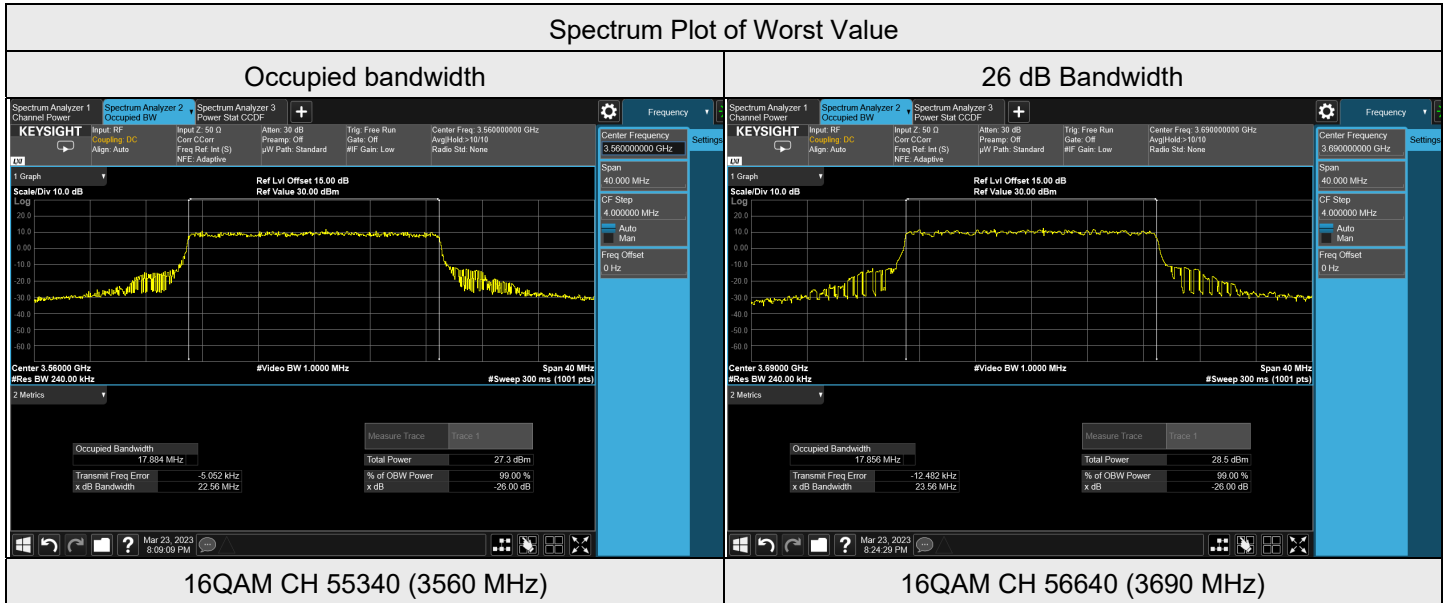




LTE Band 48, Channel Bandwidth: 20 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	55340	3560	17.879	22.170
QPSK	55990	3625	17.871	22.130
QPSK	56640	3690	17.876	22.200
16QAM	55340	3560	17.884	22.560
16QAM	55990	3625	17.831	22.410
16QAM	56640	3690	17.856	23.560



