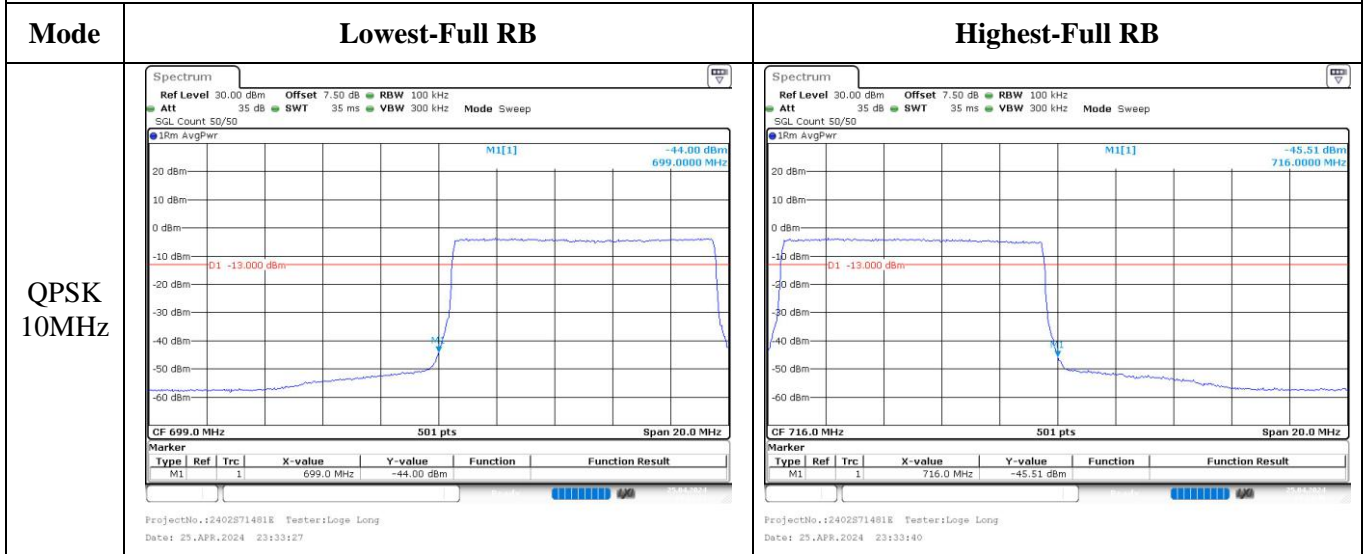
Out of band emission, Band Edge



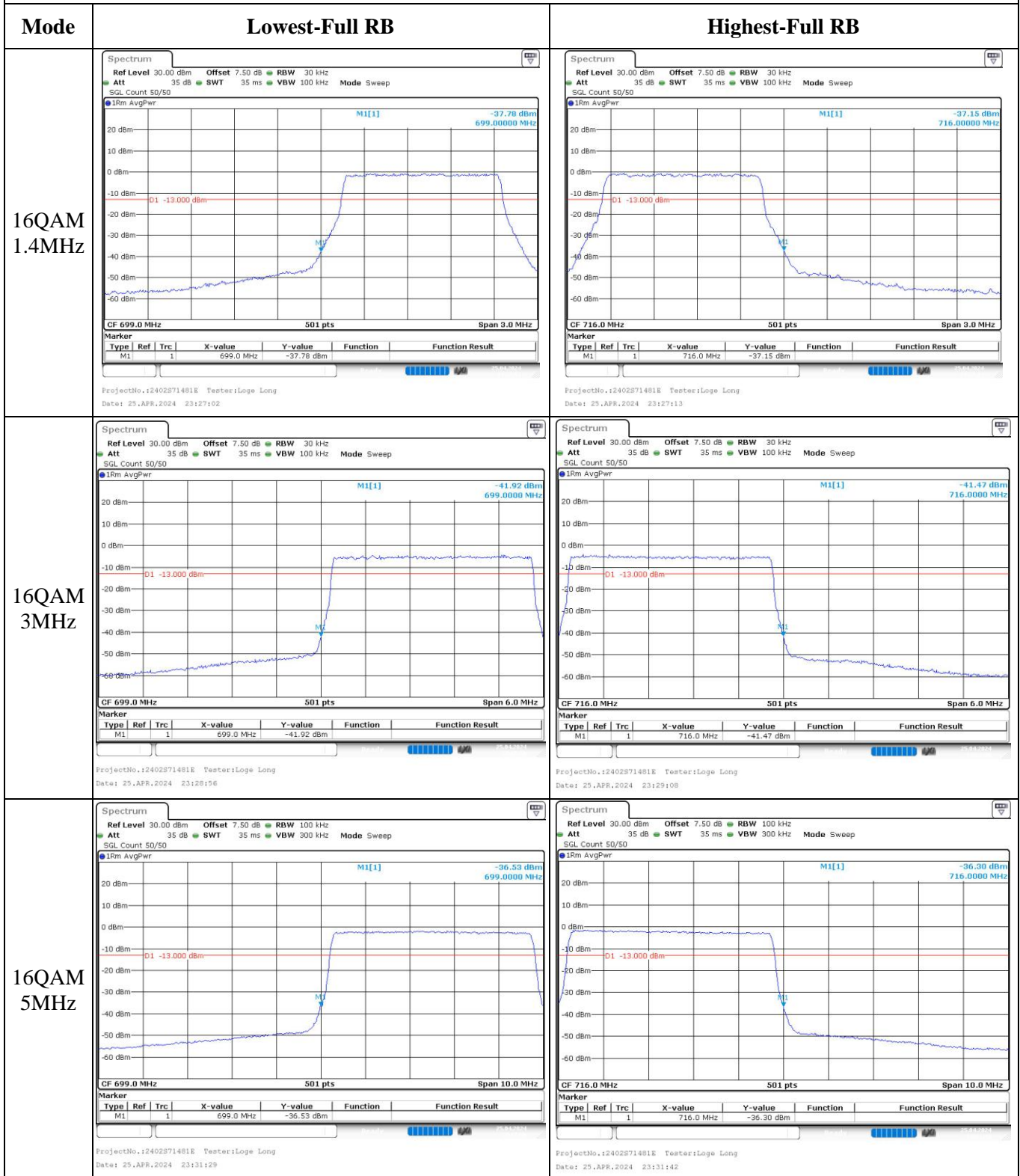
Out of band emission, Band Edge



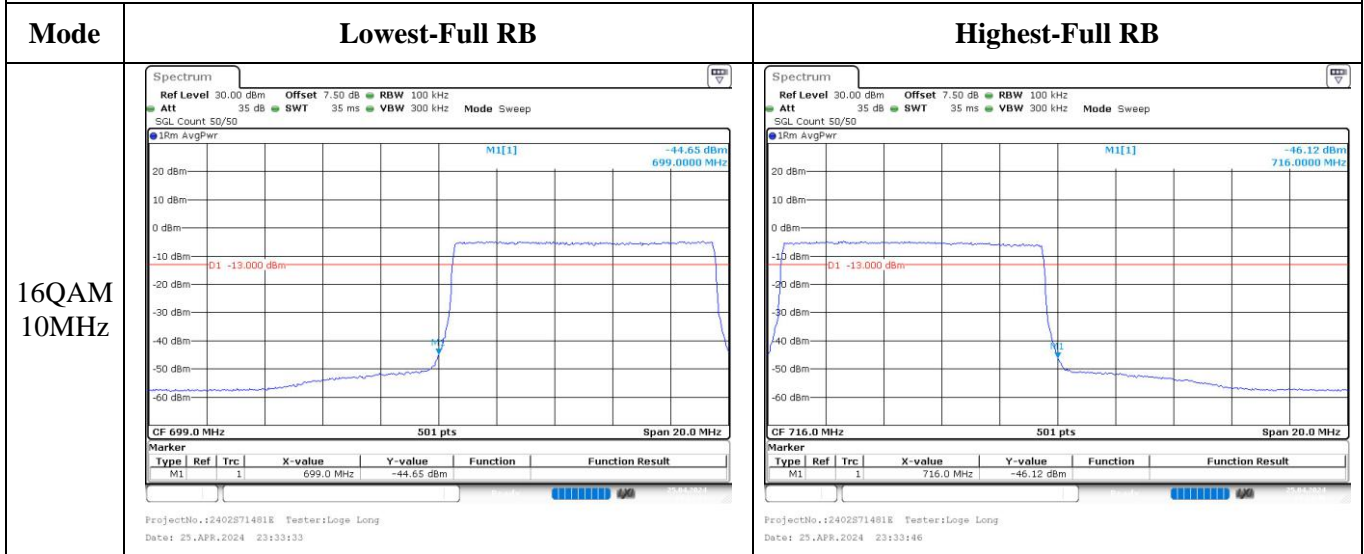
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



**5.11 Antenna Port Test Data and Results for LTE Band 13**

Serial Number:	OSEB119574-2	Test Date:	2024/4/25~2024/4/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang, Loge Long	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	25.5~25.6	Relative Humidity: (%)	66~70	ATM Pressure: (kPa)	100.6~100.9
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101461	2023/11/27	2024/11/26
Micro-Coax	Coaxial Cable	UFB205A	323308-024	2024/1/2	2025/1/1
Eastsheep	Coaxial Attenuator	5W-N-JK-6G-10dB	F-08-EM502	2023/9/10	2024/9/9
Minl-Clrucuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/2/25	2025/2/24
R&S	Wideband Radio Communication Tester	CMW500	144976	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
All-sun	Clamp Meter	EM305A	8348897	2023/8/3	2024/8/2
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	779.5	/	784.5
10MHz	/	782	/

