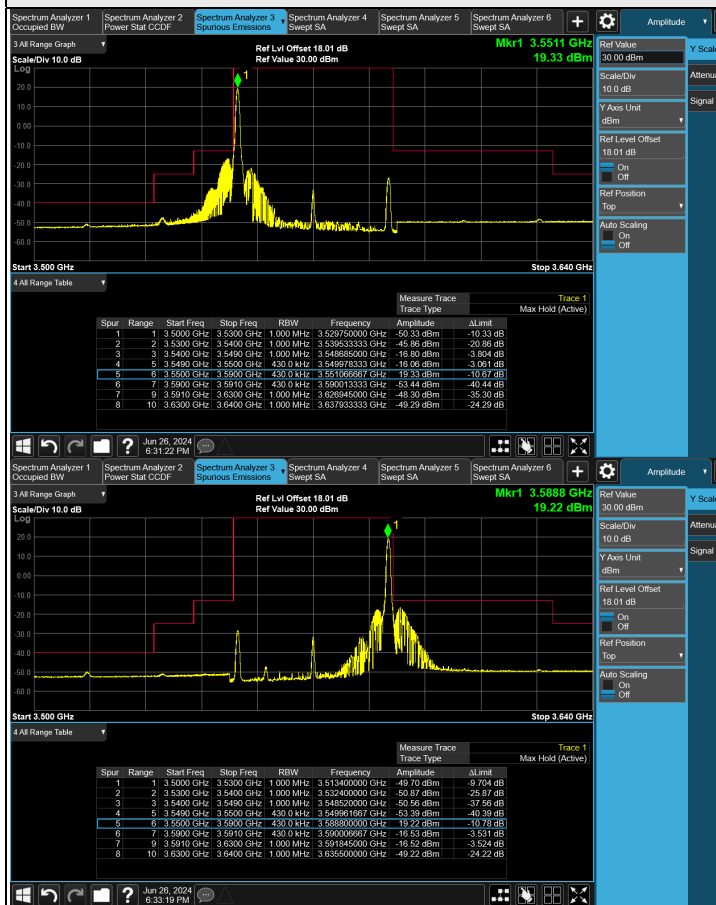


NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz) - MIMO_Ant 5, Channel Bandwidth: 40 MHz

CH 638000 (3570 MHz)

1 RB



FULL RB

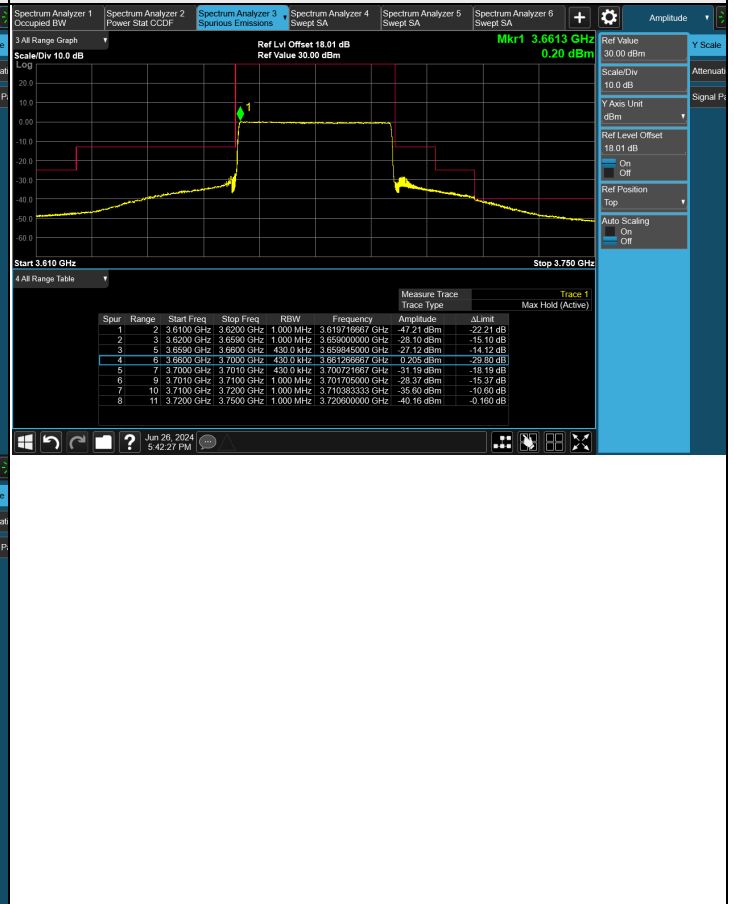


CH 645332 (3679.98 MHz)