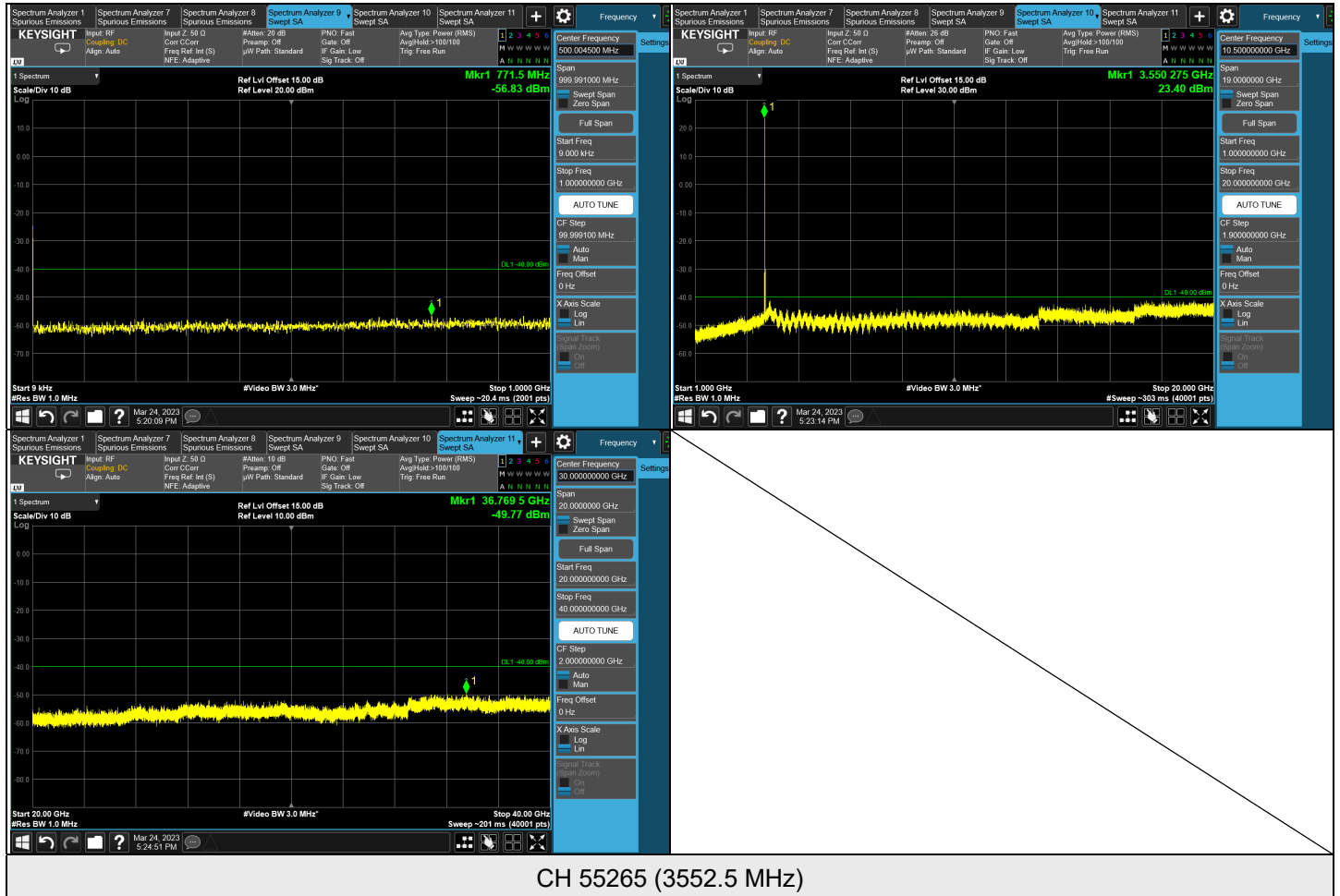


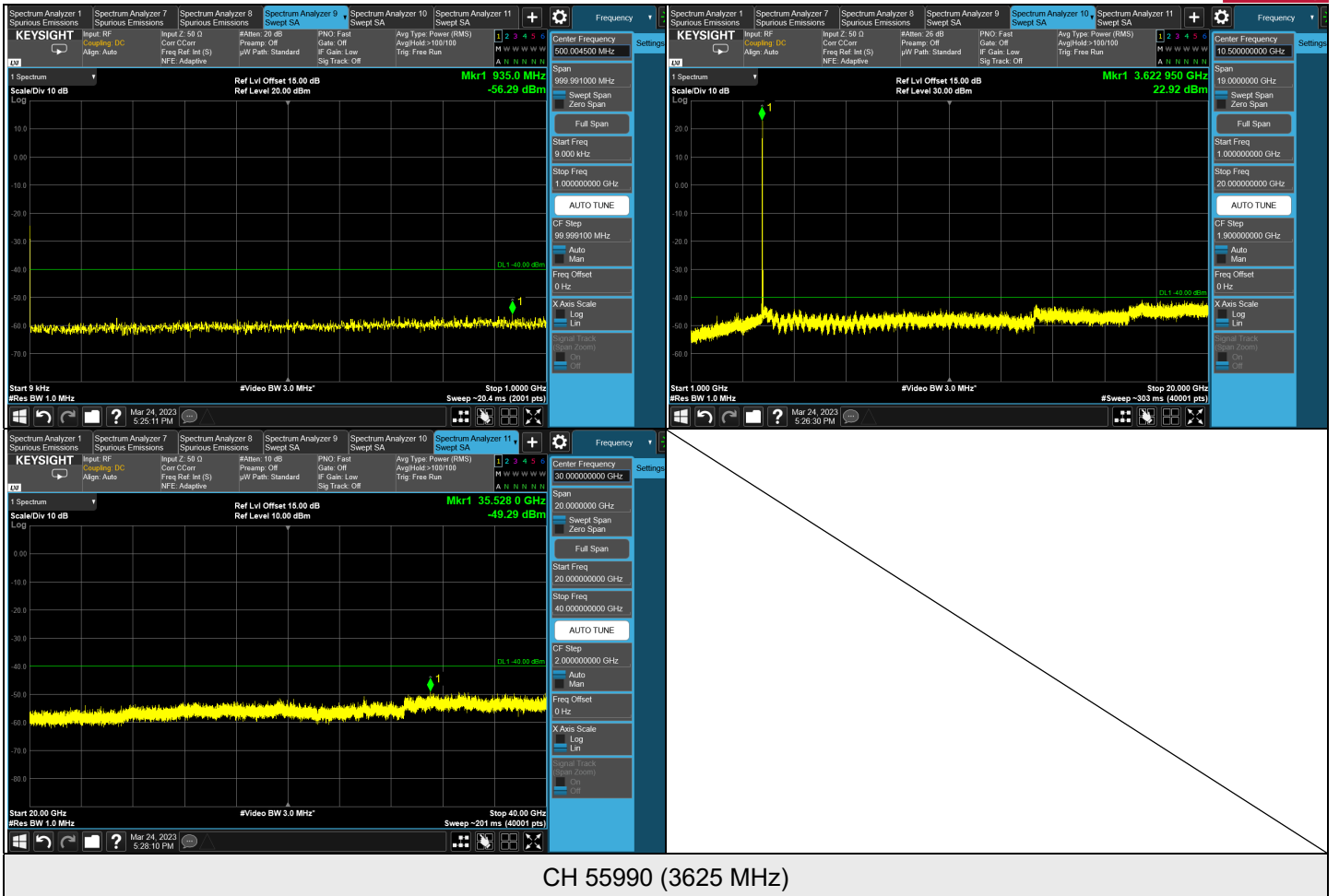
7.5 Conducted Spurious Emissions

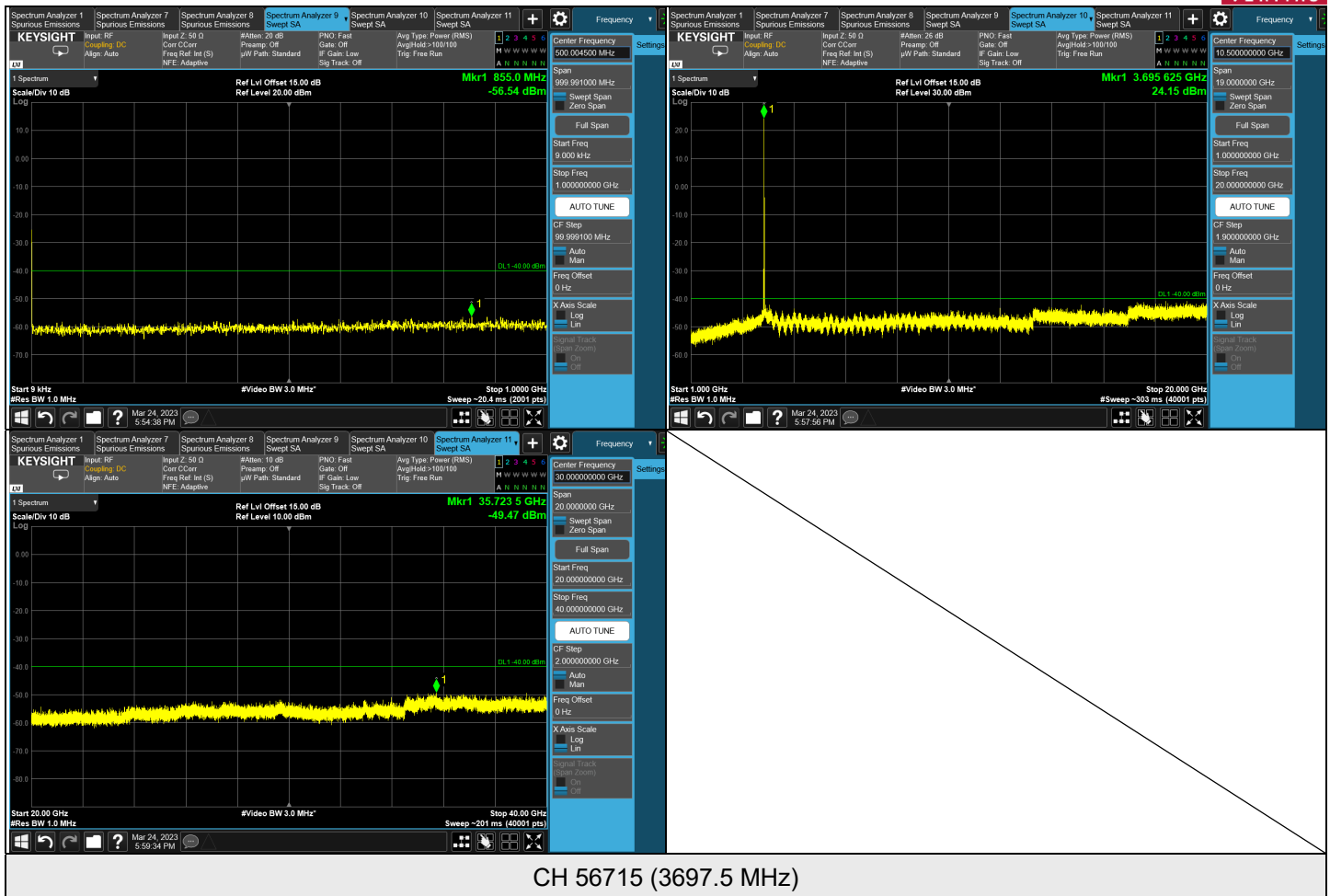
Input Power:	120Vac, 60Hz	Environmental Conditions:	22°C, 72% RH	Tested By:	James Yang
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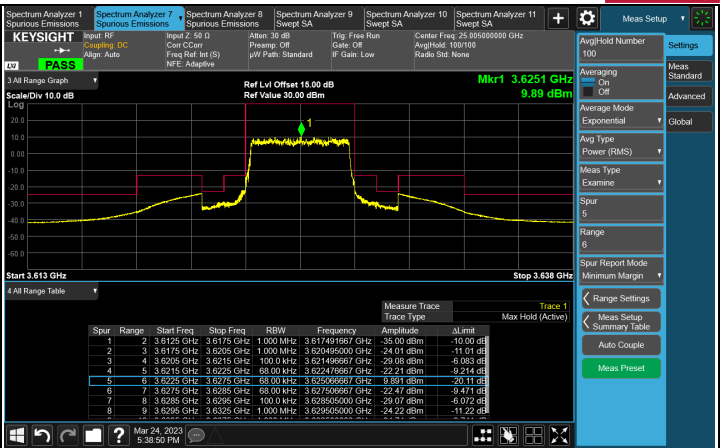
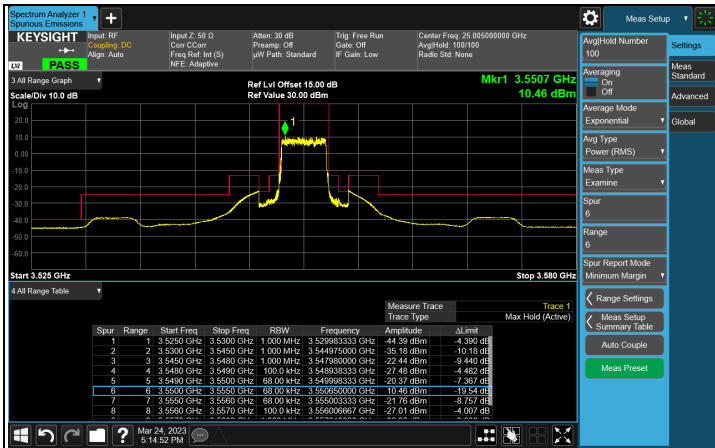
7.5.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

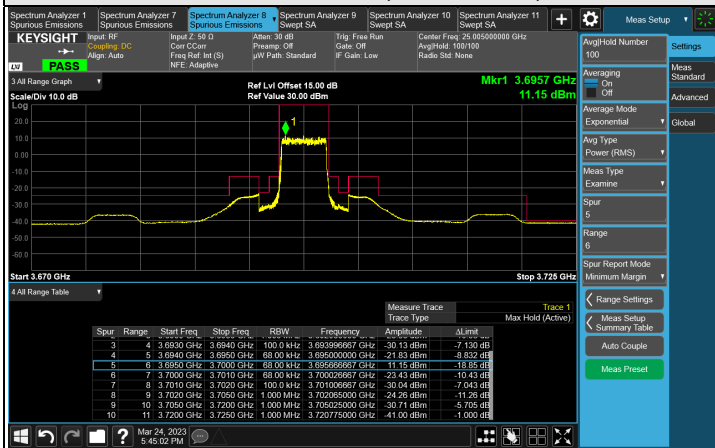




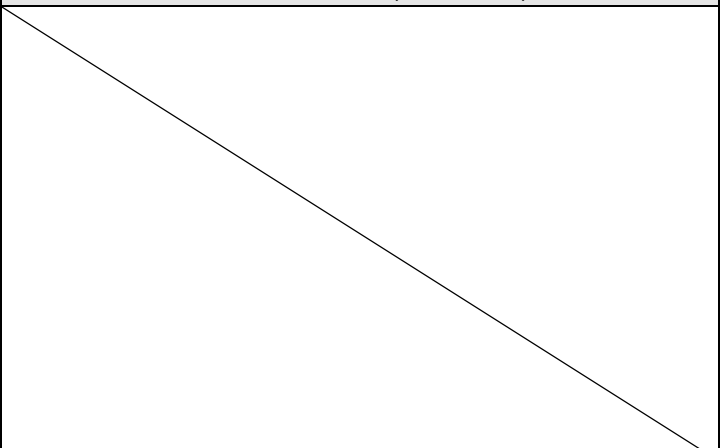




FULL CH 55265 (3552.5 MHz)

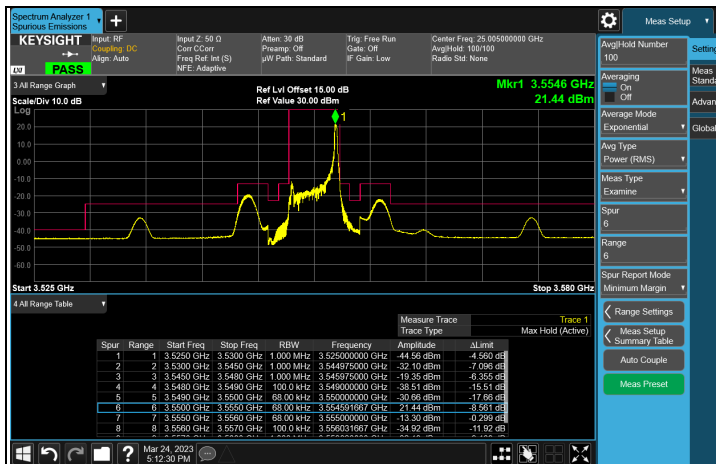


FULL CH 55990 (3625 MHz)

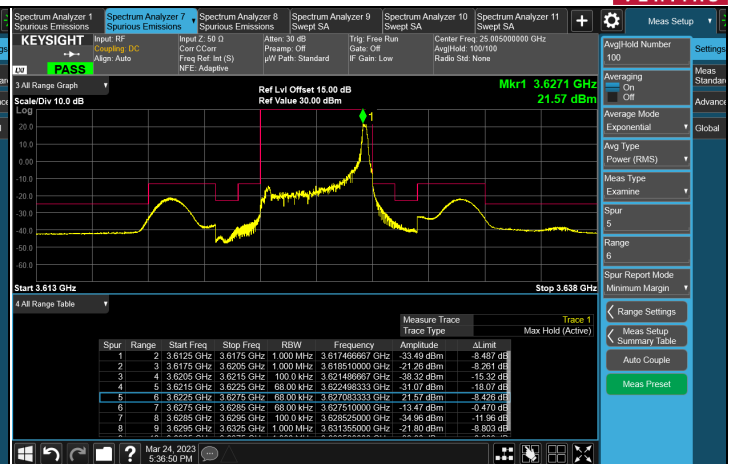


FULL CH 56715 (3697.5 MHz)

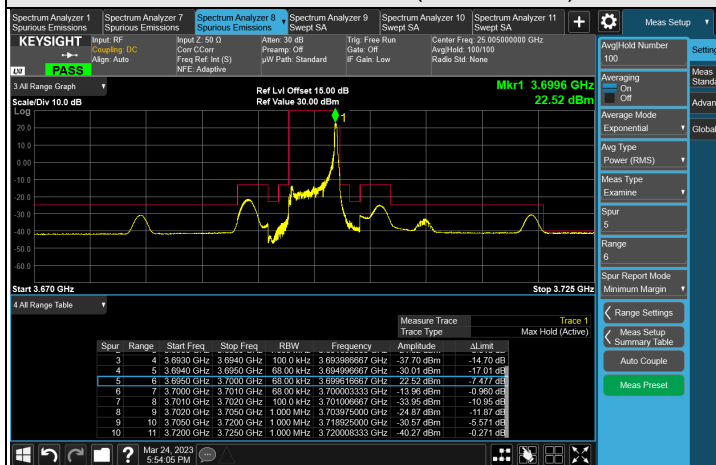




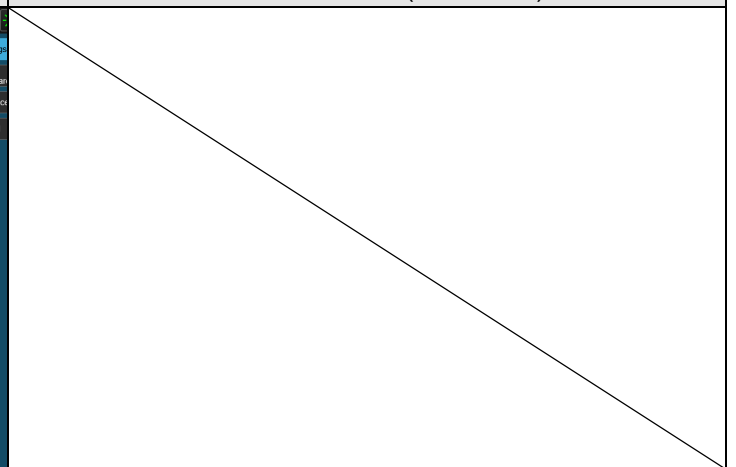
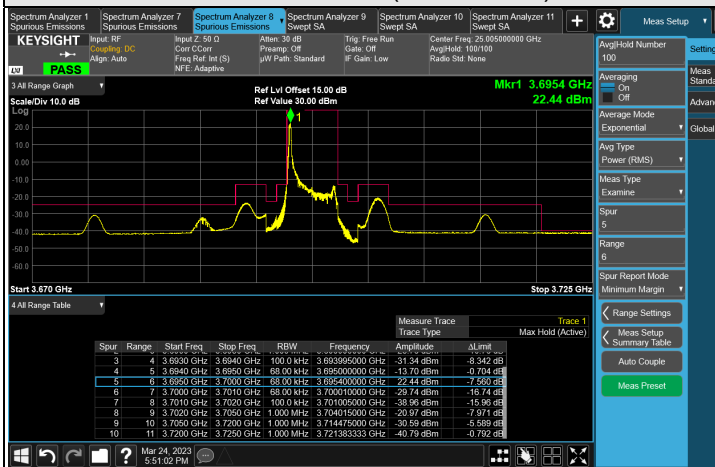
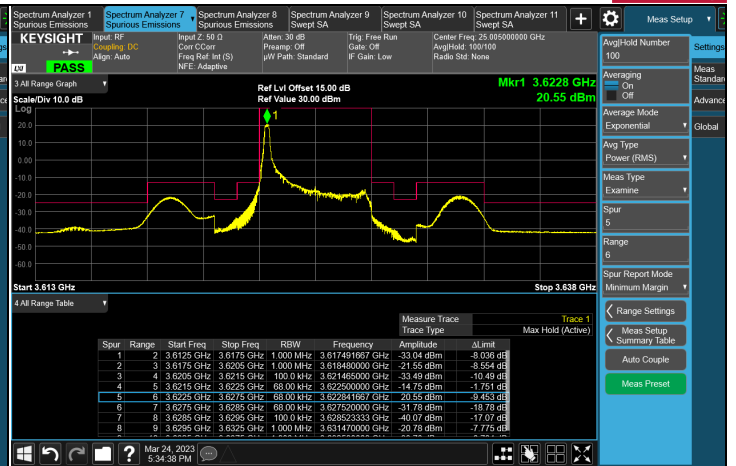
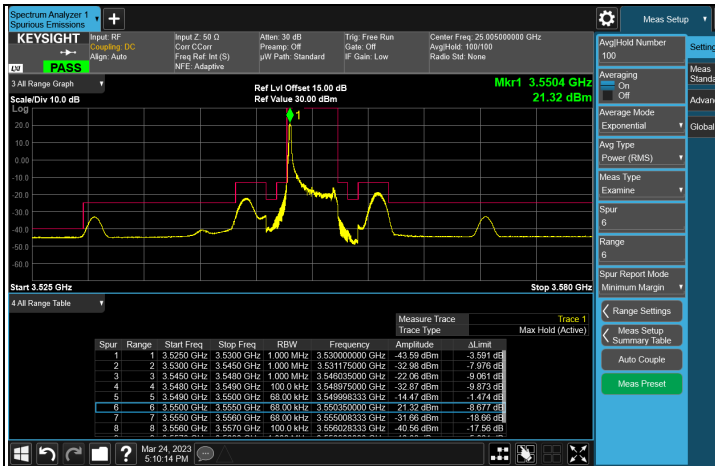
1RB#MAX CH 55265 (3552.5 MHz)



1RB#MAX CH 55990 (3625 MHz)