**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		
5MHz QPSK	RB1#0	15.72	/	15.69	7.75	34.77
	RB1#13	15.73	/	15.7		
	RB1#24	15.69	/	15.7		
	RB15#0	14.74	/	14.71		
	RB15#10	14.71	/	14.64		
	RB25#0	14.74	/	14.67		
5MHz 16QAM	RB1#0	15.07	/	14.63	7.09	34.77
	RB1#13	15.02	/	14.59		
	RB1#24	15.02	/	14.65		
	RB15#0	13.68	/	13.72		
	RB15#10	13.68	/	13.66		
	RB25#0	13.71	/	13.73		
10MHz QPSK	RB1#0	/	15.6	/	7.65	34.77
	RB1#25	/	15.63	/		
	RB1#49	/	15.59	/		
	RB25#0	/	14.64	/		
	RB25#25	/	14.65	/		
	RB50#0	/	14.66	/		
10MHz 16QAM	RB1#0	/	15.3	/	7.32	34.77
	RB1#25	/	15.26	/		
	RB1#49	/	15.29	/		
	RB25#0	/	13.68	/		
	RB25#25	/	13.73	/		
	RB50#0	/	13.7	/		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

**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	/	5.59	/	13
	RB50#0	/	5.3	/	13
10MHz 16QAM	RB1#0	/	6.12	/	13
	RB50#0	/	6.2	/	13

**Result: Pass**



<b>FCC §2.1049, §27.53:Occupied Bandwidth</b>						
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	/	4.511	7.38	/	4.98
5MHz 16QAM	4.551	/	4.491	6.78	/	4.96
10MHz QPSK	/	8.942	/	/	9.68	/
10MHz 16QAM	/	8.942	/	/	9.6	/

Note: The test plots please refer to the Plots of Occupied Bandwidth

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

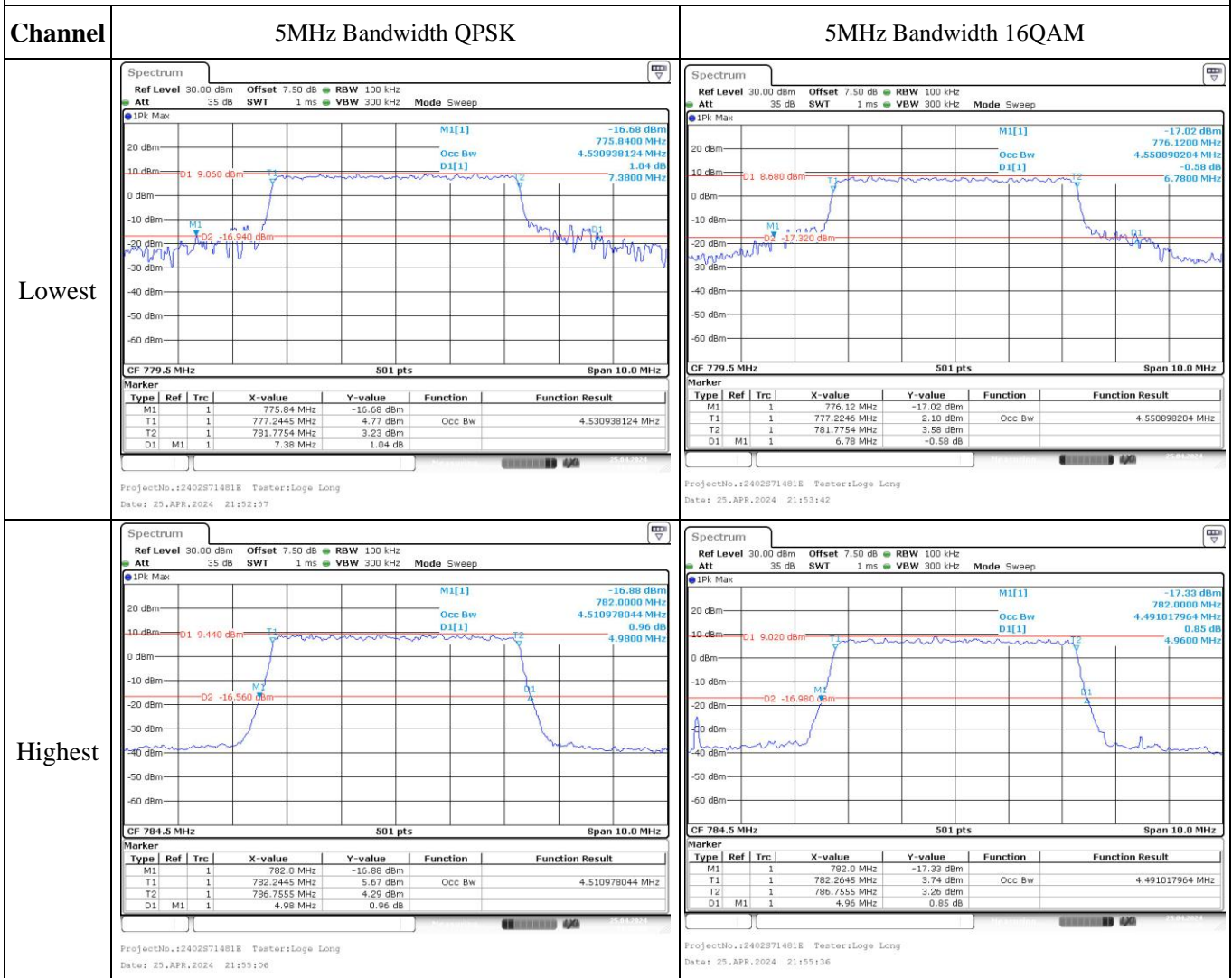
<b>FCC §2.1051, §27.53:Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	777.511	777.00	786.462	787.00
	-20	3.91	777.520	777.00	786.465	787.00
	-10	3.91	777.511	777.00	786.465	787.00
	0	3.91	777.517	777.00	786.456	787.00
	10	3.91	777.523	777.00	786.450	787.00
	20	3.91	777.529	777.00	786.471	787.00
	30	3.91	777.538	777.00	786.498	787.00
	40	3.91	777.550	777.00	786.486	787.00
Frequency Stability vs. Voltage	50	3.91	777.535	777.00	786.474	787.00
	20	3.45	777.553	777.00	786.477	787.00
	20	4.5	777.535	777.00	786.477	787.00
<b>Result:</b>						<b>Pass</b>

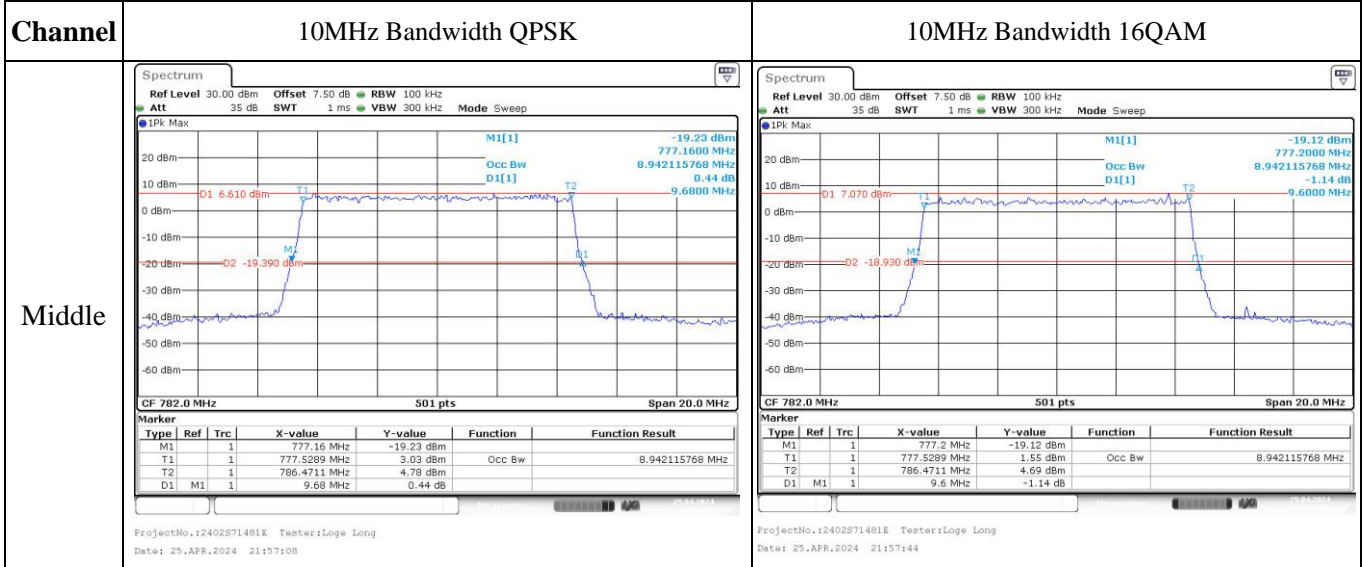
Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	777.499	777.00	786.453	787.00
	-20	3.91	777.526	777.00	786.444	787.00
	-10	3.91	777.514	777.00	786.450	787.00
	0	3.91	777.520	777.00	786.453	787.00
	10	3.91	777.523	777.00	786.459	787.00
	20	3.91	777.529	777.00	786.471	787.00
	30	3.91	777.556	777.00	786.486	787.00
	40	3.91	777.556	777.00	786.495	787.00
	50	3.91	777.538	777.00	786.480	787.00
Frequency Stability vs. Voltage	20	3.45	777.544	777.00	786.495	787.00
	20	4.5	777.544	777.00	786.495	787.00
					<b>Result:</b>	<b>Pass</b>