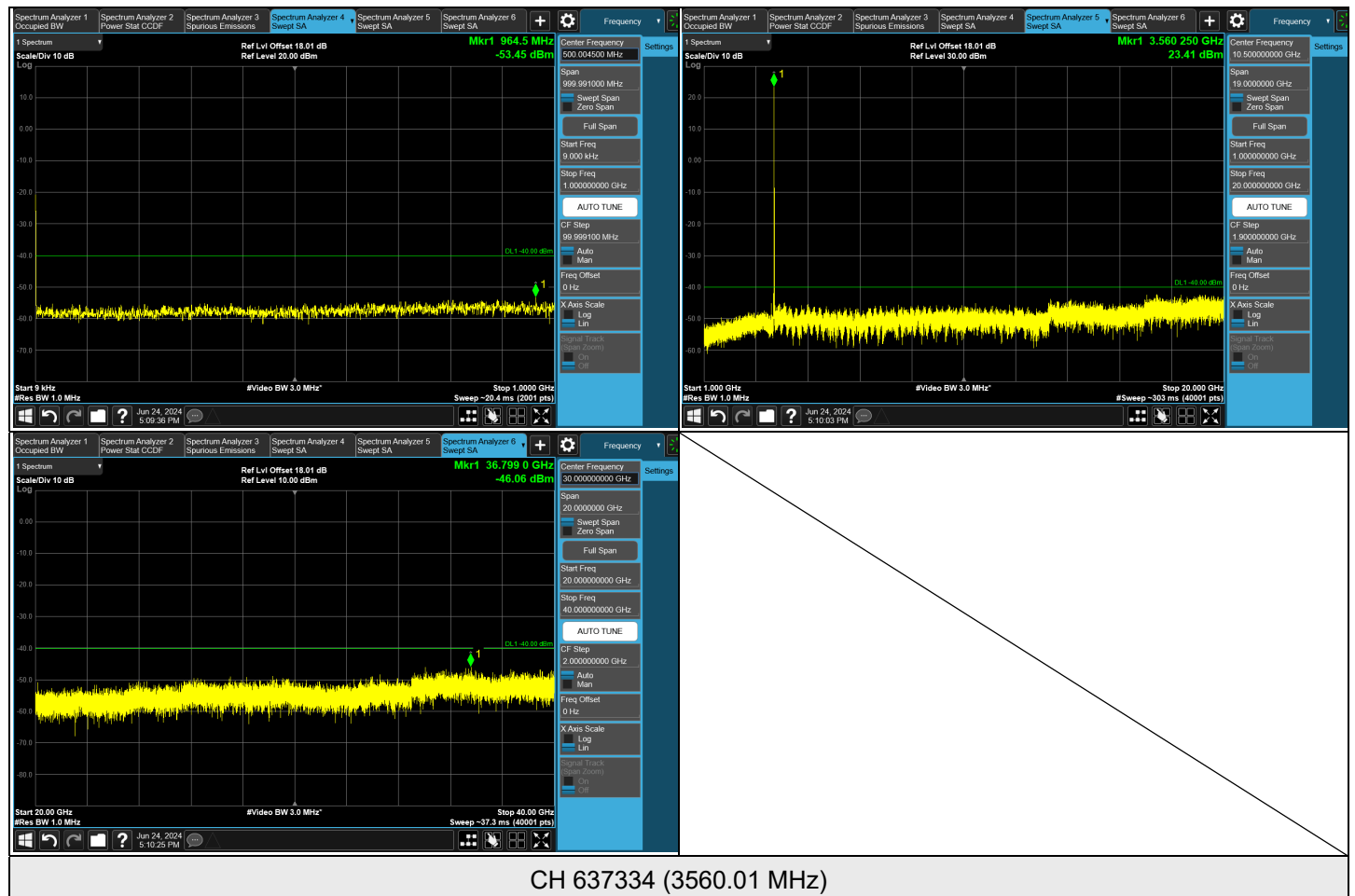
1 RB

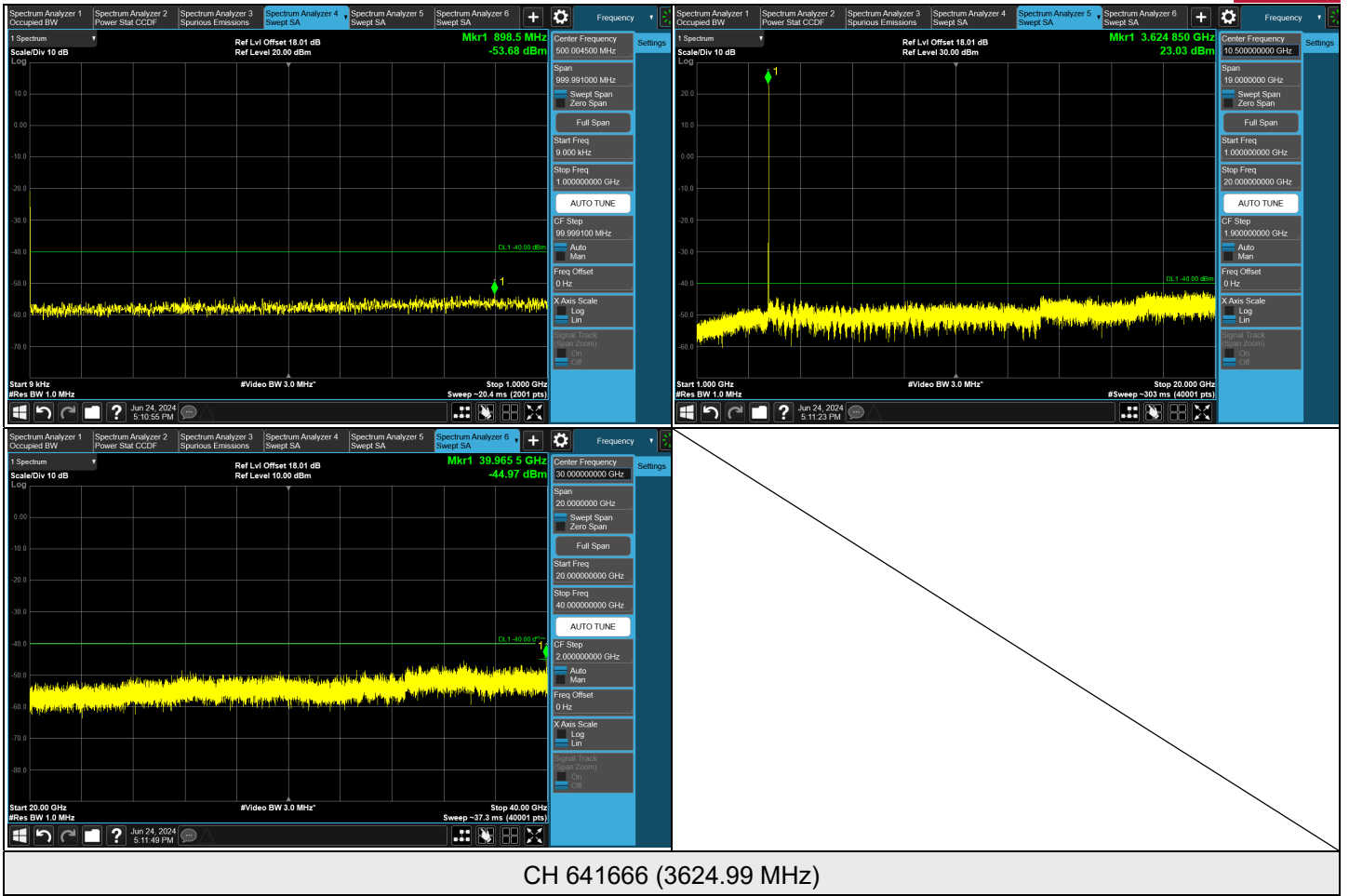


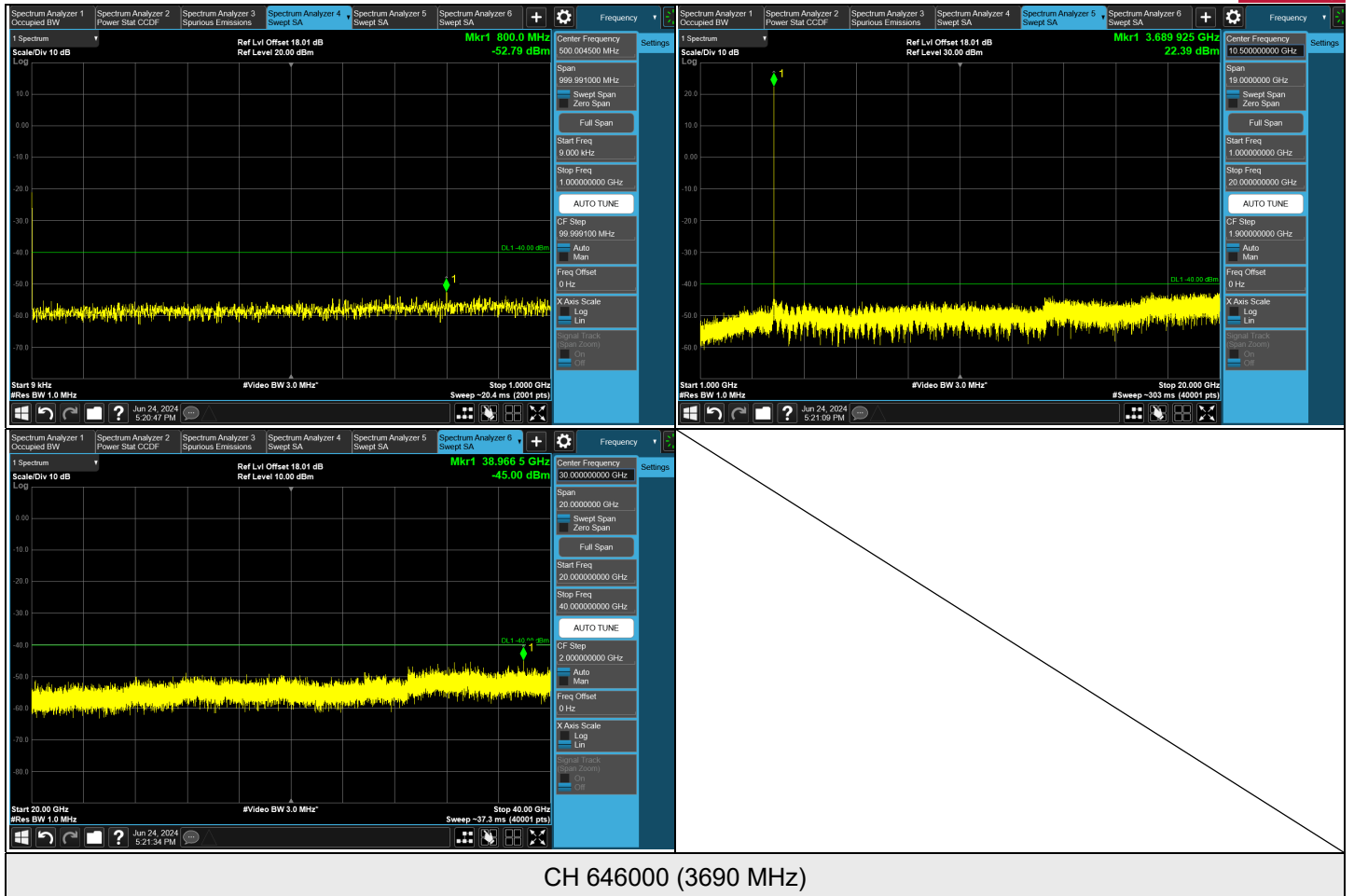
FULL RB



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz) - MIMO_Ant 7, Channel Bandwidth: 20 MHz