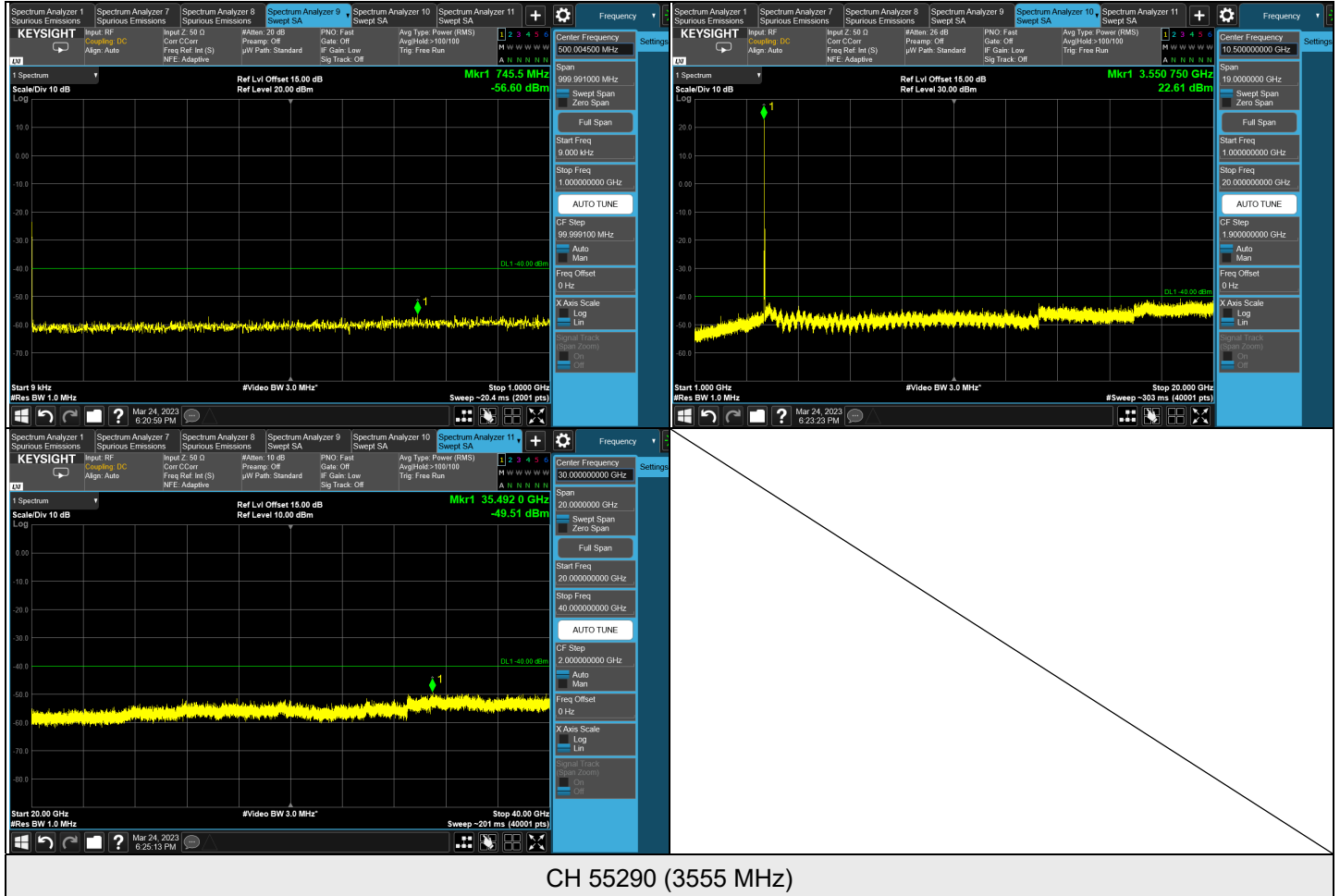


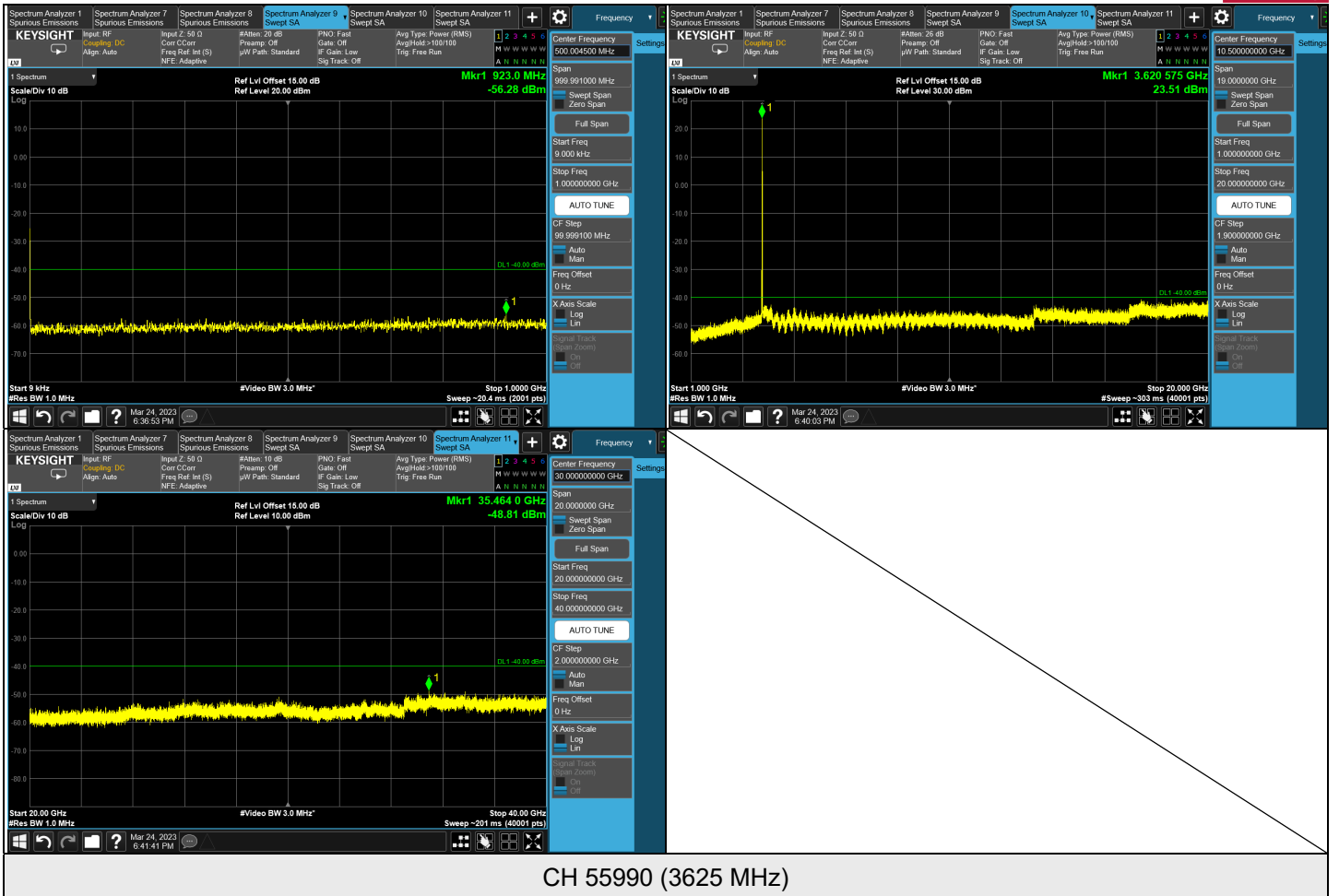
1RB#MAX CH 56715 (3697.5 MHz)