Test Plots:

Occupied Bandwidth



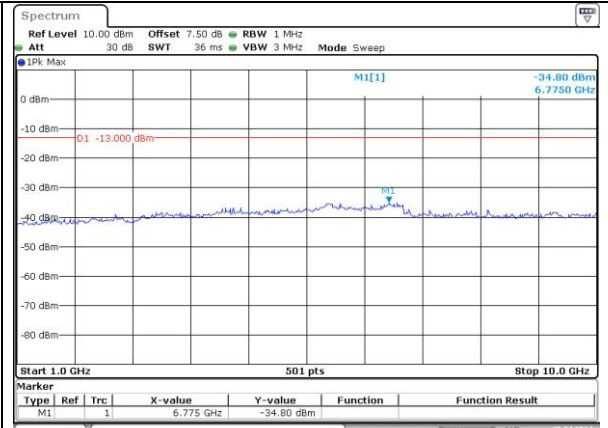
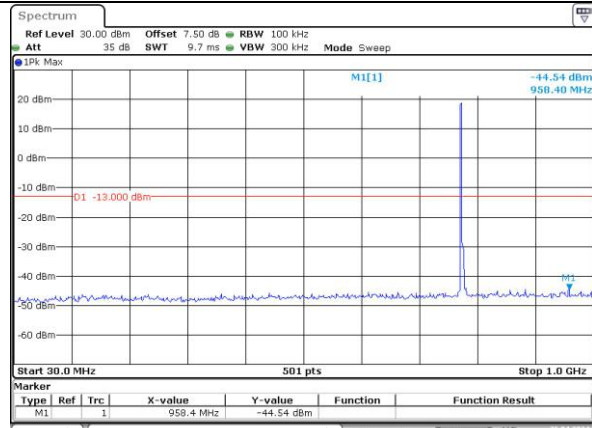
### Occupied Bandwidth



### Spurious Emissions at Antenna Terminal

Channel

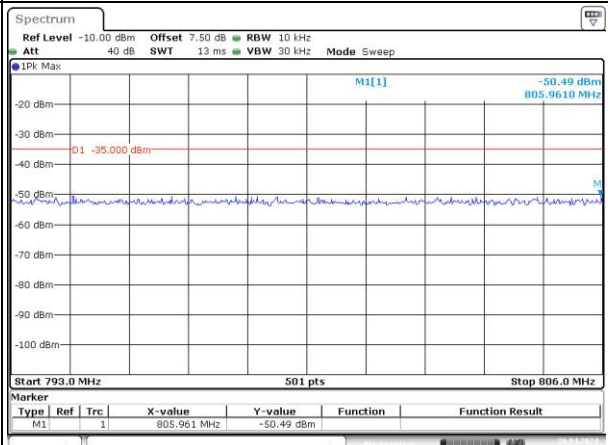
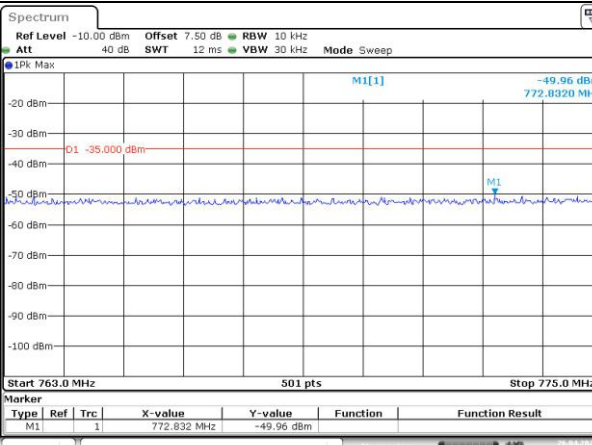
5MHz Bandwidth QPSK



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 02:15:03

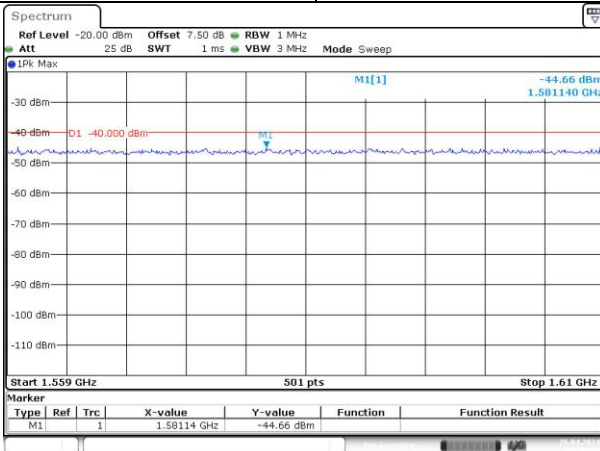
ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 02:15:25

Lowest



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 02:15:16

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 02:15:18

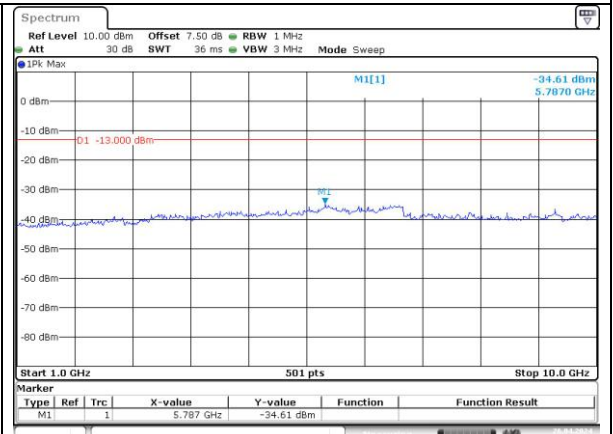
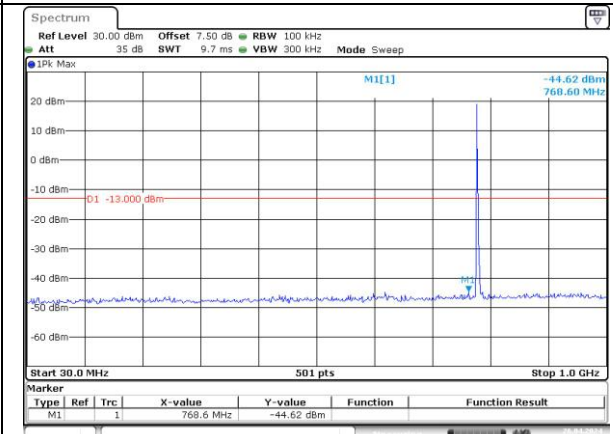


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 02:15:51

### Spurious Emissions at Antenna Terminal

Channel

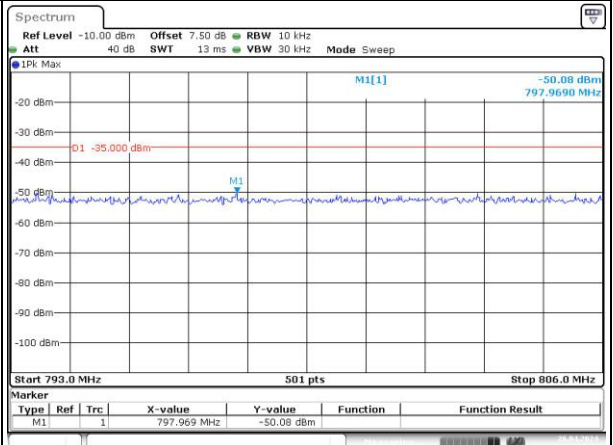
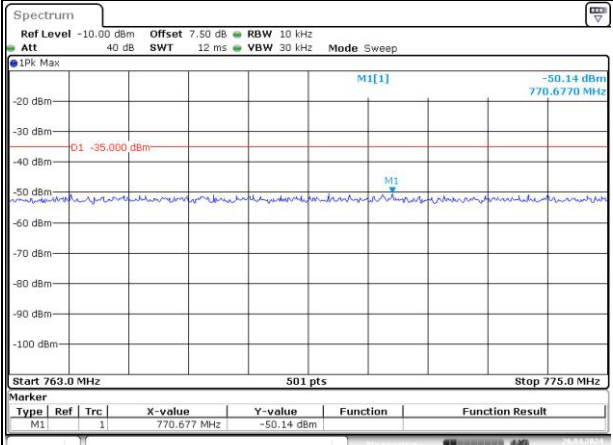
5MHz Bandwidth QPSK



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:03:31

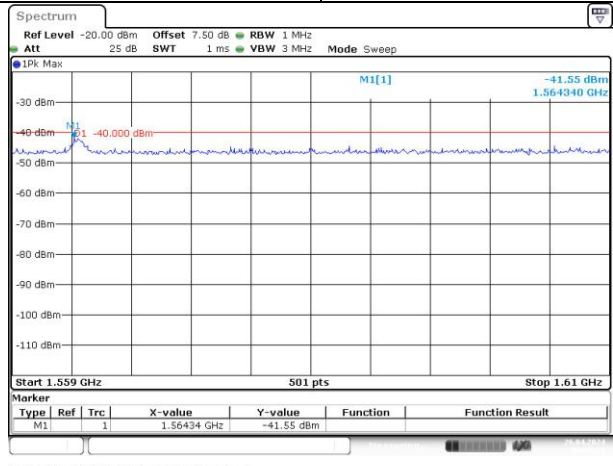
ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:03:53