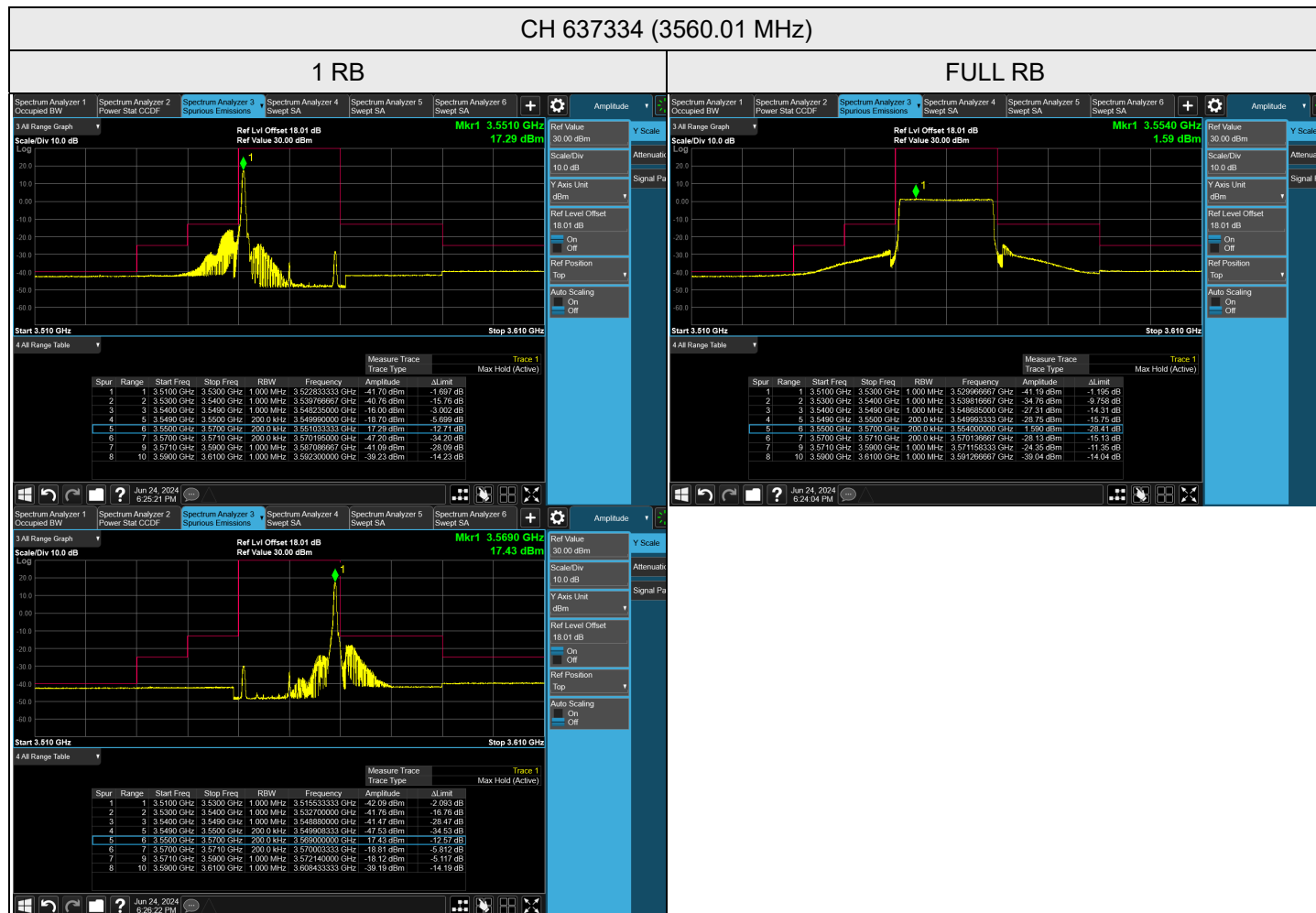




Note: The signal at 9 kHz is IF signal from spectrum analyzer.

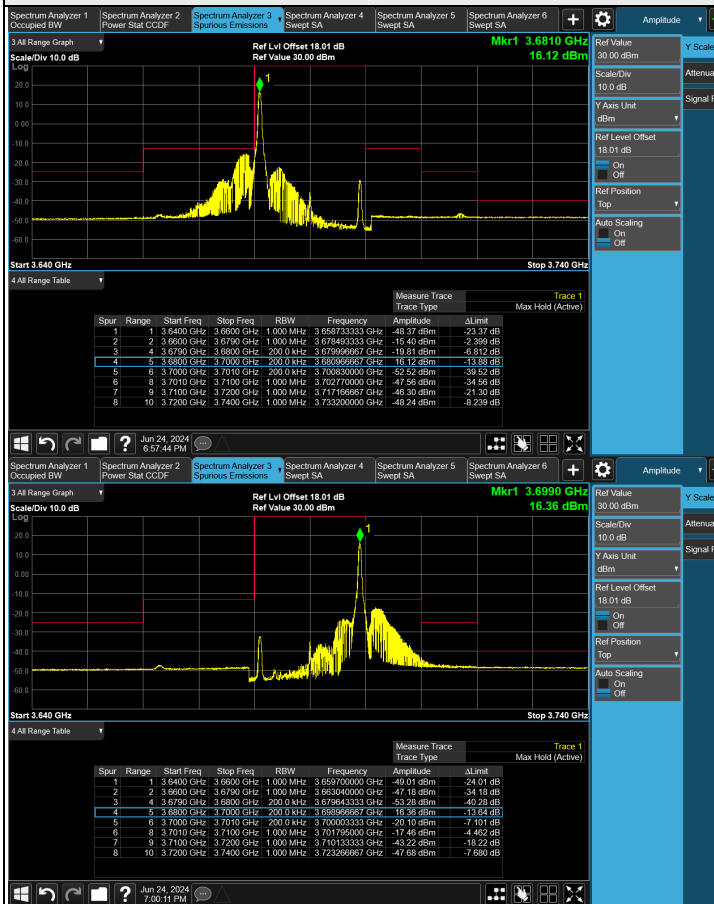
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz) - MIMO_Ant 7, Channel Bandwidth: 20 MHz

CH 637334 (3560.01 MHz)