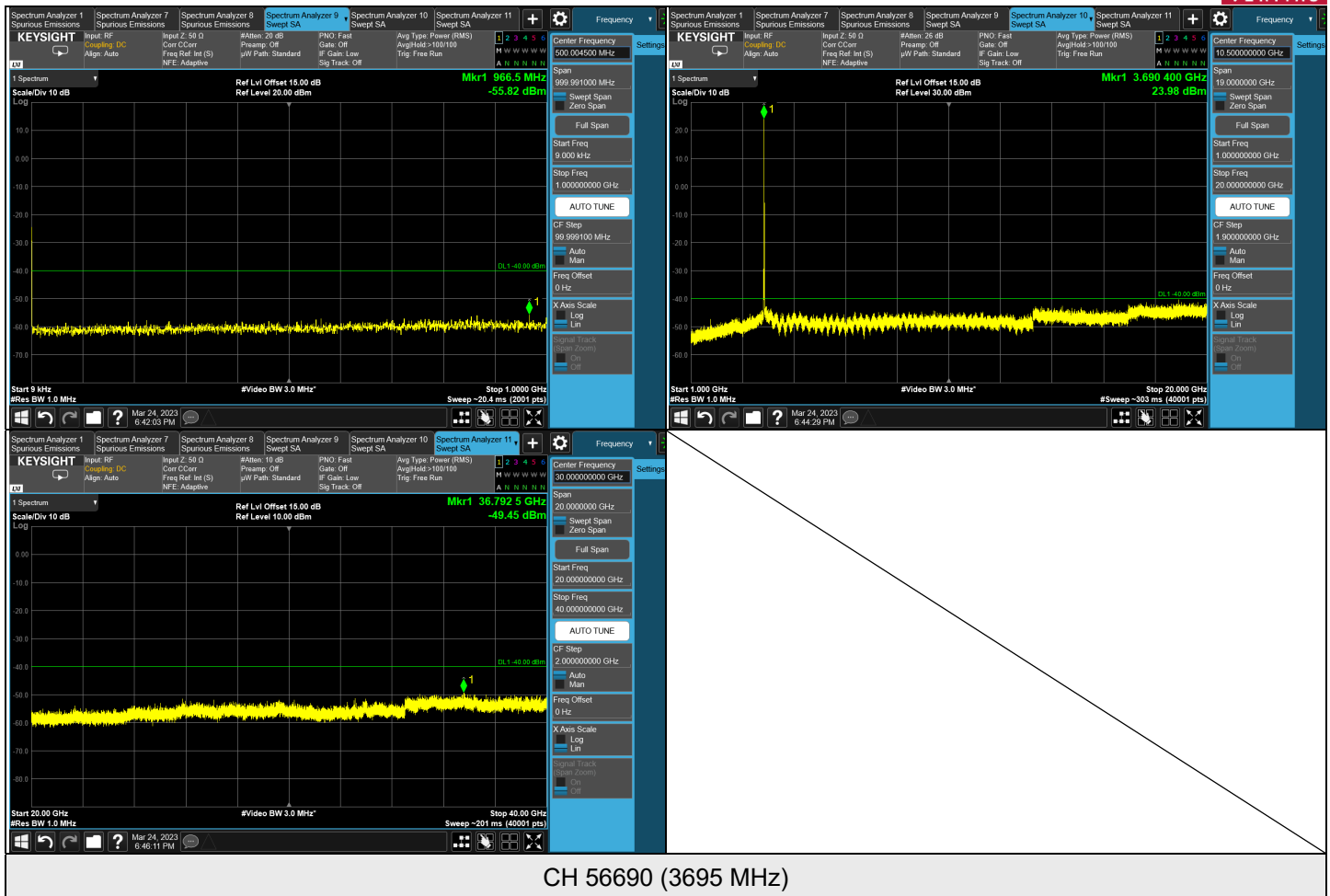


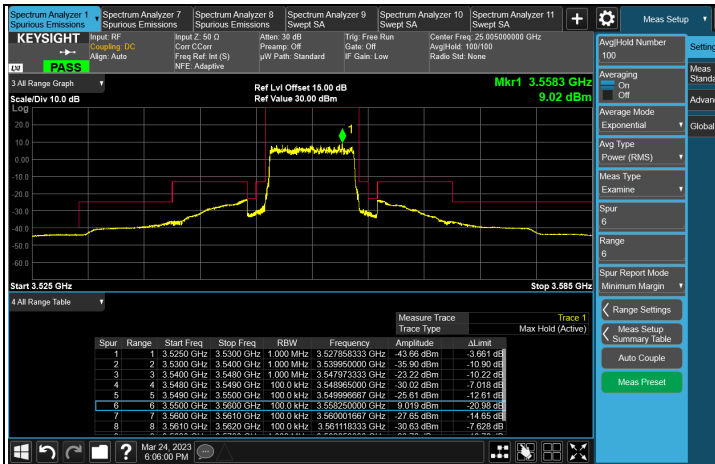


LTE Band 48, Channel Bandwidth: 10 MHz

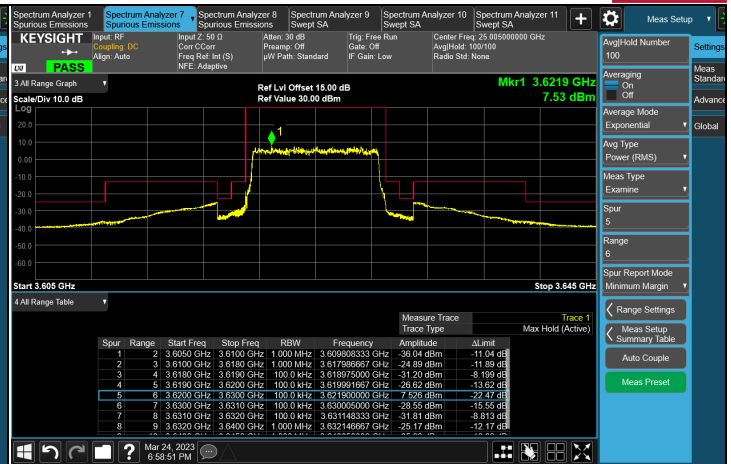




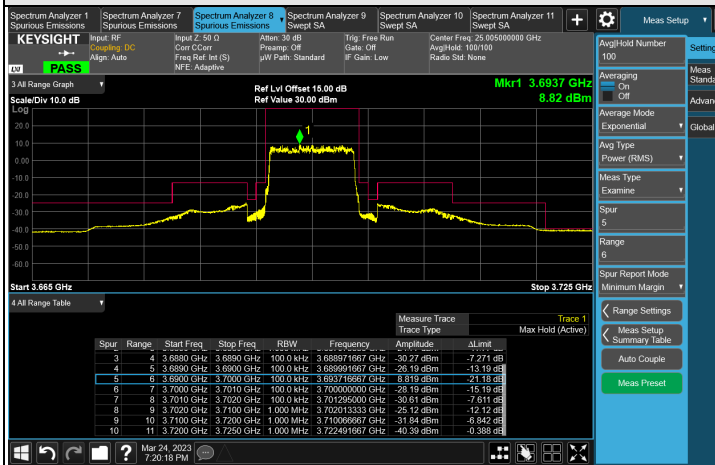




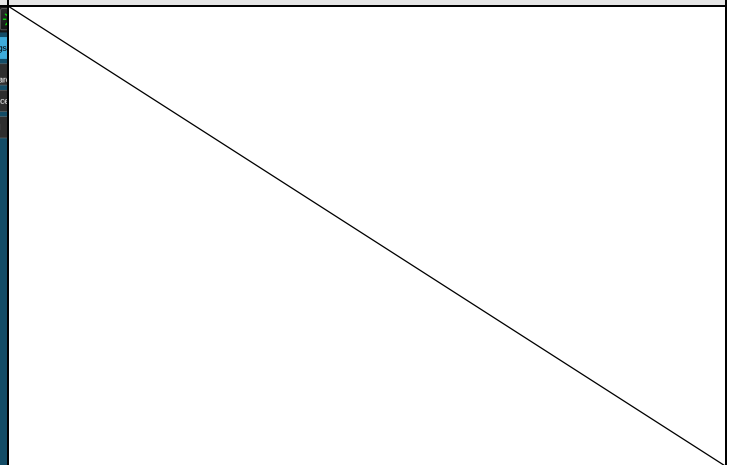
FULL CH 55290 (3555 MHz)

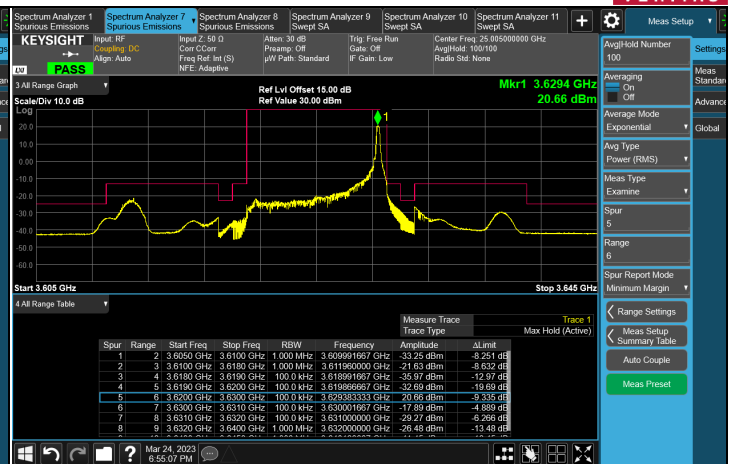
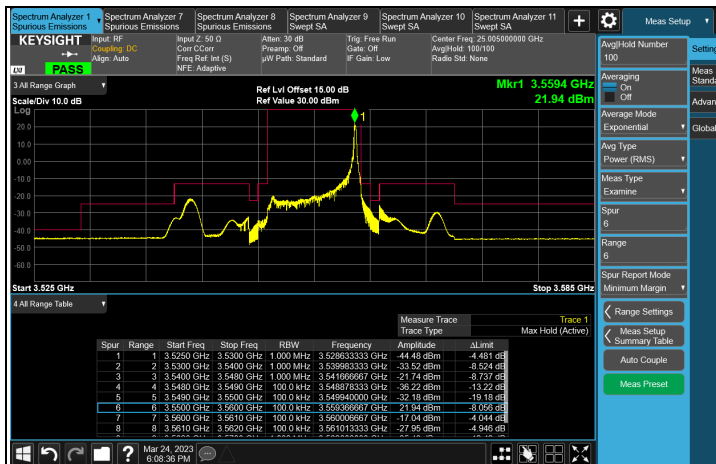


FULL CH 55990 (3625 MHz)



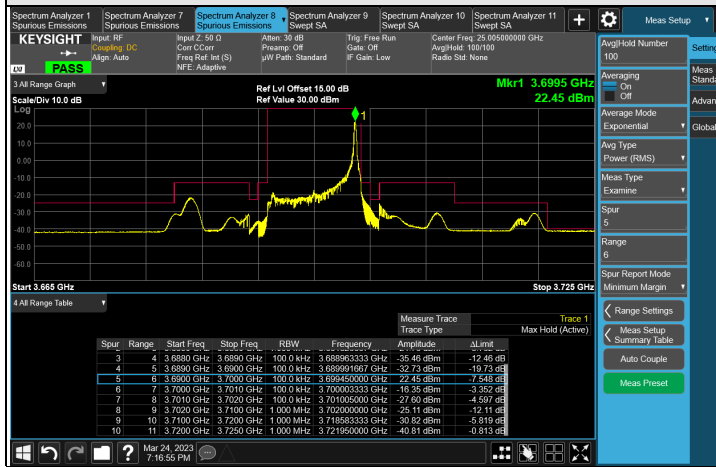
FULL CH 56690 (3695 MHz)



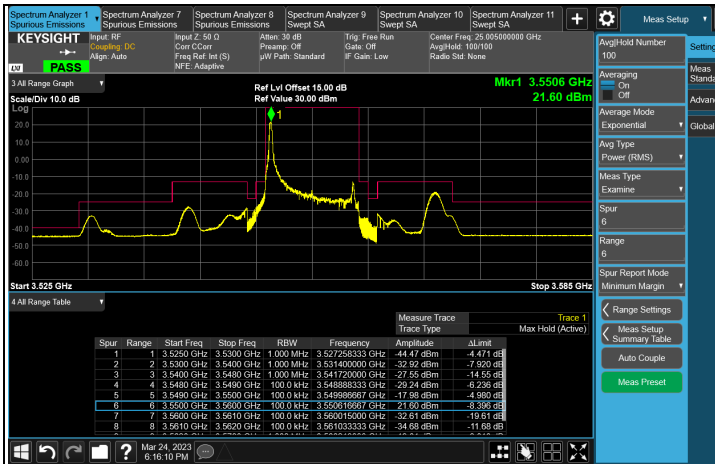


1RB#MAX CH 55290 (3555 MHz)

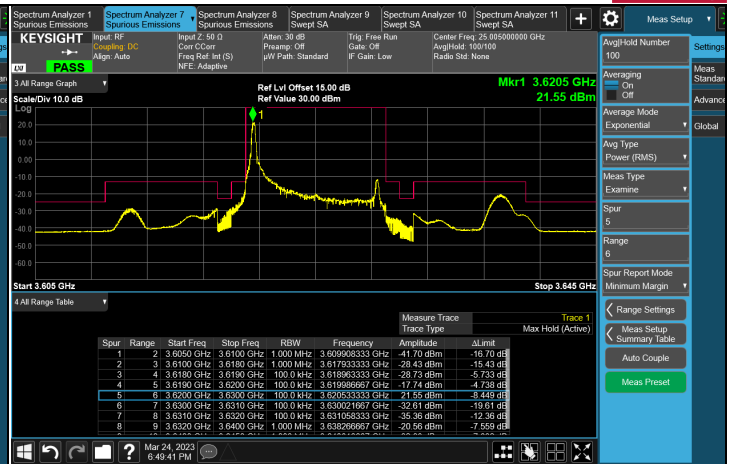
1RB#MAX CH 55990 (3625 MHz)



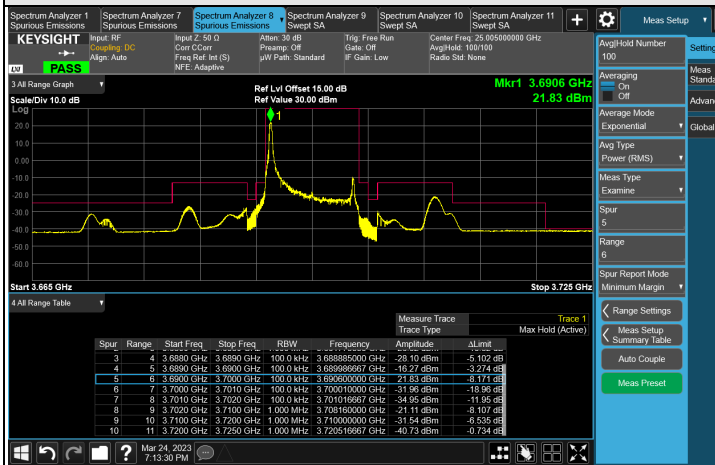
1RB#MAX CH 56690 (3695 MHz)



1RB#0 CH 55290 (3555 MHz)



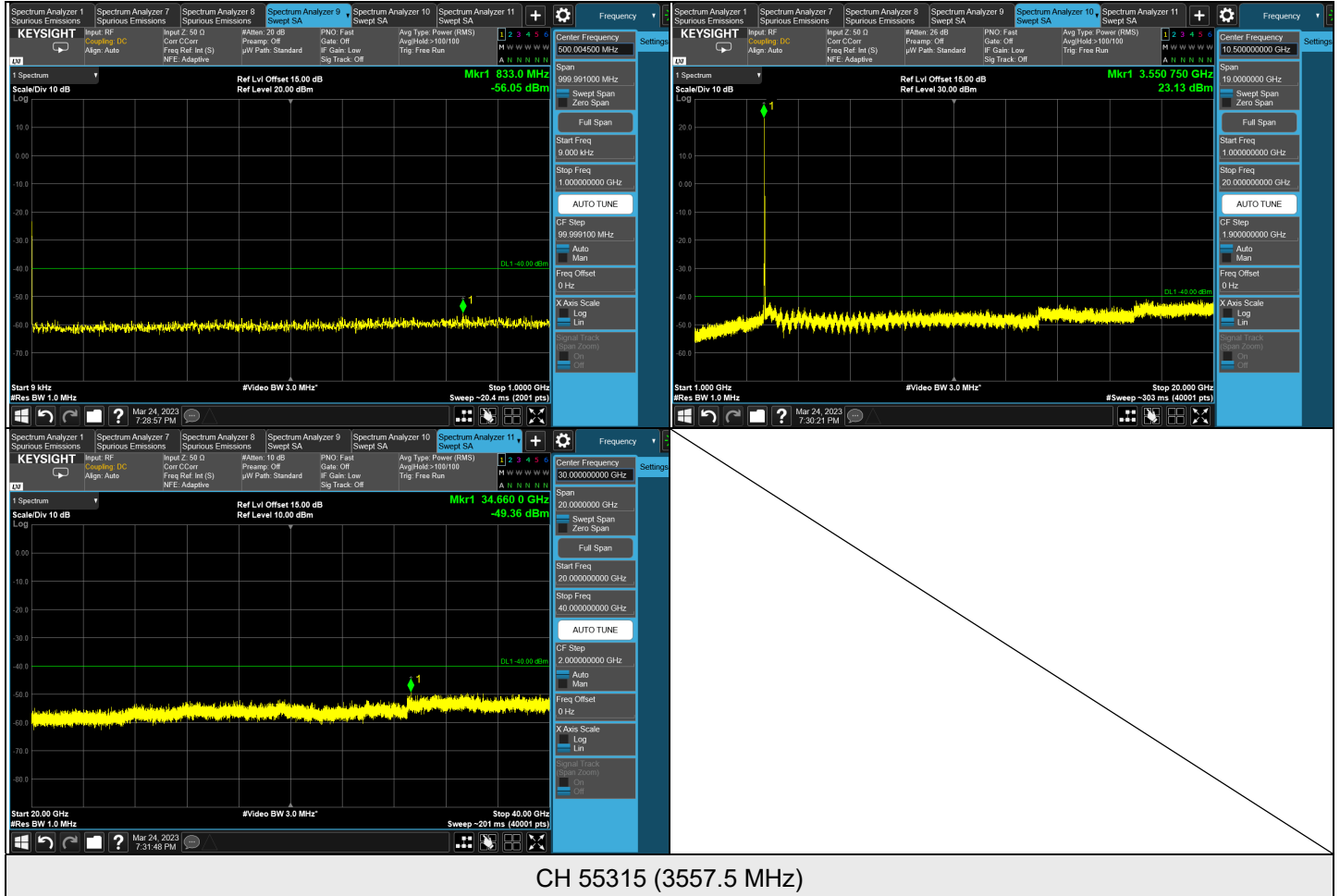
1RB#0 CH 55990 (3625 MHz)