Highest



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:04:28

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:04:46

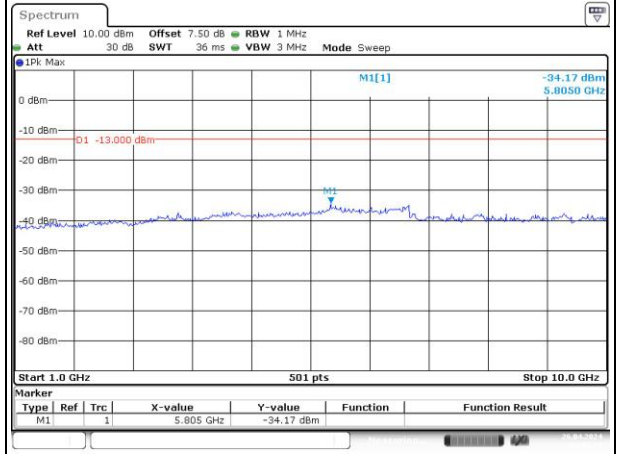
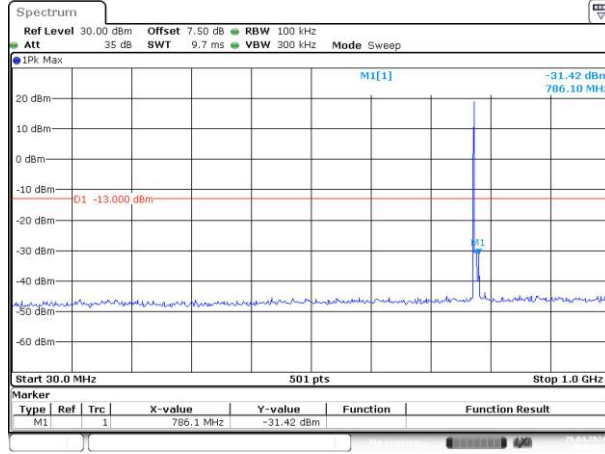


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:05:21

### Spurious Emissions at Antenna Terminal

Channel

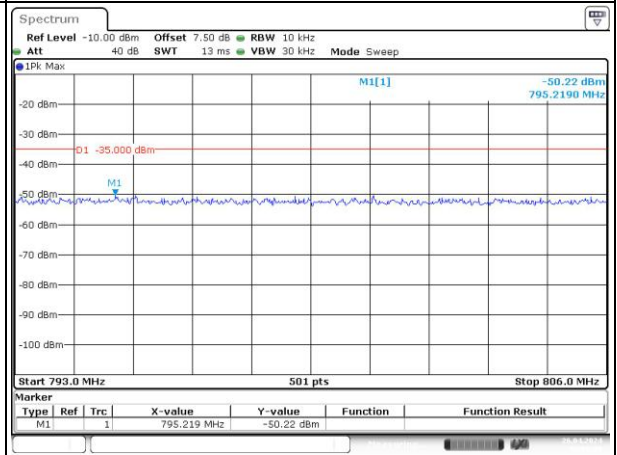
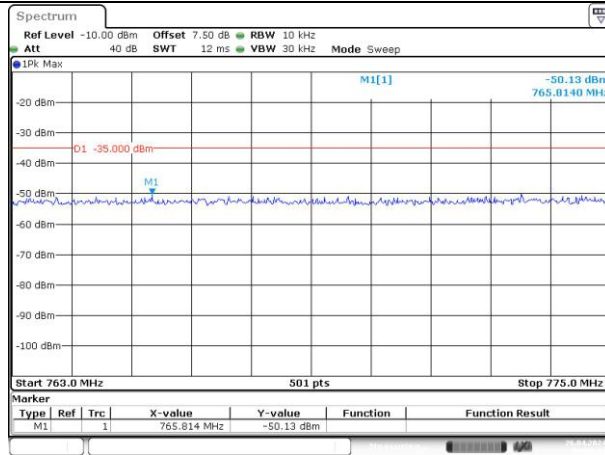
10MHz Bandwidth QPSK



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:08:14

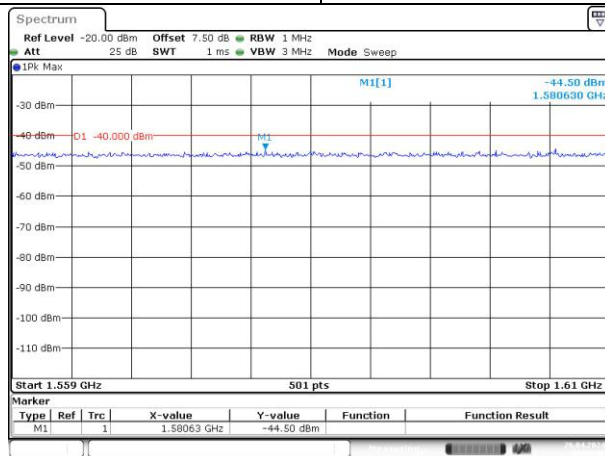
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Date: 26.APR.2024 03:07:20

Middle



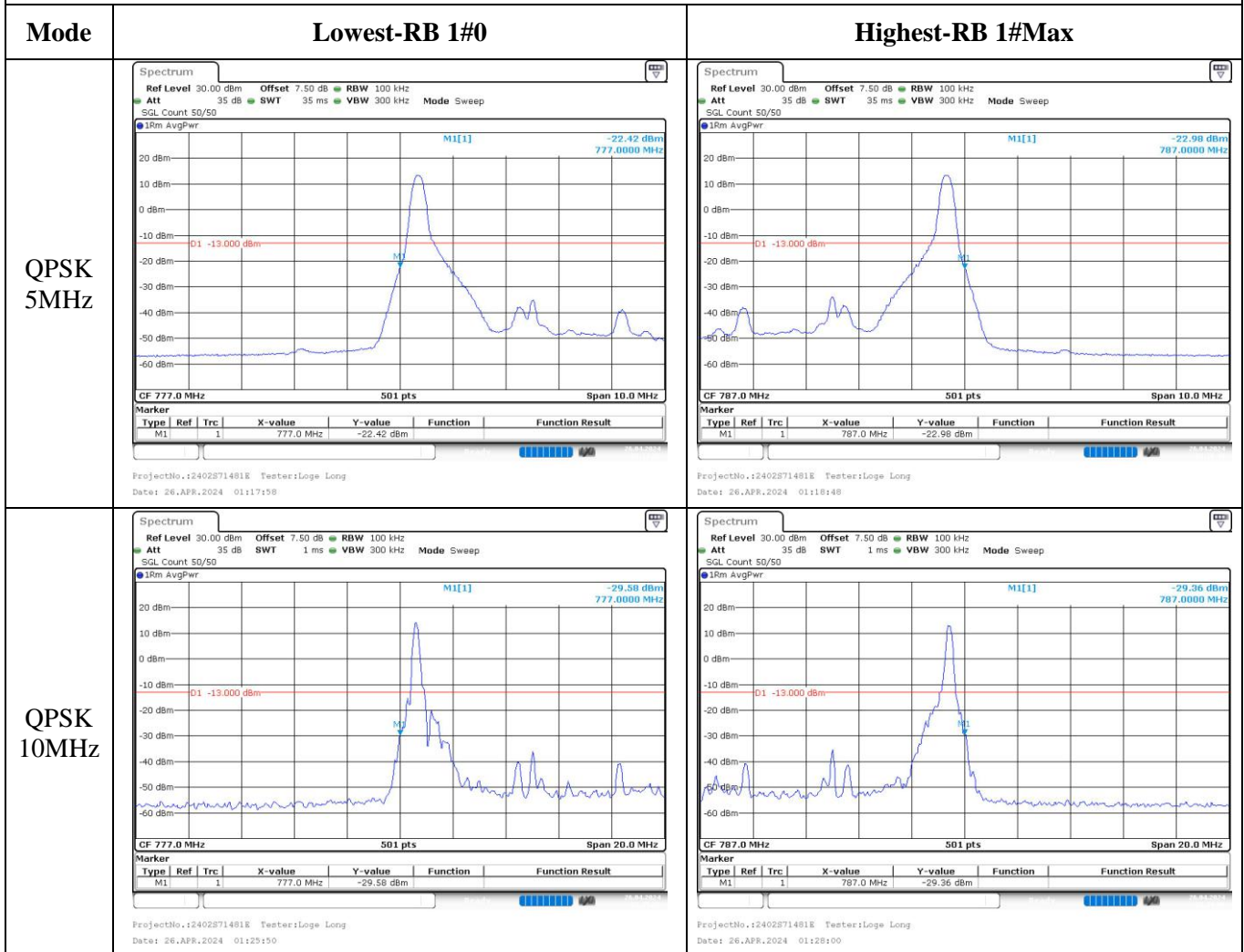
ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:07:42