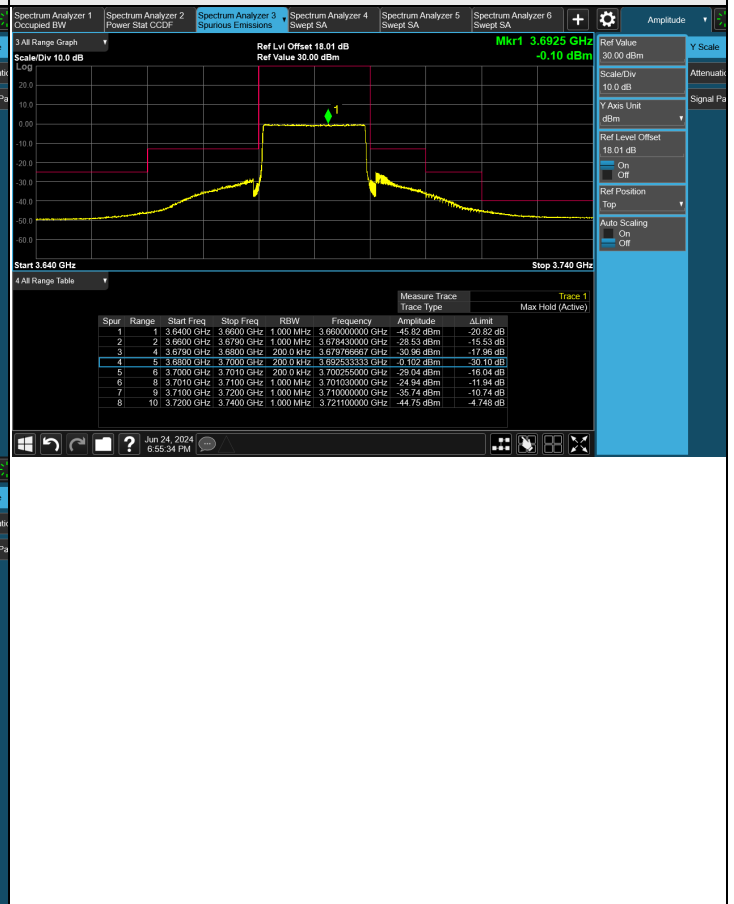


CH 646000 (3690 MHz)