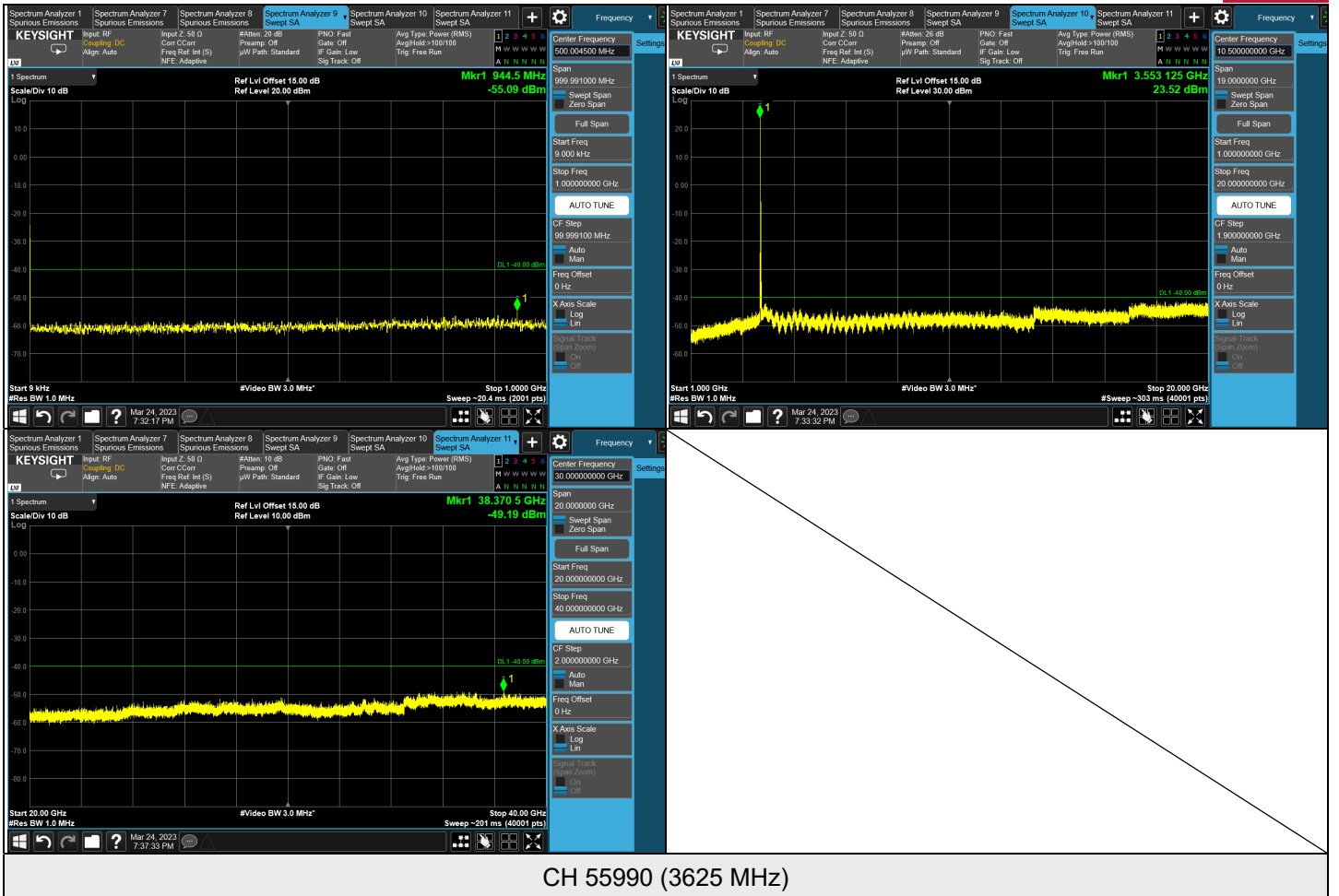


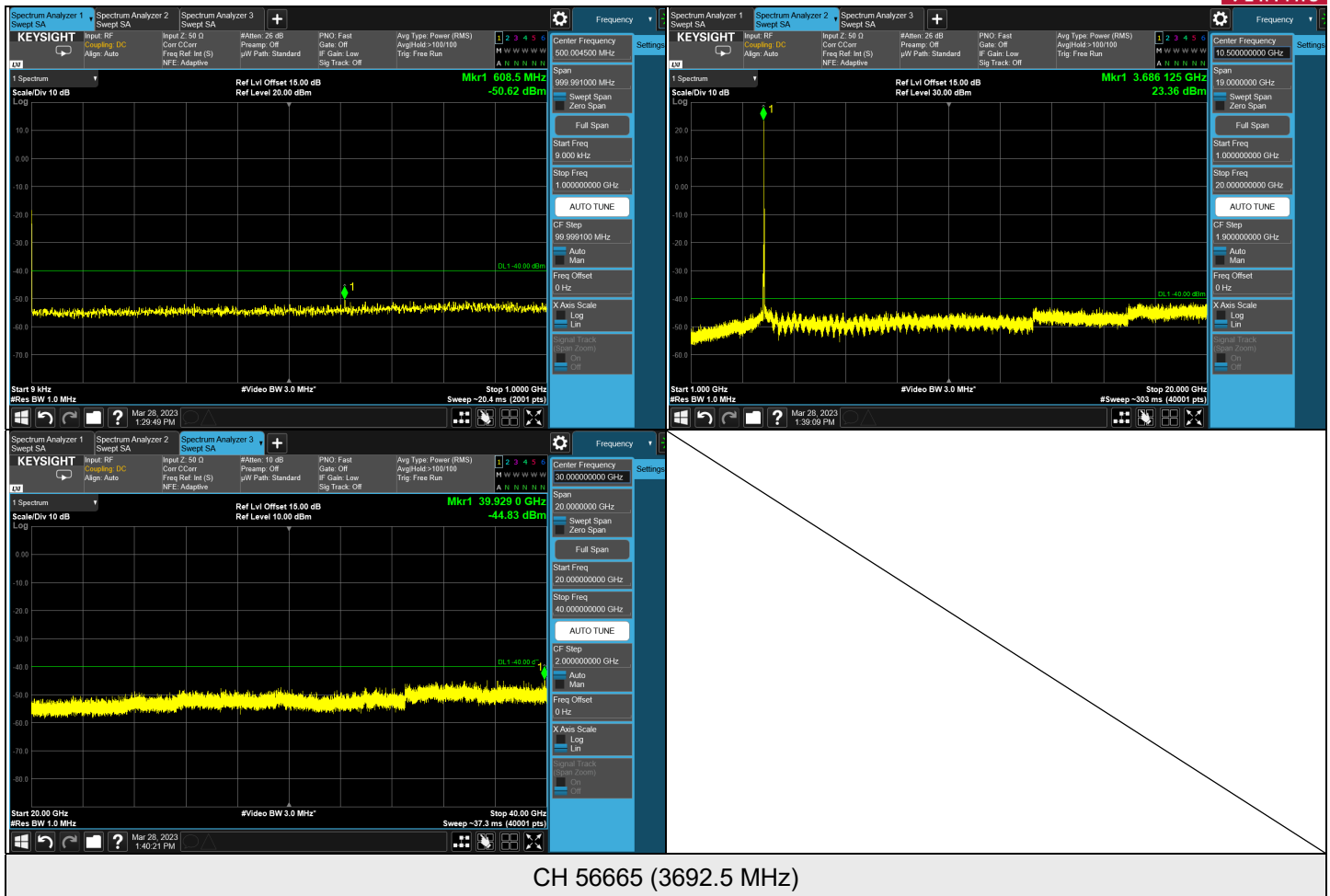
1RB#0 CH 56690 (3695 MHz)

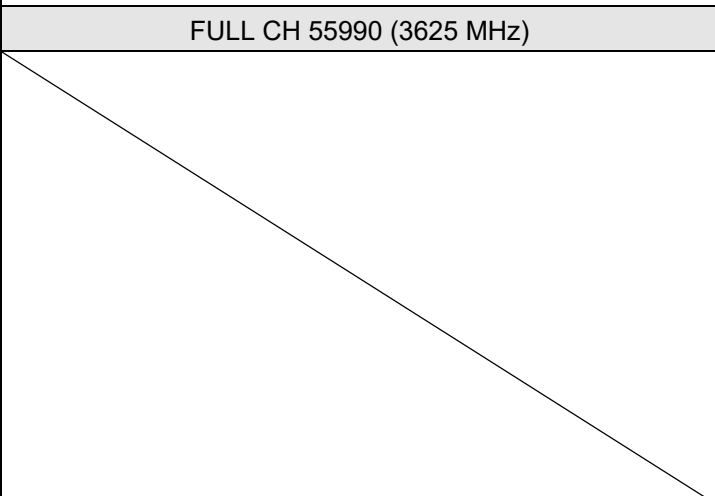
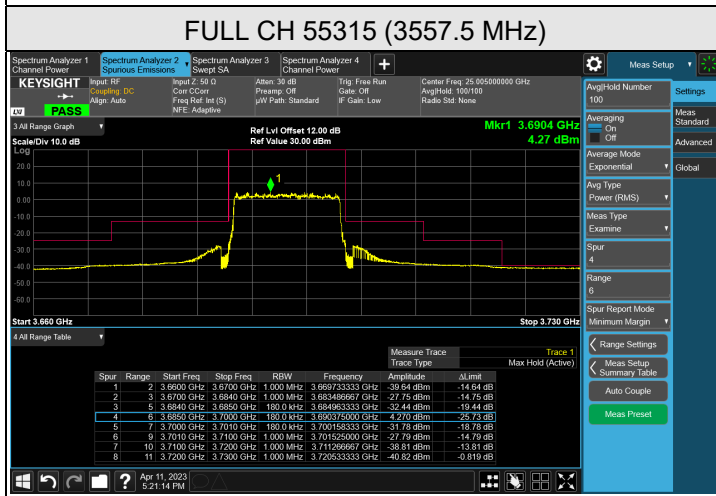
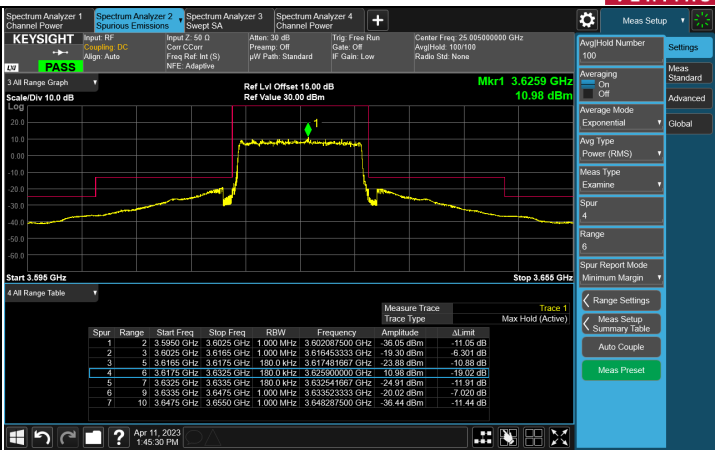
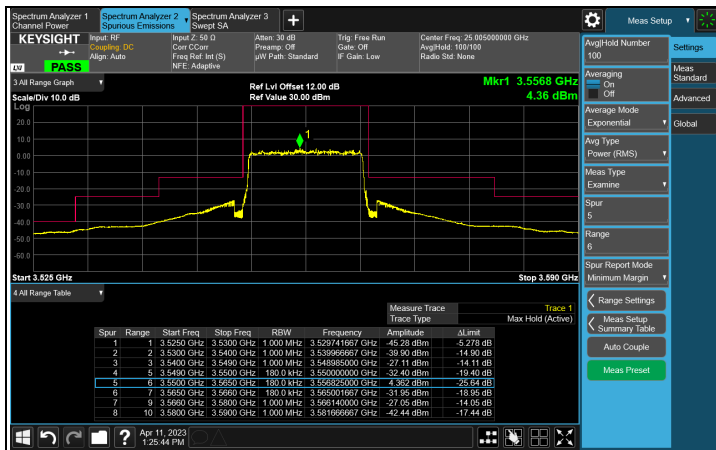