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:08:07



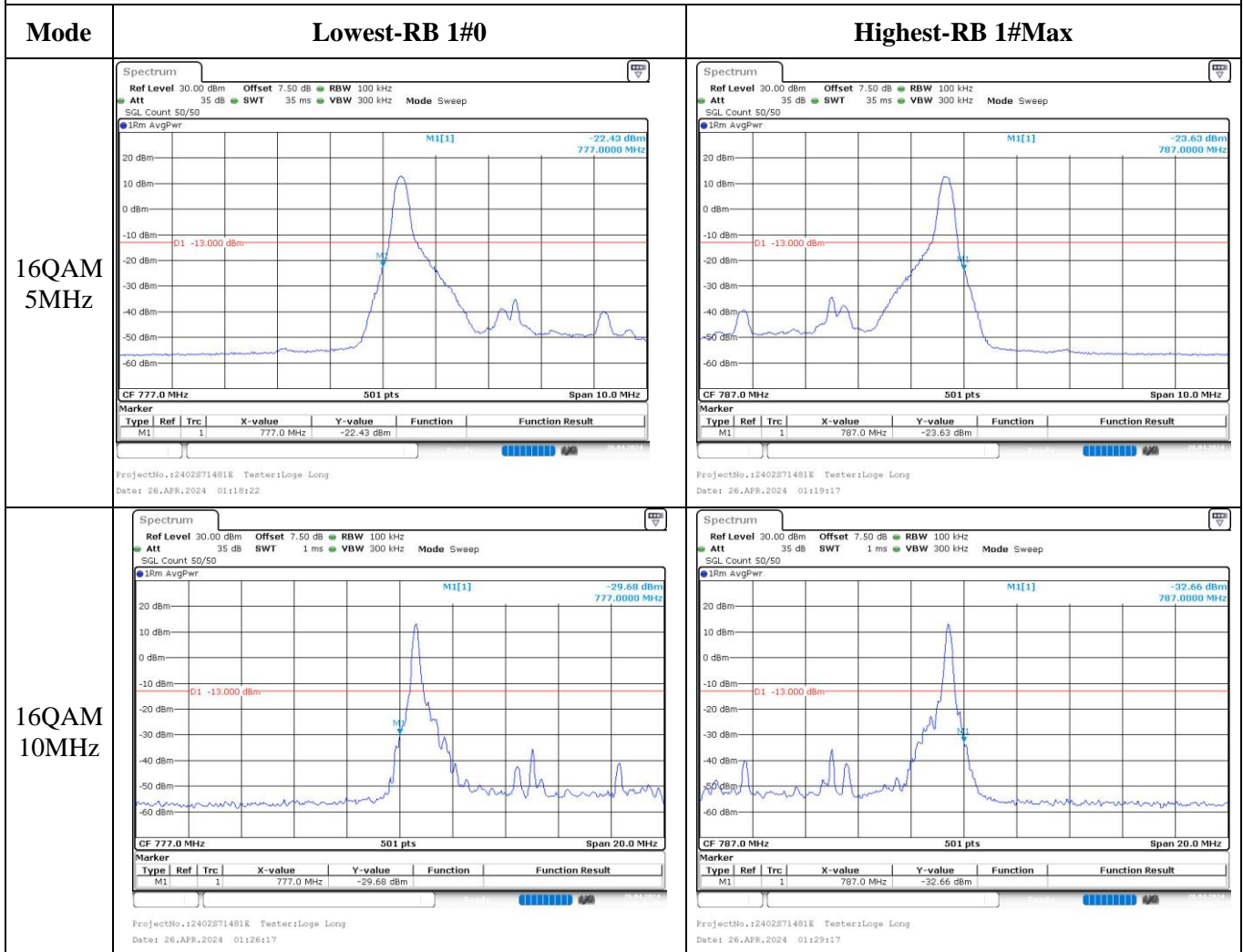
ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:08:40

Out of band emission, Band Edge

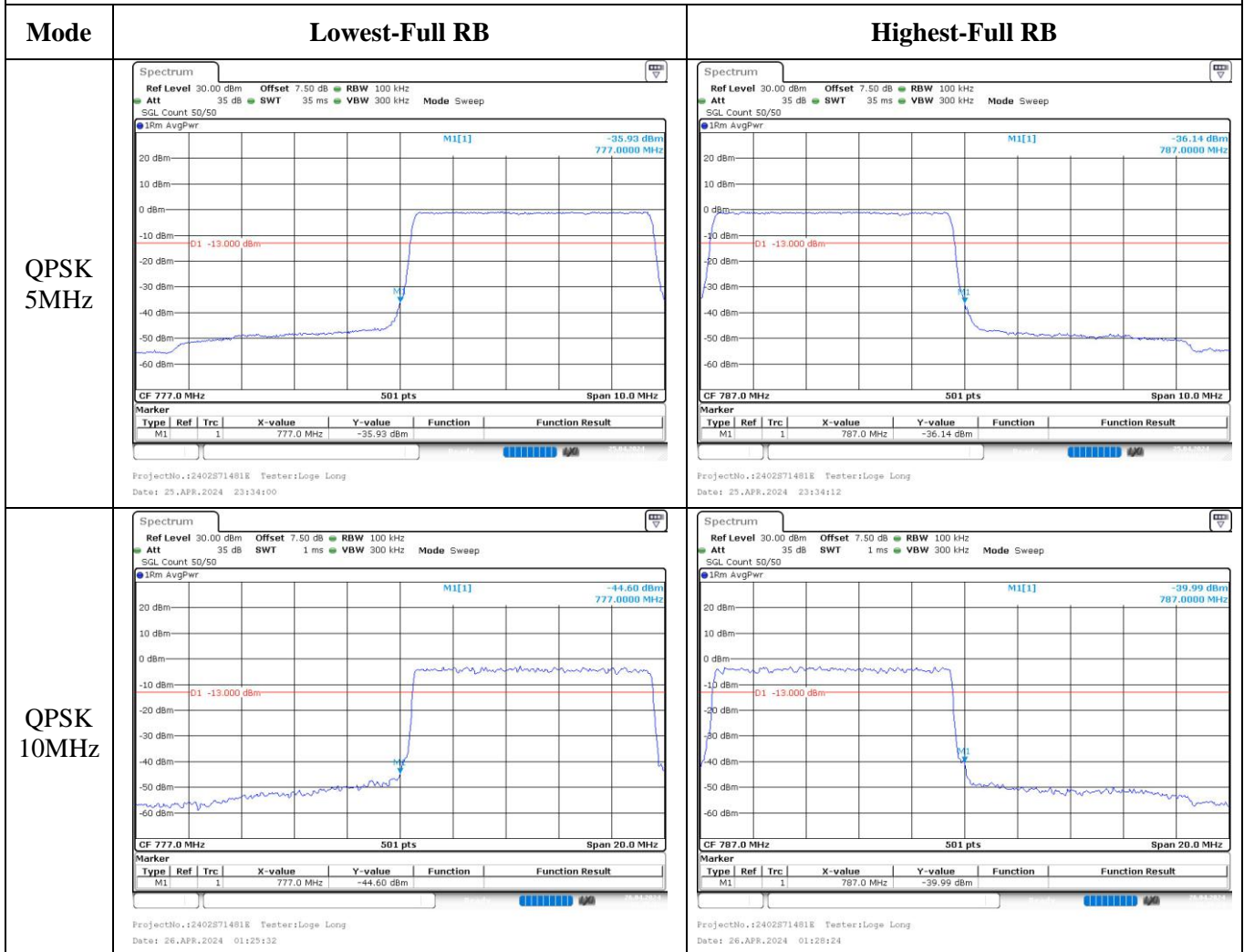




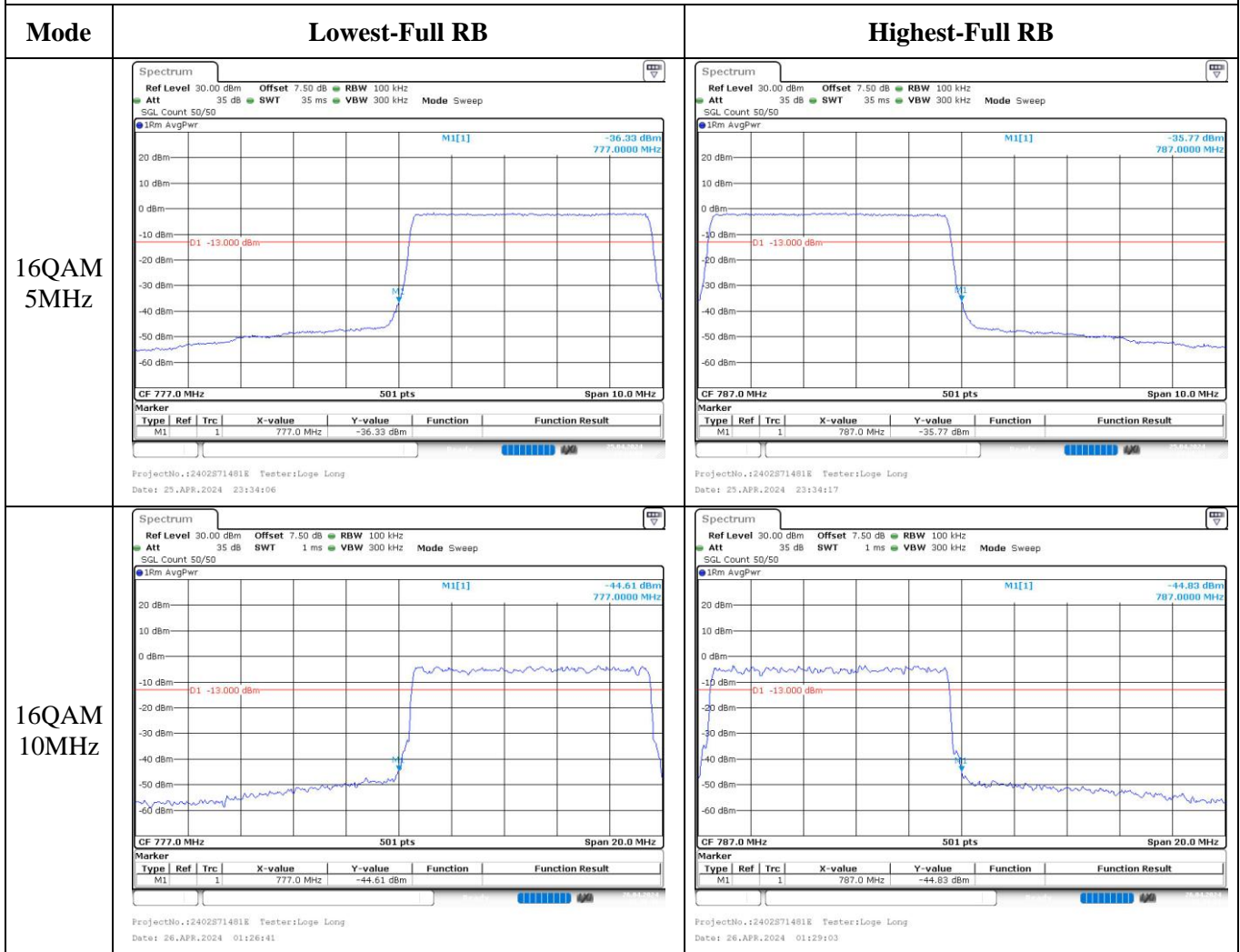
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