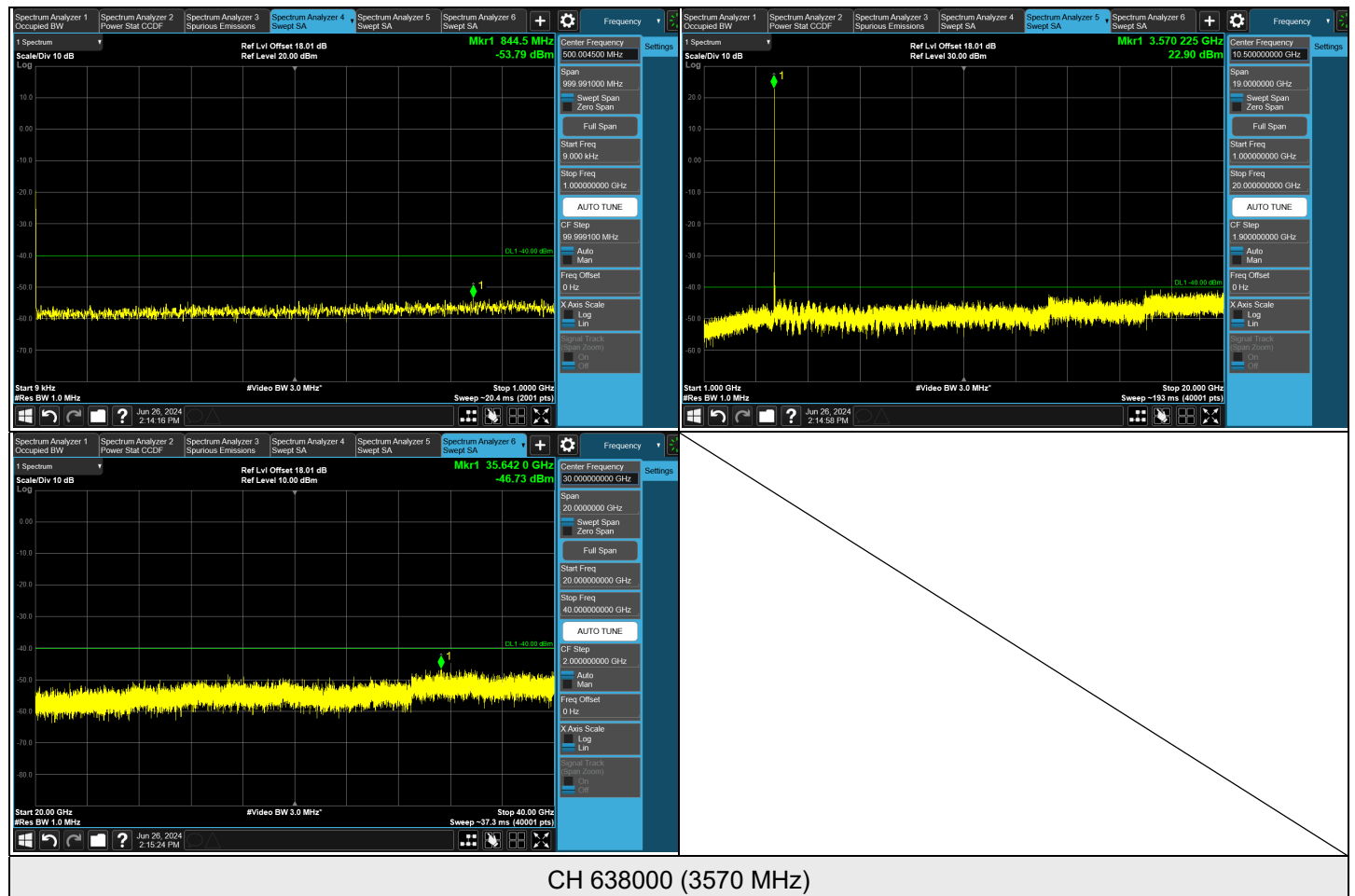
1 RB

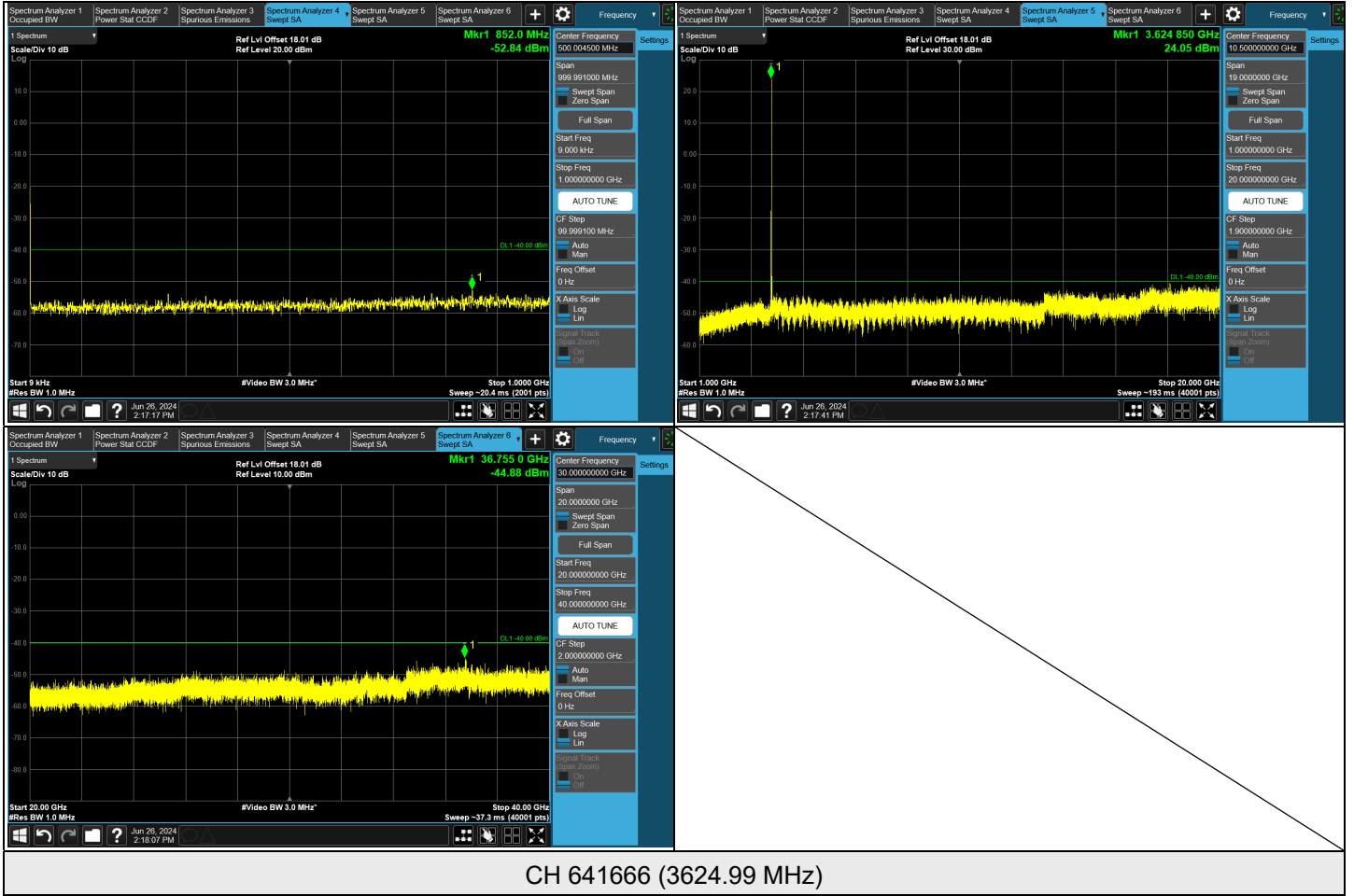