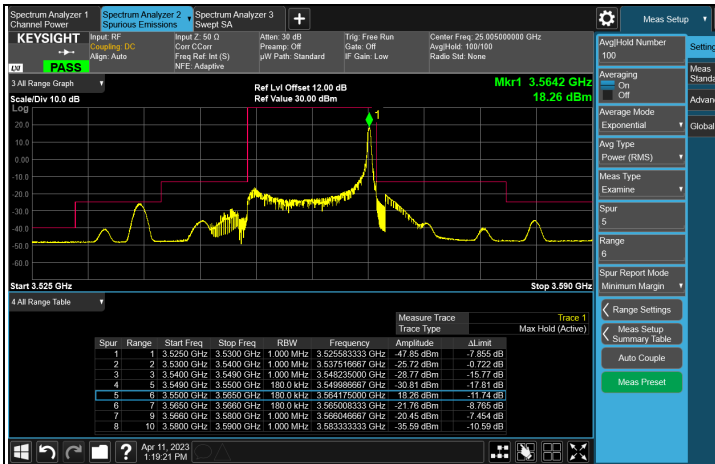
LTE Band 48, Channel Bandwidth: 15 MHz



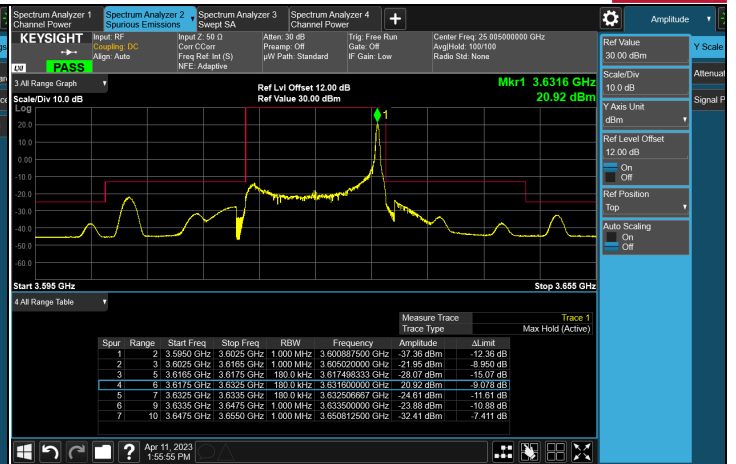




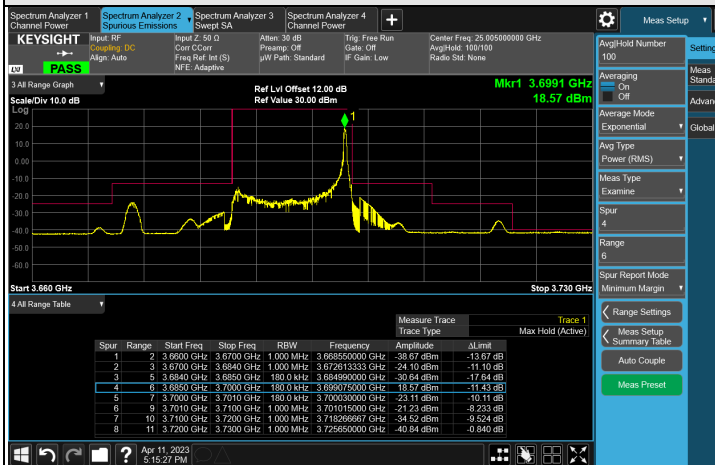




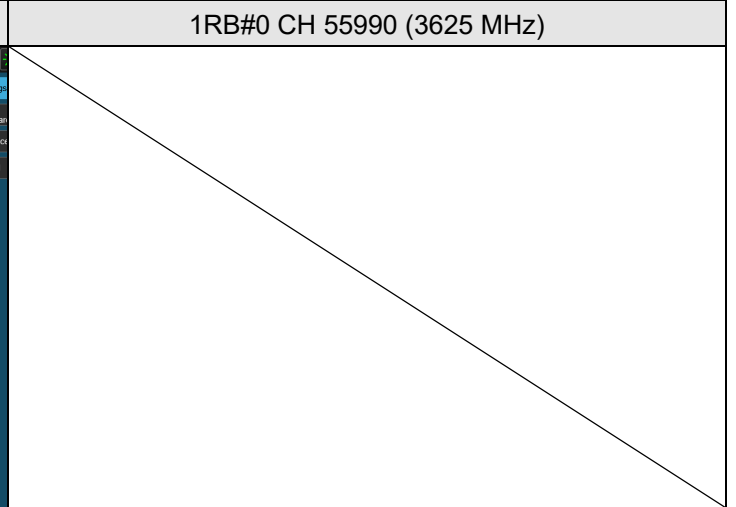
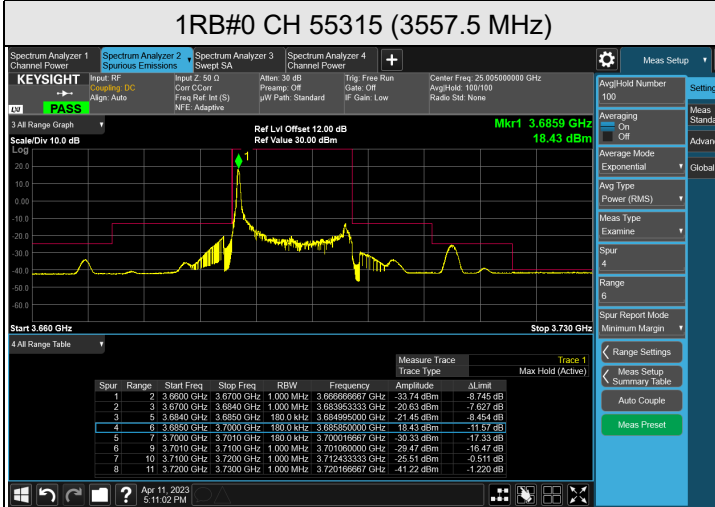
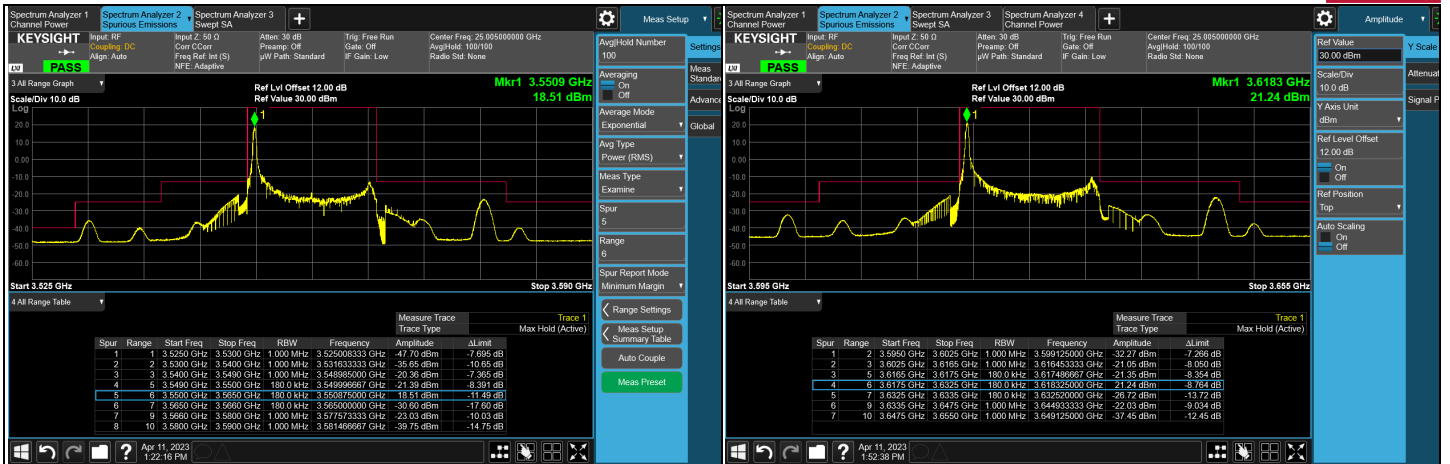
1RB#MAX CH 55315 (3557.5 MHz)



1RB#MAX CH 55990 (3625 MHz)



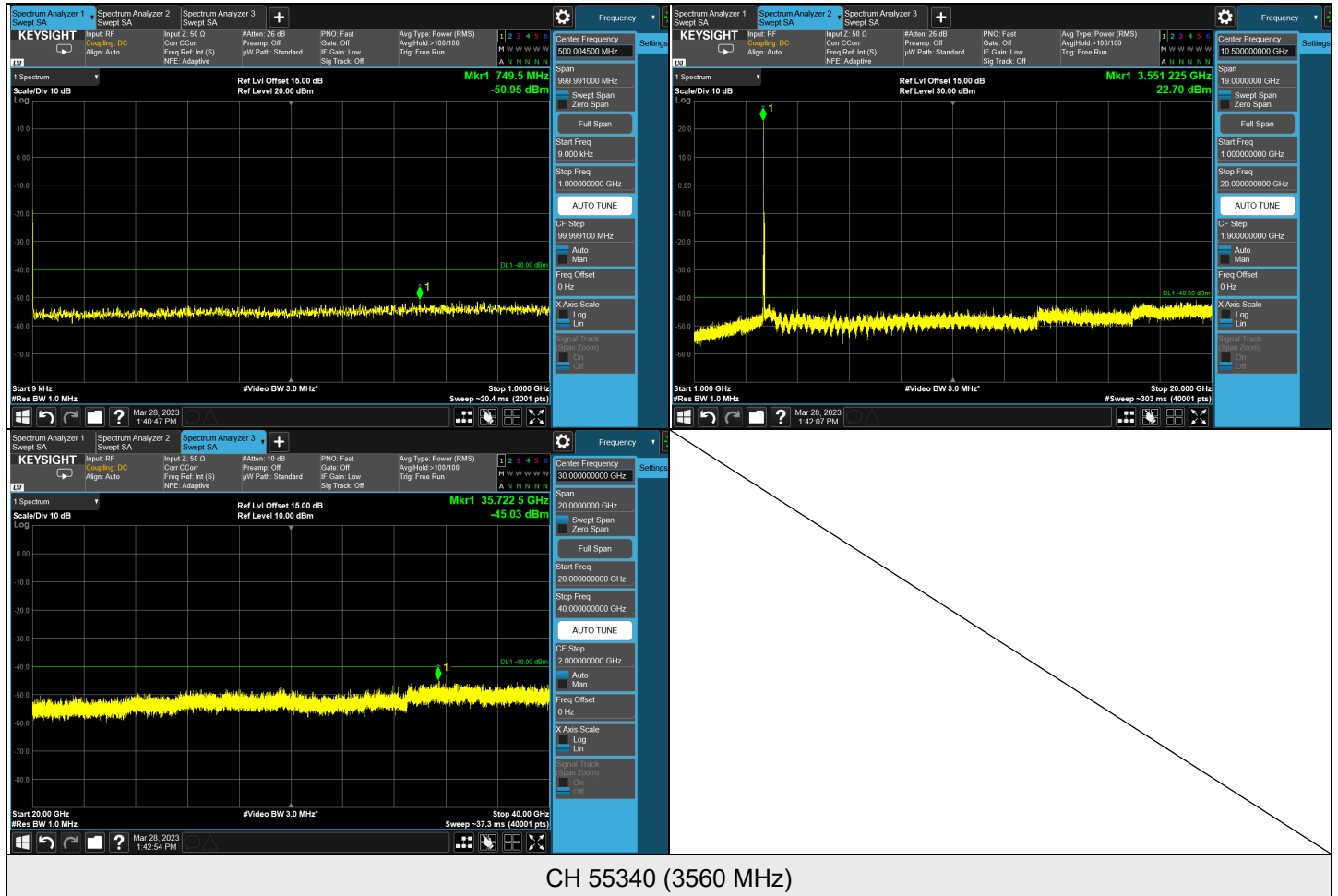
1RB#MAX CH 56665 (3692.5 MHz)

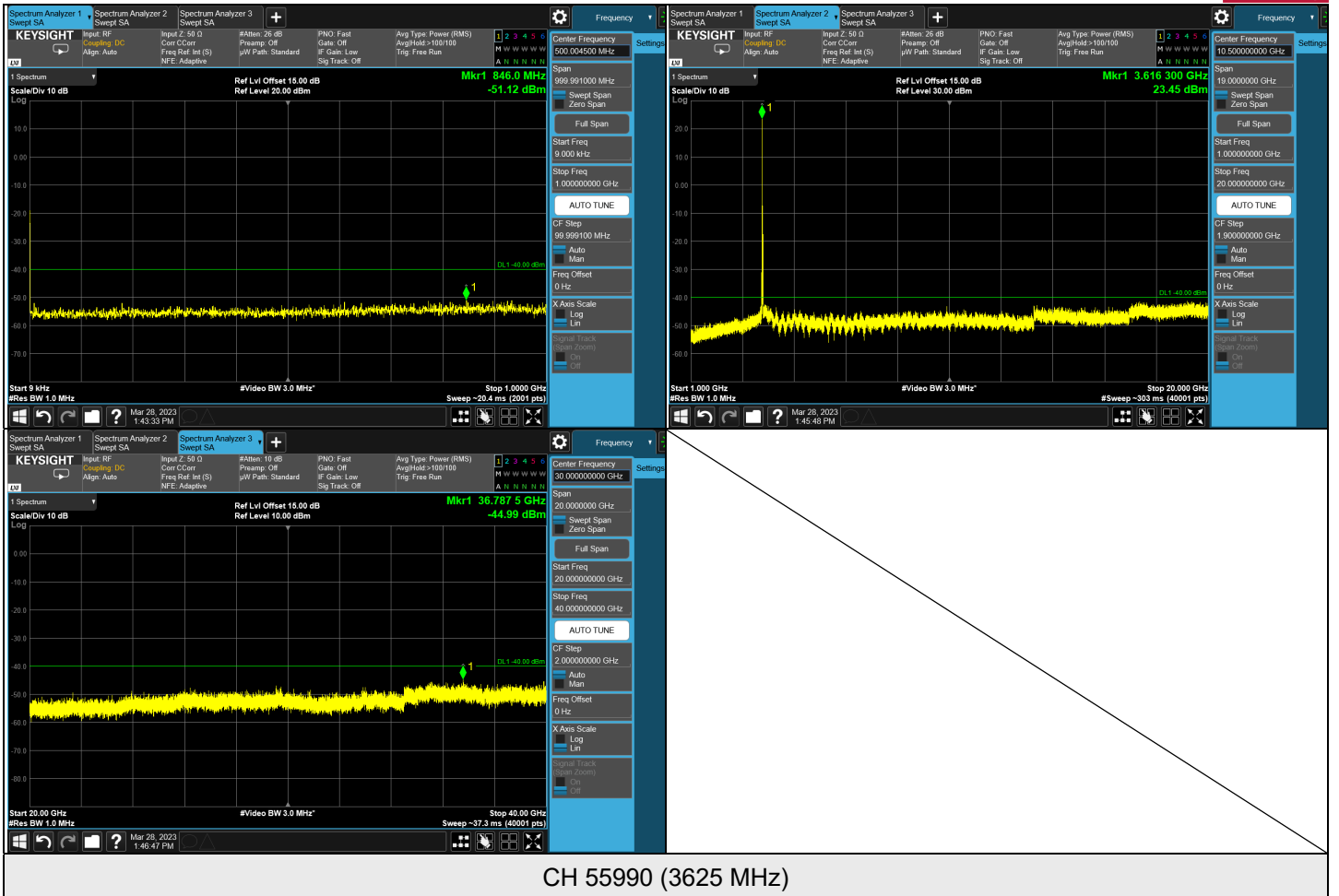


1RB#0 CH 56665 (3692.5 MHz)