**5.12 Antenna Port Test Data and Results for LTE Band 17**

Serial Number:	OSEB119574-2	Test Date:	2024/4/25~2024/4/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang, Loge Long	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	25.6	Relative Humidity: (%)	66~70	ATM Pressure: (kPa)	100.6~100.9
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101461	2023/11/27	2024/11/26
Micro-Coax	Coaxial Cable	UFB205A	323308-024	2024/1/2	2025/1/1
Eastsheep	Coaxial Attenuator	5W-N-JK-6G-10dB	F-08-EM502	2023/9/10	2024/9/9
Mini-Circuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/2/25	2025/2/24
R&S	Wideband Radio Communication Tester	CMW500	144976	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
All-sun	Clamp Meter	EM305A	8348897	2023/8/3	2024/8/2
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	706.5	710	713.5
10MHz	709	710	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		
5MHz QPSK	RB1#0	15.5	15.36	15.62	8.44	34.77
	RB1#13	15.47	15.46	15.56		
	RB1#24	15.55	15.5	15.58		
	RB15#0	14.51	14.51	14.65		
	RB15#10	14.58	14.5	14.57		
	RB25#0	14.53	14.52	14.6		
5MHz 16QAM	RB1#0	14.89	14.61	14.46	7.44	34.77
	RB1#13	14.84	14.59	14.43		
	RB1#24	14.9	14.62	14.5		
	RB15#0	13.46	13.53	13.68		
	RB15#10	13.52	13.49	13.5		
	RB25#0	13.53	13.55	13.66		
10MHz QPSK	RB1#0	15.23	15.45	15.35	8.35	34.77
	RB1#25	15.42	15.46	15.52		
	RB1#49	15.39	15.47	15.53		
	RB25#0	14.39	14.44	14.47		
	RB25#25	14.47	14.42	14.41		
	RB50#0	14.47	14.43	14.47		
10MHz 16QAM	RB1#0	15.09	14.68	14.55	7.51	34.77
	RB1#25	15.05	14.57	14.57		
	RB1#49	15.1	14.69	14.63		
	RB25#0	13.45	13.46	13.58		
	RB25#25	13.49	13.41	13.55		
	RB50#0	13.44	13.43	13.5		

Note:

$ERP = \text{Conducted Power(dBm)} - L_c(\text{dB}) + G_T(\text{dBd})$

$G_T(\text{dBd}) = G_T(\text{dBi}) - 2.15$

<b>Result:</b>	<b>Pass</b>
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<b>Peak-to-average Ratio(PAR)</b>					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	5.88	6.20	6.12	13
	RB50#0	5.42	5.45	5.42	13
10MHz 16QAM	RB1#0	6.41	7.07	7.04	13
	RB50#0	6.38	6.35	6.35	13
				<b>Result:</b>	<b>Pass</b>

<b>FCC §2.1049, §27.53:Occupied Bandwidth</b>						
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	4.511	4.511	4.571	4.98	4.96	7.62
5MHz 16QAM	4.531	4.511	4.531	4.98	5	6.22
10MHz QPSK	8.942	8.942	8.942	9.6	9.64	9.68
10MHz 16QAM	8.942	8.942	8.982	9.68	9.92	9.6
Note: The test plots please refer to the Plots of Occupied Bandwidth						

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

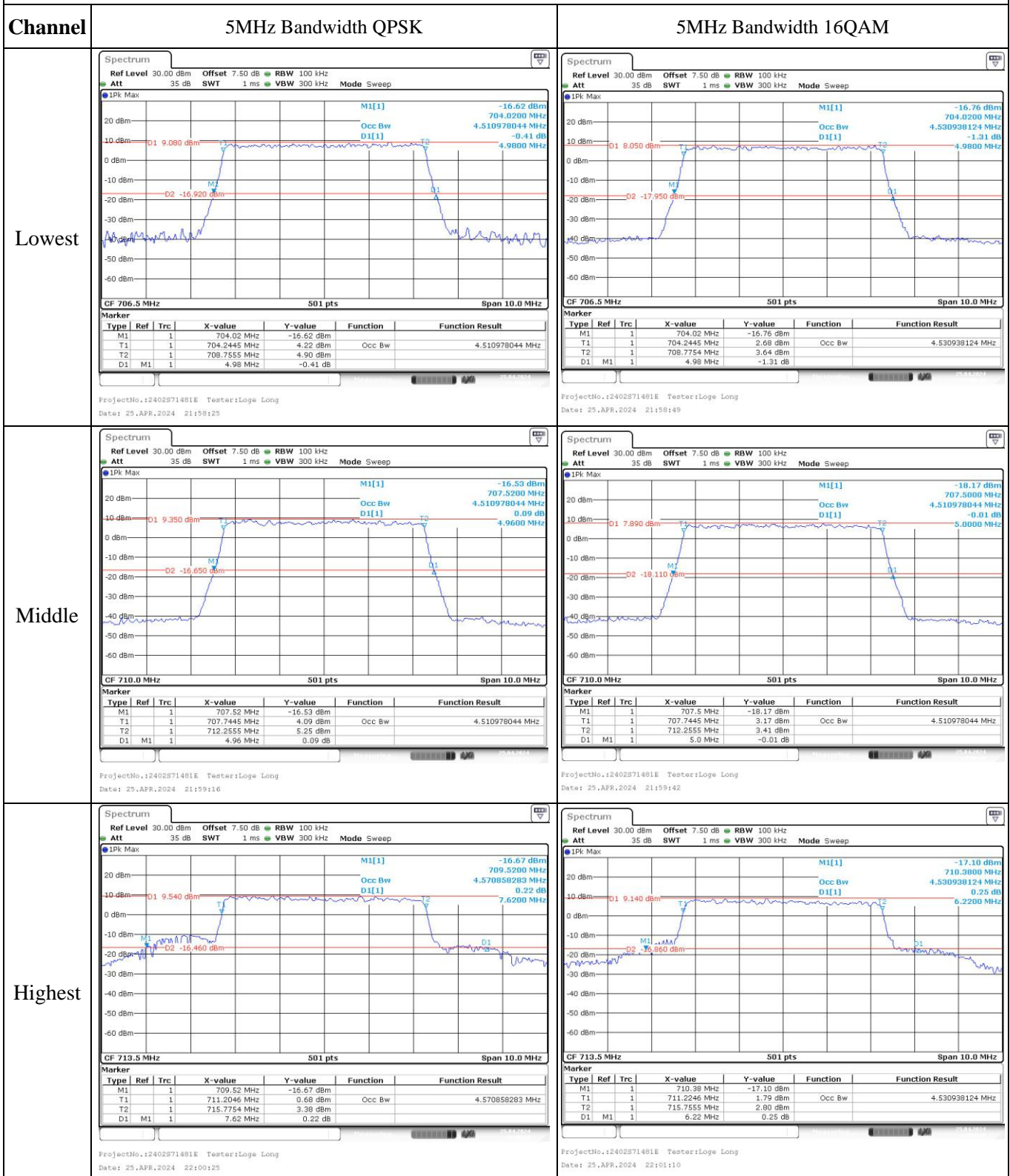
<b>FCC §2.1051, §27.53:Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	704.496	704.00	715.459	716.00
	-20	3.91	704.526	704.00	715.456	716.00
	-10	3.91	704.511	704.00	715.462	716.00
	0	3.91	704.520	704.00	715.456	716.00
	10	3.91	704.520	704.00	715.459	716.00
	20	3.91	704.529	704.00	715.471	716.00
	30	3.91	704.532	704.00	715.492	716.00
	40	3.91	704.532	704.00	715.498	716.00
Frequency Stability vs. Voltage	20	3.45	704.556	704.00	715.483	716.00
	20	4.5	704.553	704.00	715.477	716.00
					<b>Result:</b>	<b>Pass</b>

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	704.520	704.00	715.505	716.00
	-20	3.91	704.517	704.00	715.493	716.00
	-10	3.91	704.505	704.00	715.493	716.00
	0	3.91	704.505	704.00	715.496	716.00
	10	3.91	704.523	704.00	715.508	716.00
	20	3.91	704.529	704.00	715.511	716.00
	30	3.91	704.538	704.00	715.514	716.00
	40	3.91	704.556	704.00	715.532	716.00
Frequency Stability vs. Voltage	20	3.45	704.550	704.00	715.514	716.00
	20	4.5	704.547	704.00	715.514	716.00
					<b>Result:</b>	<b>Pass</b>