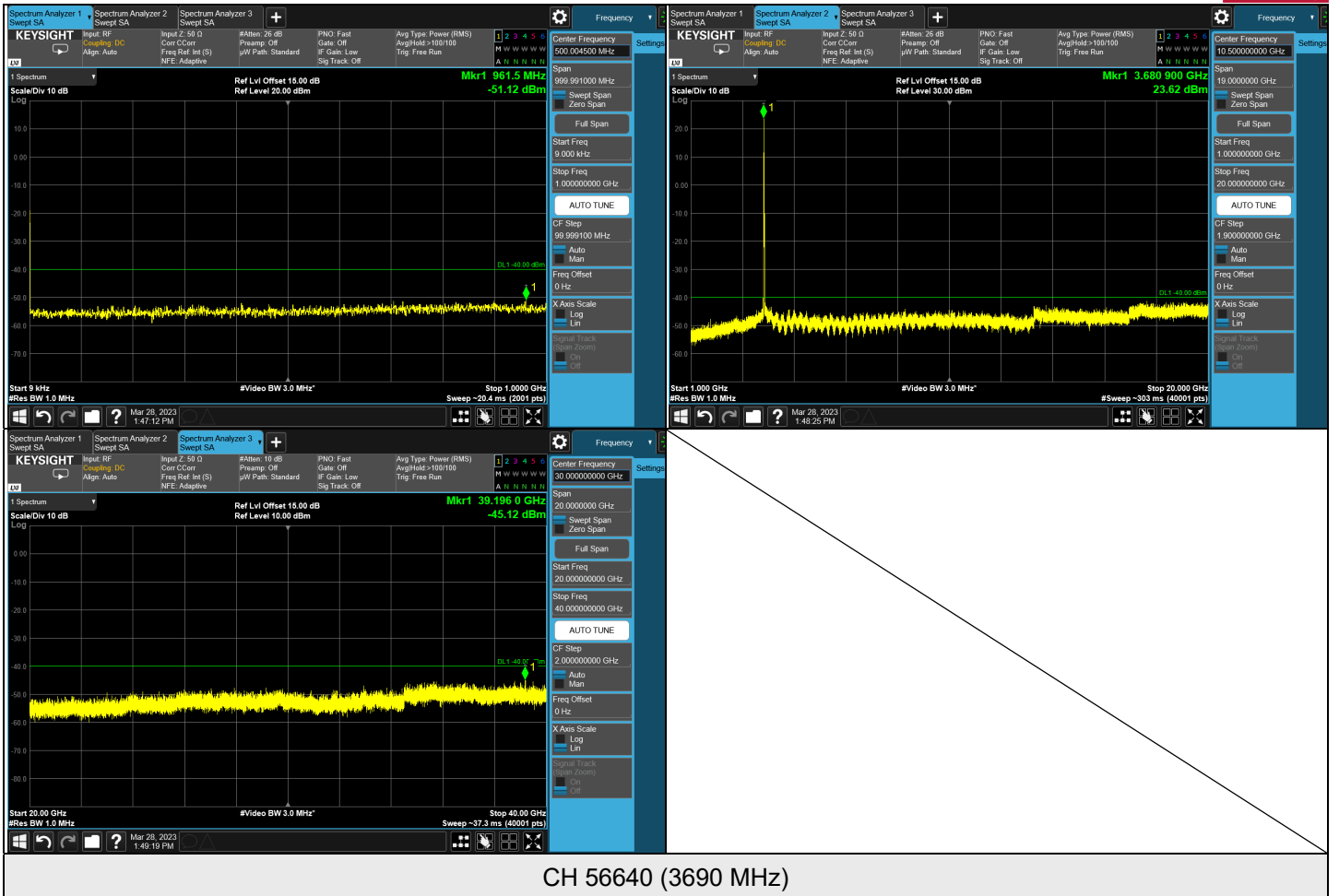


LTE Band 48, Channel Bandwidth: 20 MHz

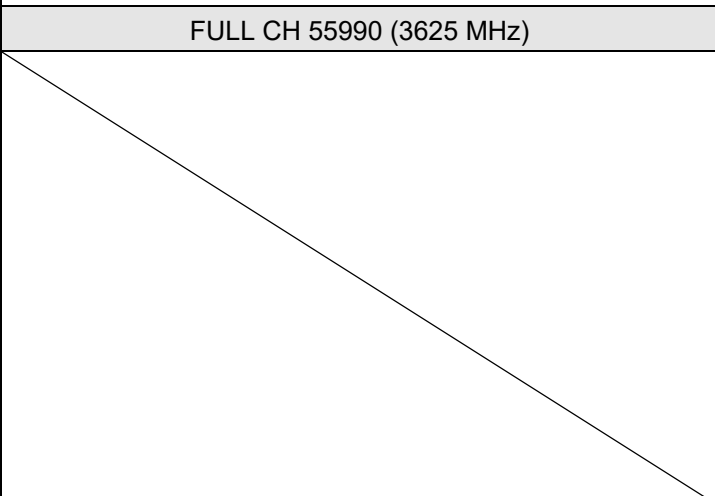
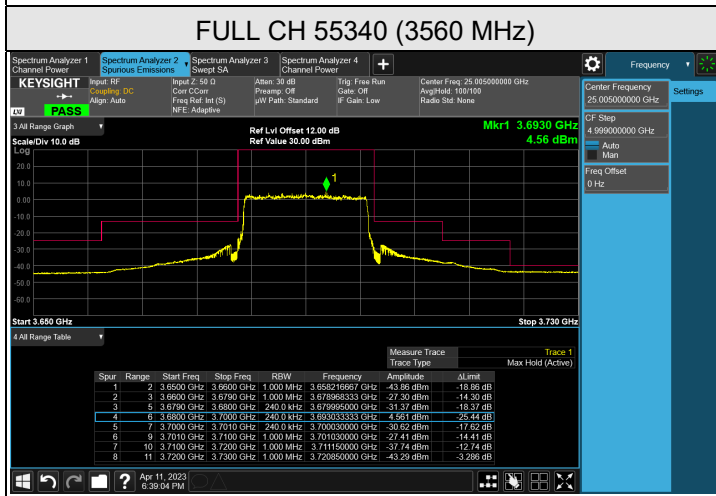
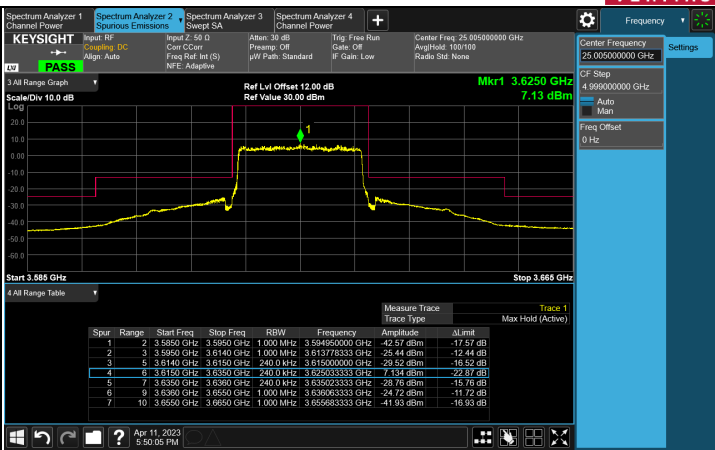
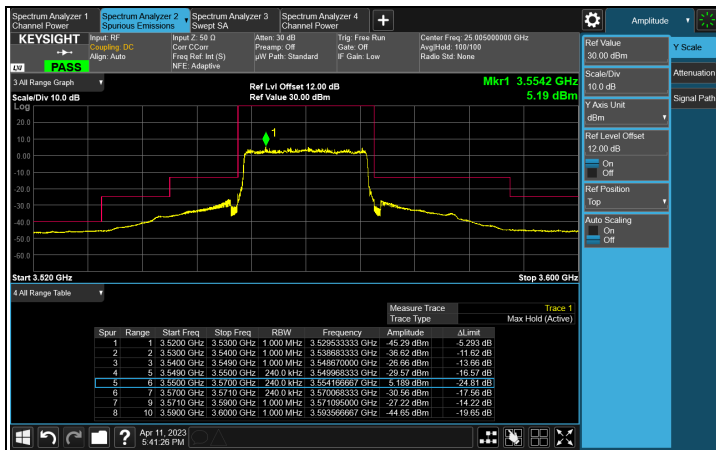




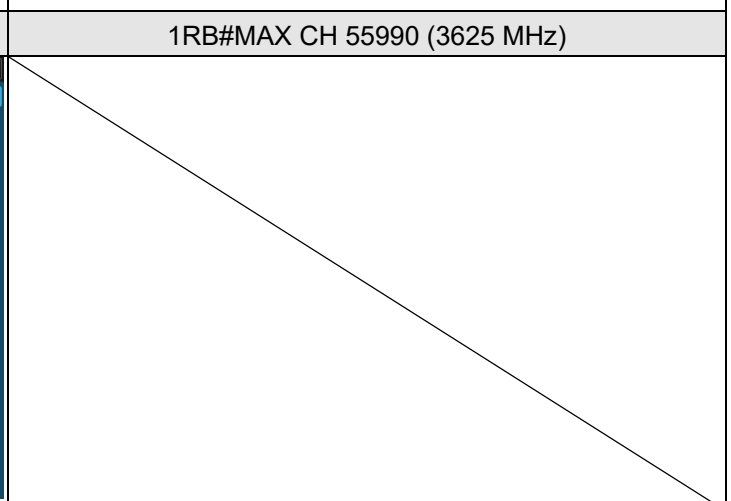
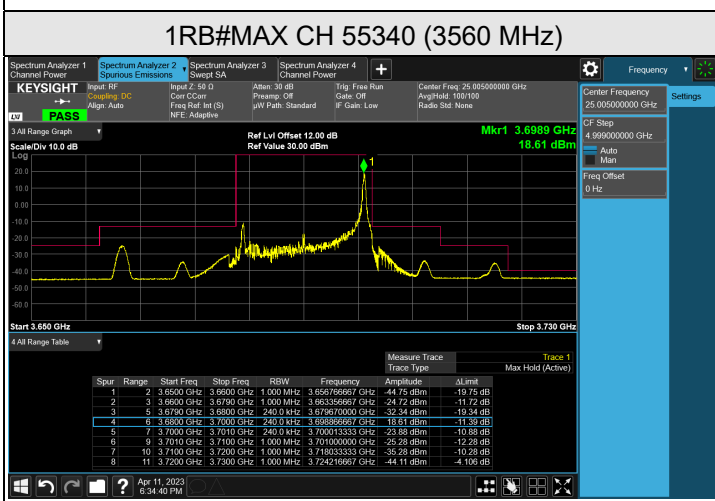
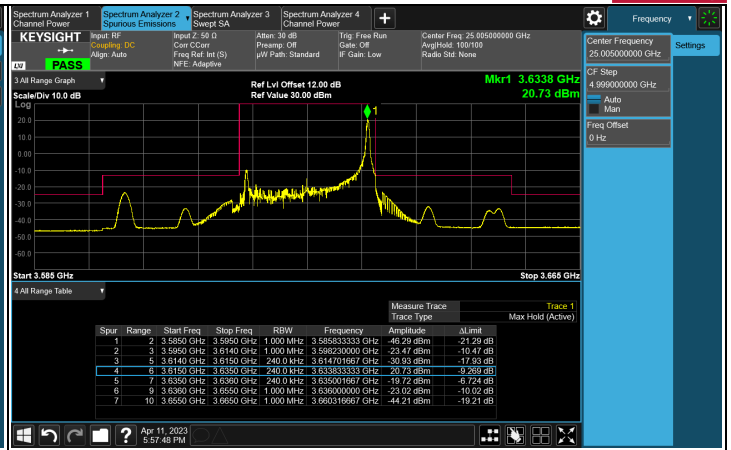
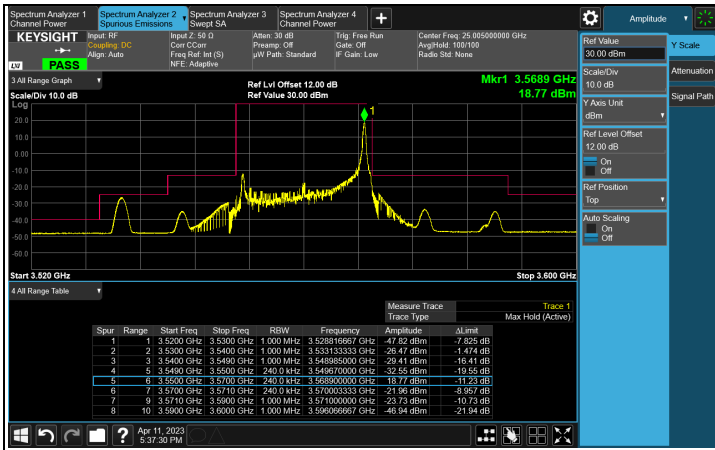
CH 55990 (3625 MHz)



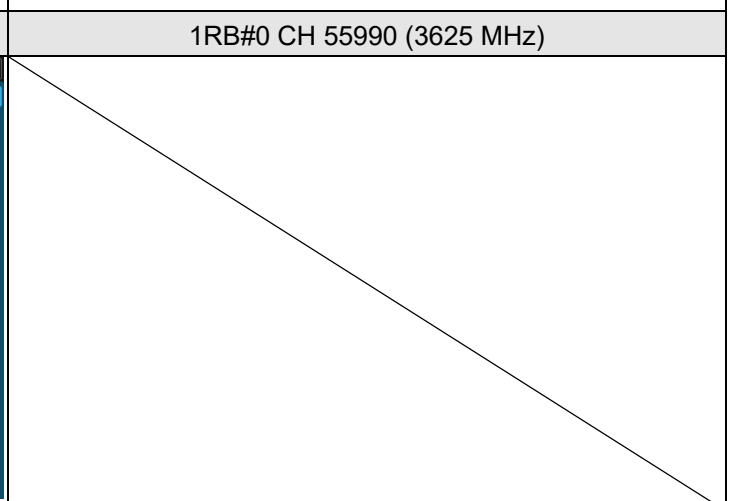
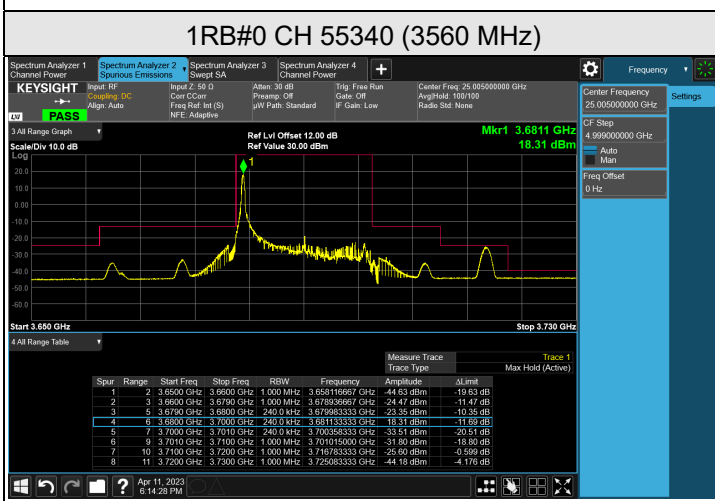
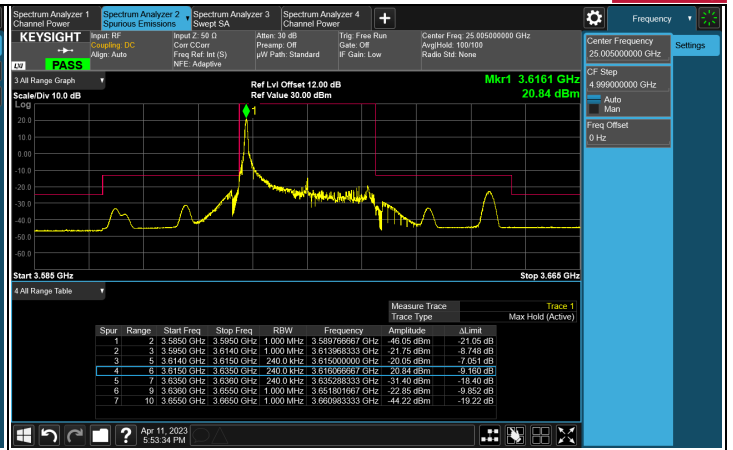
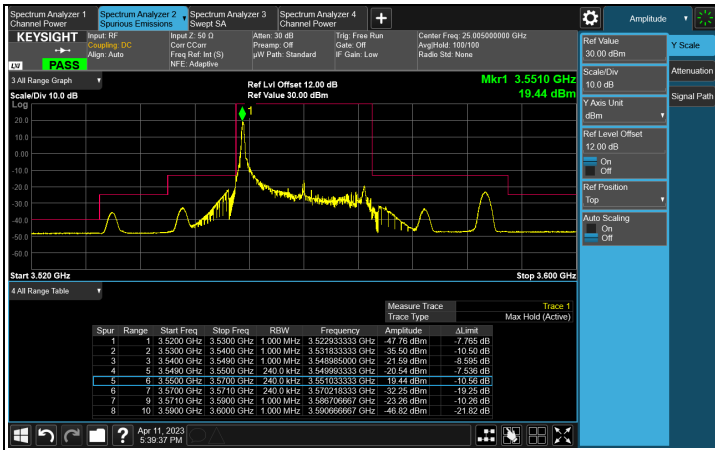
CH 56640 (3690 MHz)



FULL CH 56640 (3690 MHz)



1RB#MAX CH 56640 (3690 MHz)



1RB#0 CH 5664 (3690 MHz)

7.6 Radiated Spurious Emissions below 1GHz

7.6.1 LTE Band 48

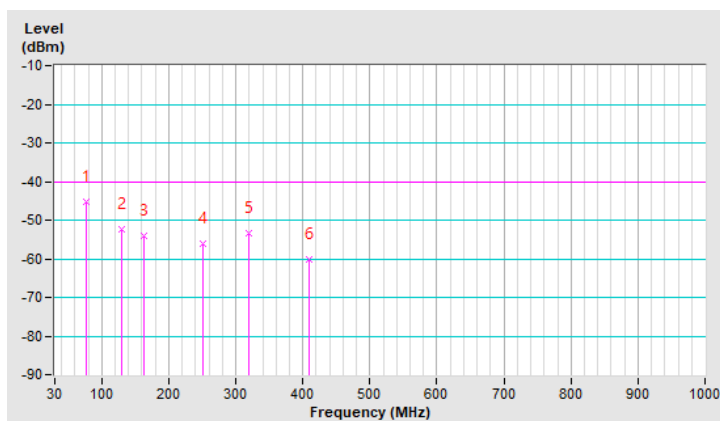
RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55340 : 3560 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 72% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	76.56	-45.35	-40.00	-5.35	2.50 H	244	65.88	-111.23
2	129.91	-52.33	-40.00	-12.33	1.50 H	212	56.34	-108.67
3	163.86	-54.16	-40.00	-14.16	2.00 H	132	53.80	-107.96
4	250.19	-56.07	-40.00	-16.07	1.50 H	98	52.81	-108.88
5	320.03	-53.30	-40.00	-13.30	2.00 H	75	53.23	-106.53
6	410.24	-60.32	-40.00	-20.32	2.50 H	284	44.23	-104.55

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The EIRP levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

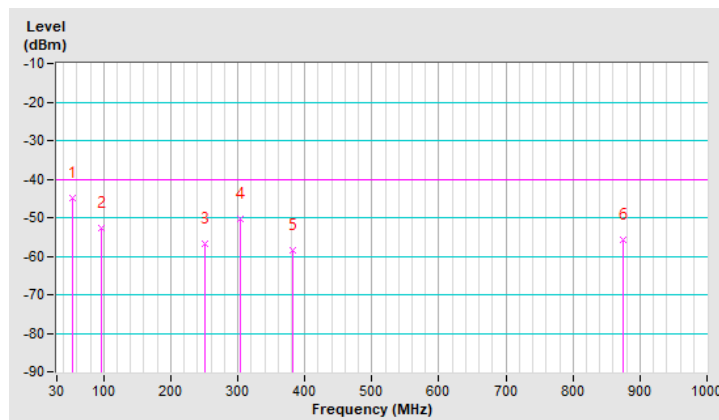


RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55340 : 3560 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 72% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	53.28	-44.82	-40.00	-4.82	1.25 V	8	62.83	-107.65
2	96.93	-52.62	-40.00	-12.62	1.00 V	206	59.76	-112.38
3	250.19	-56.65	-40.00	-16.65	1.50 V	132	52.23	-108.88
4	303.54	-50.40	-40.00	-10.40	1.00 V	163	56.54	-106.94
5	382.11	-58.61	-40.00	-18.61	1.50 V	98	46.42	-105.03
6	874.87	-55.82	-40.00	-15.82	2.00 V	169	40.79	-96.61

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The EIRP levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.7 Radiated Spurious Emissions above 1GHz

7.7.1 LTE Band 48

RF Mode	LTE Band 48 Channel Bandwidth: 5MHz	Channel	CH 55265 : 3552.5 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7105.00	-43.66	-40.00	-3.66	3.04 H	130	56.20	-99.86

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7105.00	-45.38	-40.00	-5.38	2.63 V	97	54.48	-99.86

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



RF Mode	LTE Band 48 Channel Bandwidth: 5MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-43.34	-40.00	-3.34	2.43 H	310	56.33	-99.67

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-45.82	-40.00	-5.82	1.45 V	236	53.85	-99.67

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	LTE Band 48 Channel Bandwidth: 5MHz	Channel	CH 56715 : 3697.5 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7395.00	-43.27	-40.00	-3.27	3.03 H	128	56.03	-99.30
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7395.00	-45.32	-40.00	-5.32	2.61 V	13	53.98	-99.30

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55340 : 3560 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7120.00	-43.21	-40.00	-3.21	2.31 H	102	56.67	-99.88
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7120.00	-45.13	-40.00	-5.13	3.36 V	350	54.75	-99.88

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-43.48	-40.00	-3.48	1.56 H	38	56.19	-99.67
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-44.97	-40.00	-4.97	3.33 V	325	54.70	-99.67

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 56640 : 3690 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22°C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7380.00	-43.22	-40.00	-3.22	3.81 H	251	56.07	-99.29
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7380.00	-44.82	-40.00	-4.82	2.84 V	105	54.47	-99.29

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

7.8 Frequency Stability

Environmental Conditions:	25°C, 60% RH	Tested By:	James Yang
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7.8.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage				
Voltage (Vac)	CH 55265 (3552.5 MHz)		CH 56715 (3697.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	3552.499996	-0.001126	3697.499999	-0.000270
102	3552.499999	-0.000281	3697.499996	-0.001082
138	3552.499996	-0.001126	3697.499998	-0.000541

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55265 (3552.5 MHz)		CH 56715 (3697.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3552.499999	-0.000281	3697.500003	0.000811
-20	3552.500003	0.000844	3697.500003	0.000811
-10	3552.500002	0.000563	3697.500002	0.000541
0	3552.500004	0.001126	3697.499998	-0.000541
10	3552.499999	-0.000281	3697.499997	-0.000811
20	3552.500004	0.001126	3697.500004	0.001082
30	3552.500004	0.001126	3697.499997	-0.000811
40	3552.500001	0.000281	3697.500004	0.001082
50	3552.500004	0.001126	3697.500004	0.001082

LTE Band 48, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage				
Voltage (Vac)	CH 55290 (3555 MHz)		CH 56690 (3695 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	3555.000004	0.001125	3694.999997	-0.000812
102	3555.000001	0.000281	3694.999999	-0.000271
138	3554.999998	-0.000563	3694.999996	-0.001083

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55290 (3555 MHz)		CH 56690 (3695 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3555.000001	0.000281	3695.000002	0.000541
-20	3555.000004	0.001125	3695.000002	0.000541
-10	3554.999999	-0.000281	3694.999997	-0.000812
0	3555.000003	0.000844	3695.000001	0.000271
10	3555.000002	0.000563	3694.999998	-0.000541
20	3555.000002	0.000563	3695.000001	0.000271
30	3554.999996	-0.001125	3694.999998	-0.000541
40	3554.999999	-0.000281	3694.999999	-0.000271
50	3554.999997	-0.000844	3695.000003	0.000812

LTE Band 48, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage				
Voltage (Vac)	CH 55315 (3557.5 MHz)		CH 56665 (3692.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	3557.500003	0.000843	3692.500004	0.001083
102	3557.500001	0.000281	3692.499996	-0.001083
138	3557.499996	-0.001124	3692.500004	0.001083

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55315 (3557.5 MHz)		CH 56665 (3692.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3557.500002	0.000562	3692.499996	-0.001083
-20	3557.499998	-0.000562	3692.500004	0.001083
-10	3557.499996	-0.001124	3692.499998	-0.000542
0	3557.500003	0.000843	3692.499999	-0.000271
10	3557.499998	-0.000562	3692.499996	-0.001083
20	3557.500004	0.001124	3692.500002	0.000542
30	3557.499996	-0.001124	3692.499999	-0.000271
40	3557.500004	0.001124	3692.499998	-0.000542
50	3557.499999	-0.000281	3692.500004	0.001083

LTE Band 48, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage				
Voltage (Vac)	CH 55340 (3560 MHz)		CH 56640 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	3559.999996	0.000843	3690.000002	0.001083
102	3560.000002	0.000281	3689.999996	-0.001083
138	3559.999998	-0.001124	3689.999998	0.001083

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55340 (3560 MHz)		CH 56640 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.000003	0.000562	3689.999997	-0.001083
-20	3560.000003	0.000843	3690.000003	0.000812
-10	3559.999999	-0.000281	3690.000003	0.000812
0	3560.000003	0.000843	3690.000003	0.000812
10	3560.000001	0.000281	3690.000001	0.000271
20	3559.999999	-0.000281	3690.000003	0.000812
30	3560.000001	0.000281	3689.999996	-0.001083
40	3559.999996	-0.001124	3689.999996	-0.001083
50	3560.000003	0.000843	3689.999996	-0.001083

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)



9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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