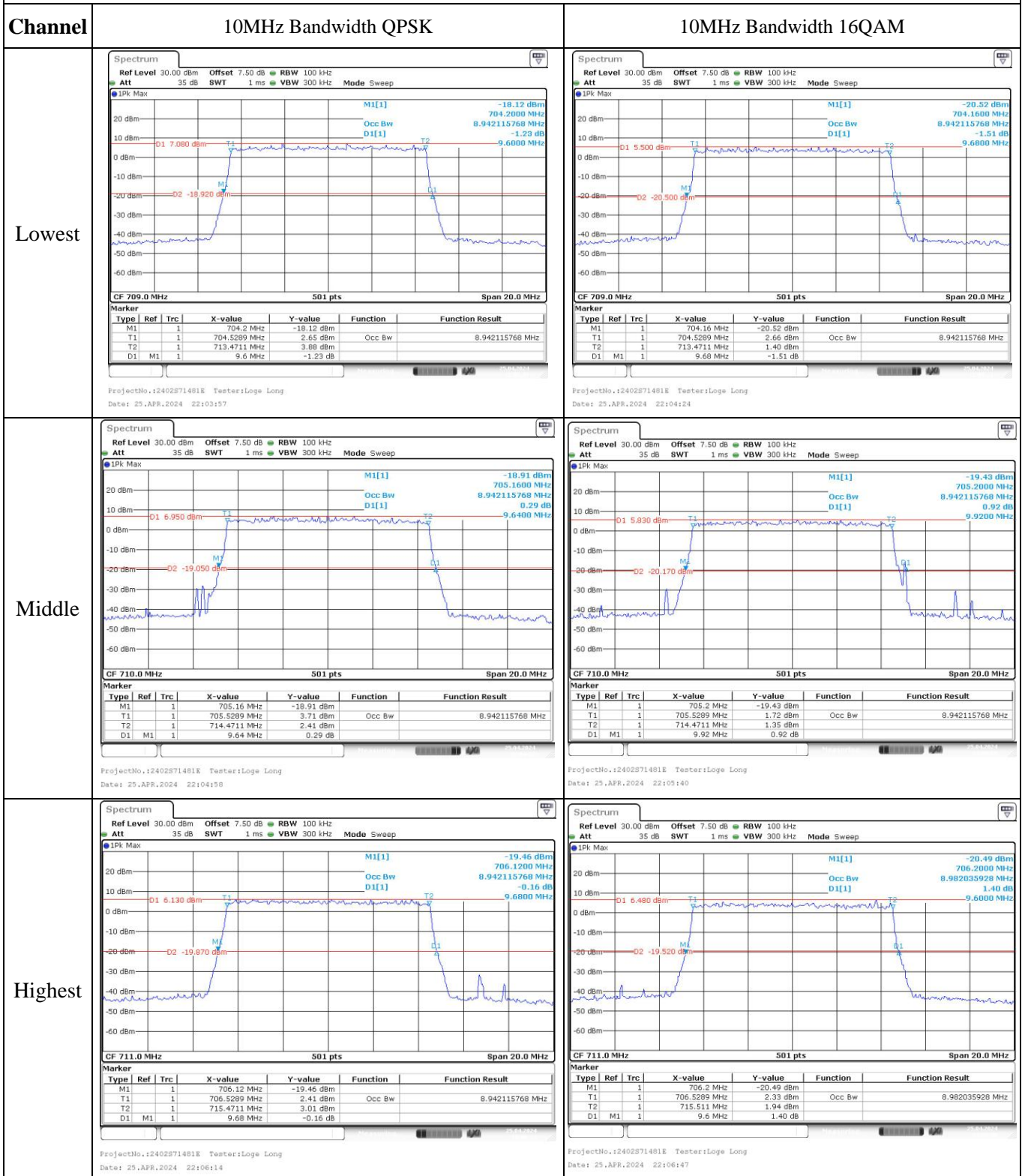
Test Plots:

Occupied Bandwidth





Occupied Bandwidth

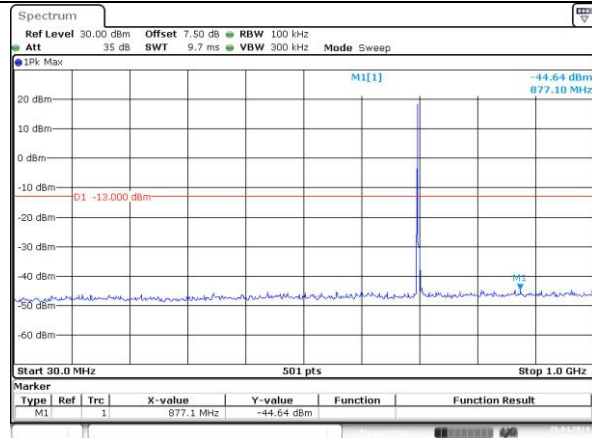


### Spurious Emissions at Antenna Terminal

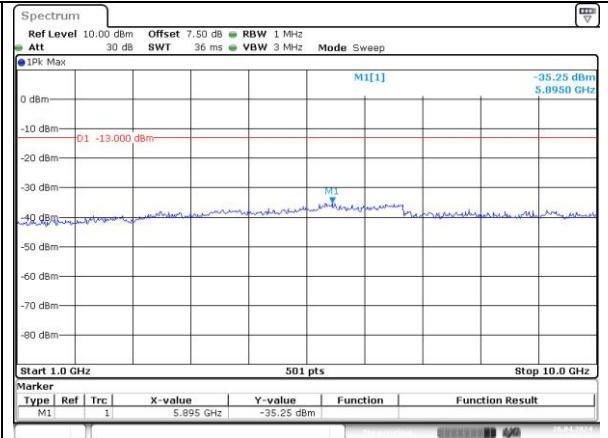
Channel

5MHz Bandwidth QPSK

Lowest

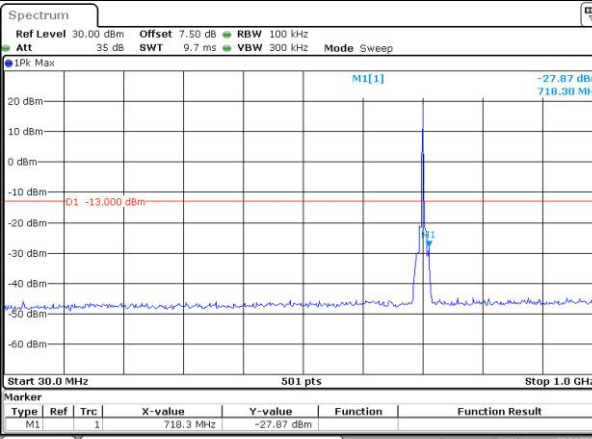


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:09:27

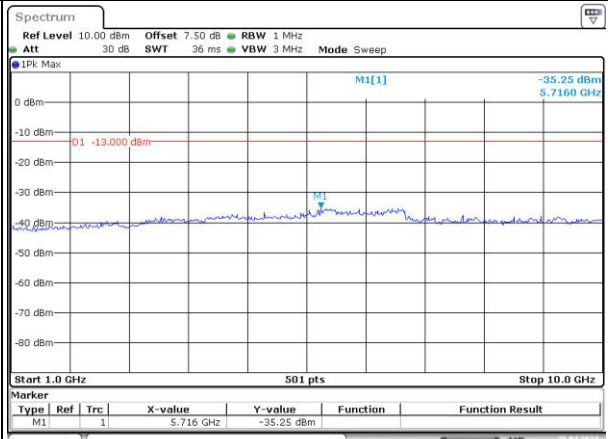


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:09:49

Middle

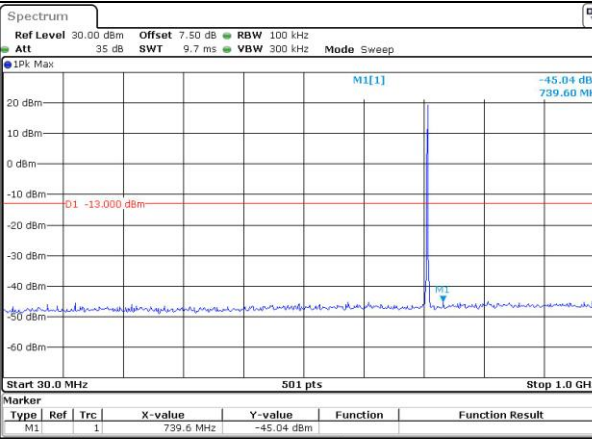


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:10:36

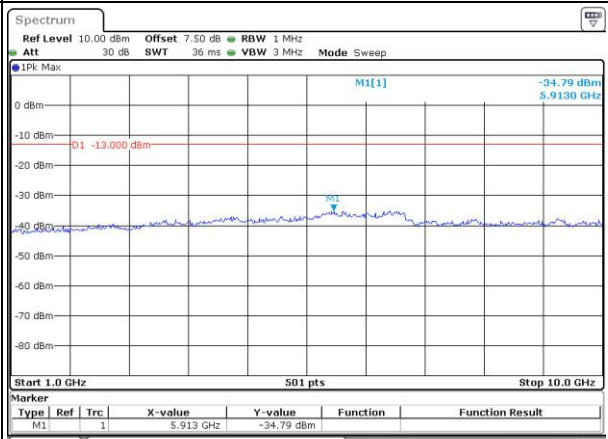


ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:10:58

Highest



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:11:46



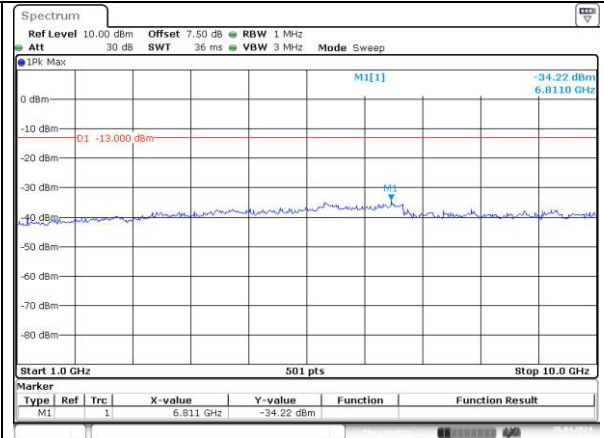
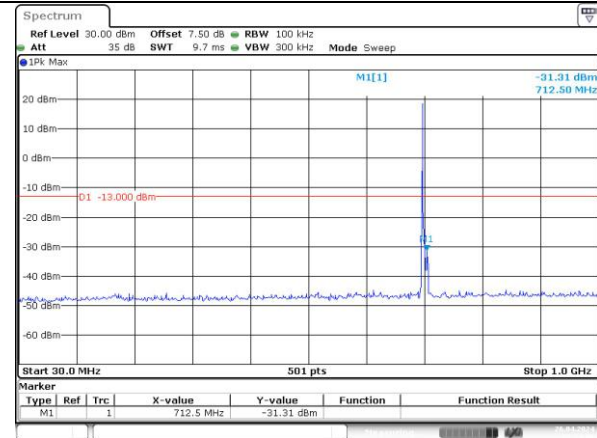
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Date: 26.APR.2024 03:12:14

### Spurious Emissions at Antenna Terminal

Channel

10MHz Bandwidth QPSK

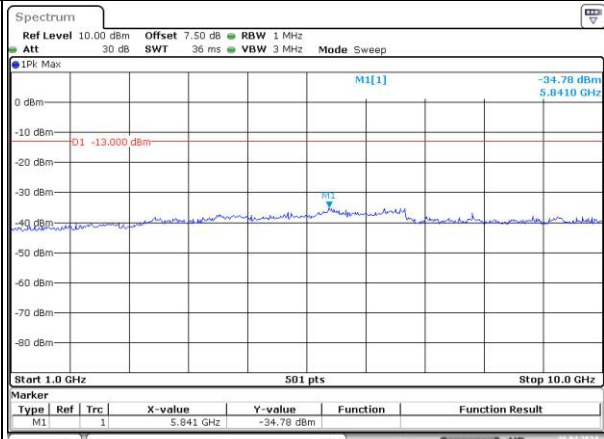
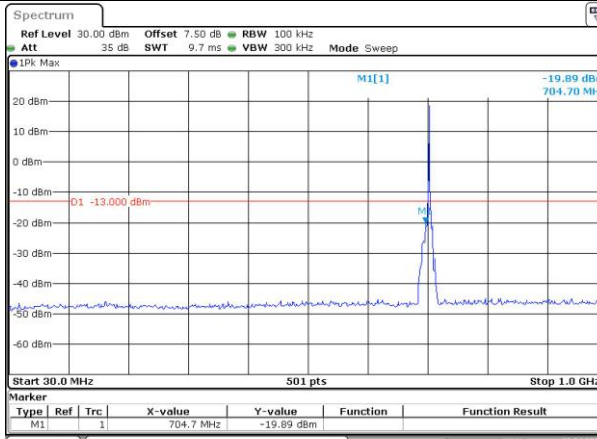
Lowest



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:14:07

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:14:39

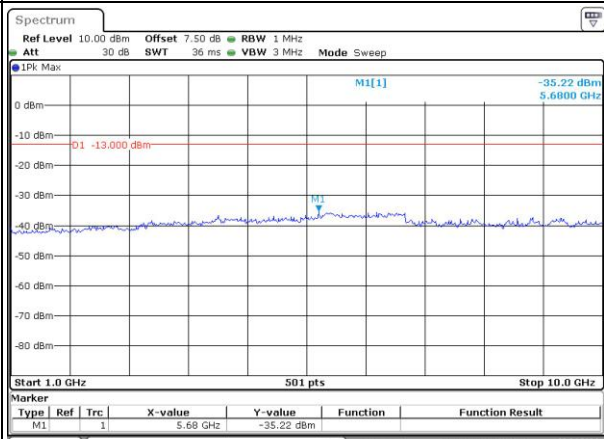
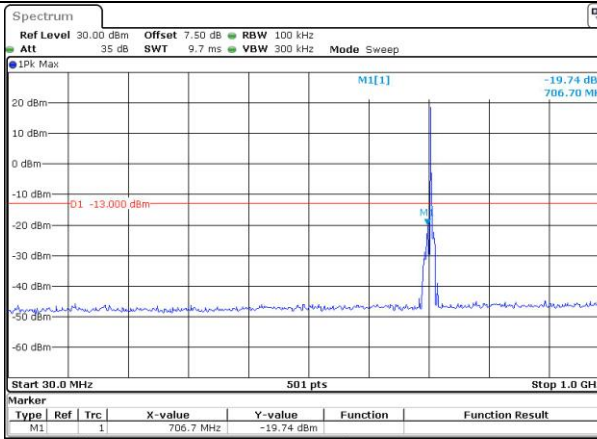
Middle



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:15:28

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:15:47

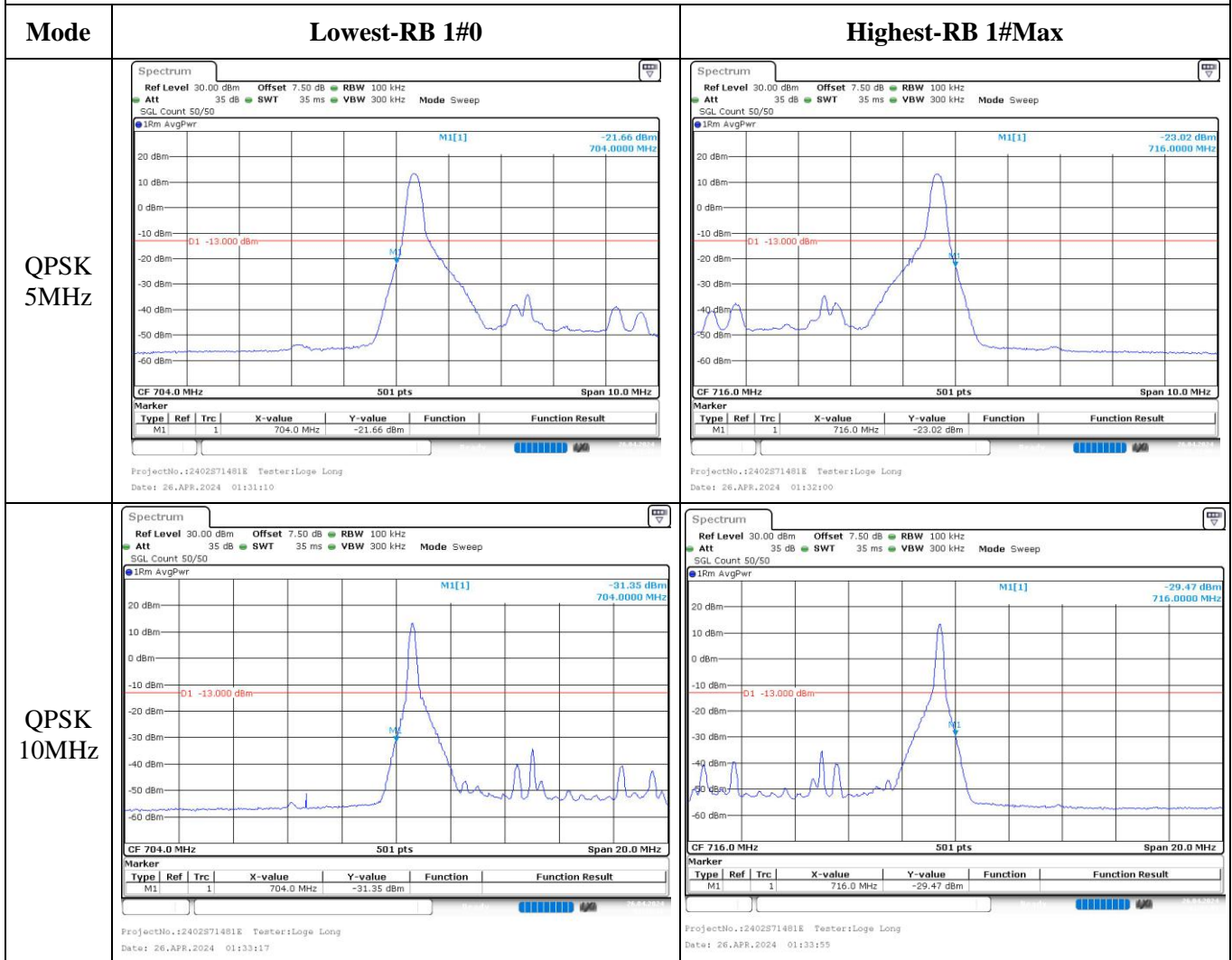
Highest



ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:16:38

ProjectNo.:2402S71481E Tester:Loge Long  
Date: 26.APR.2024 03:17:00

Out of band emission, Band Edge



Out of band emission, Band Edge