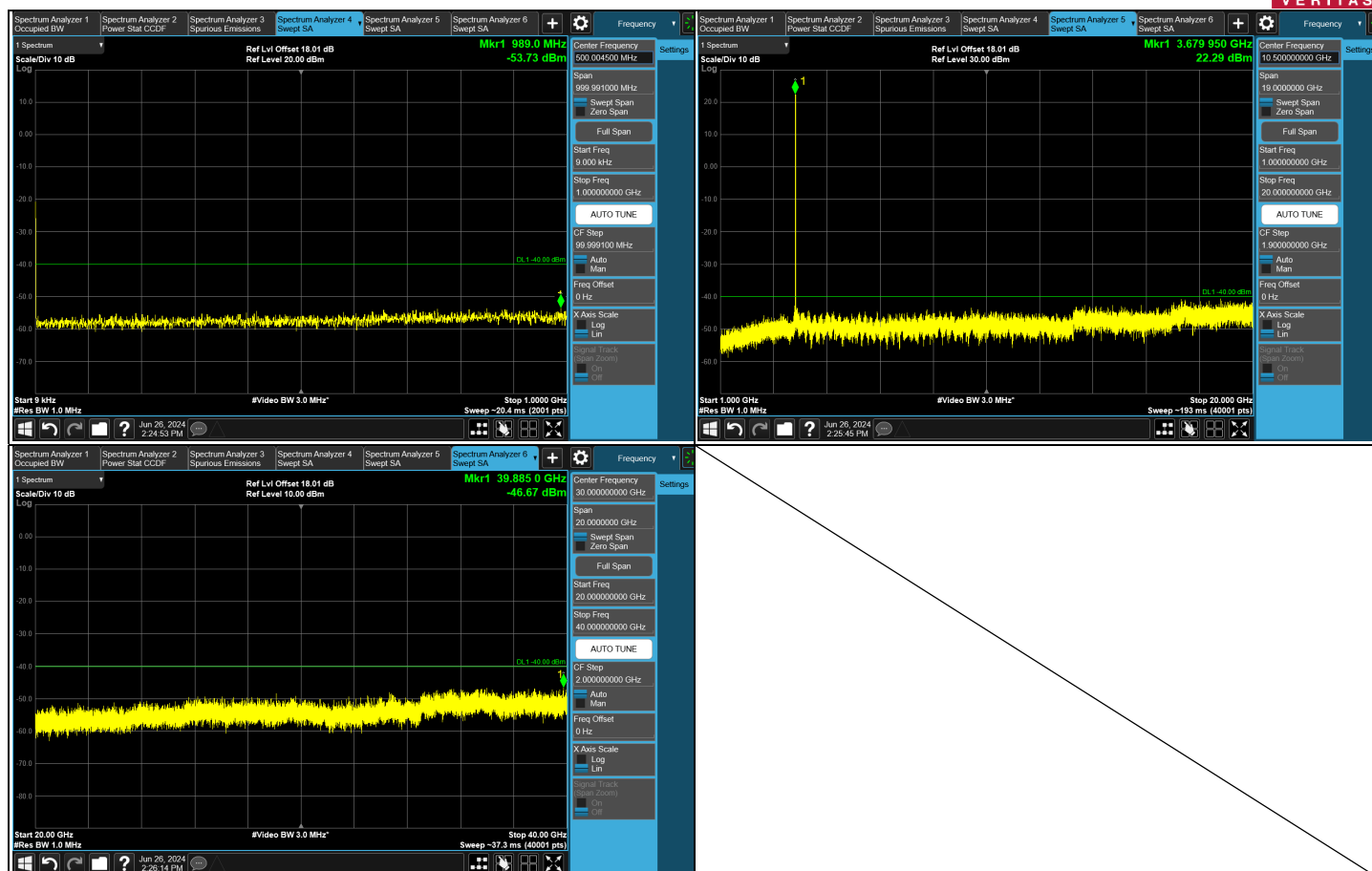
FULL RB



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz) - MIMO_Ant 7, Channel Bandwidth: 40 MHz





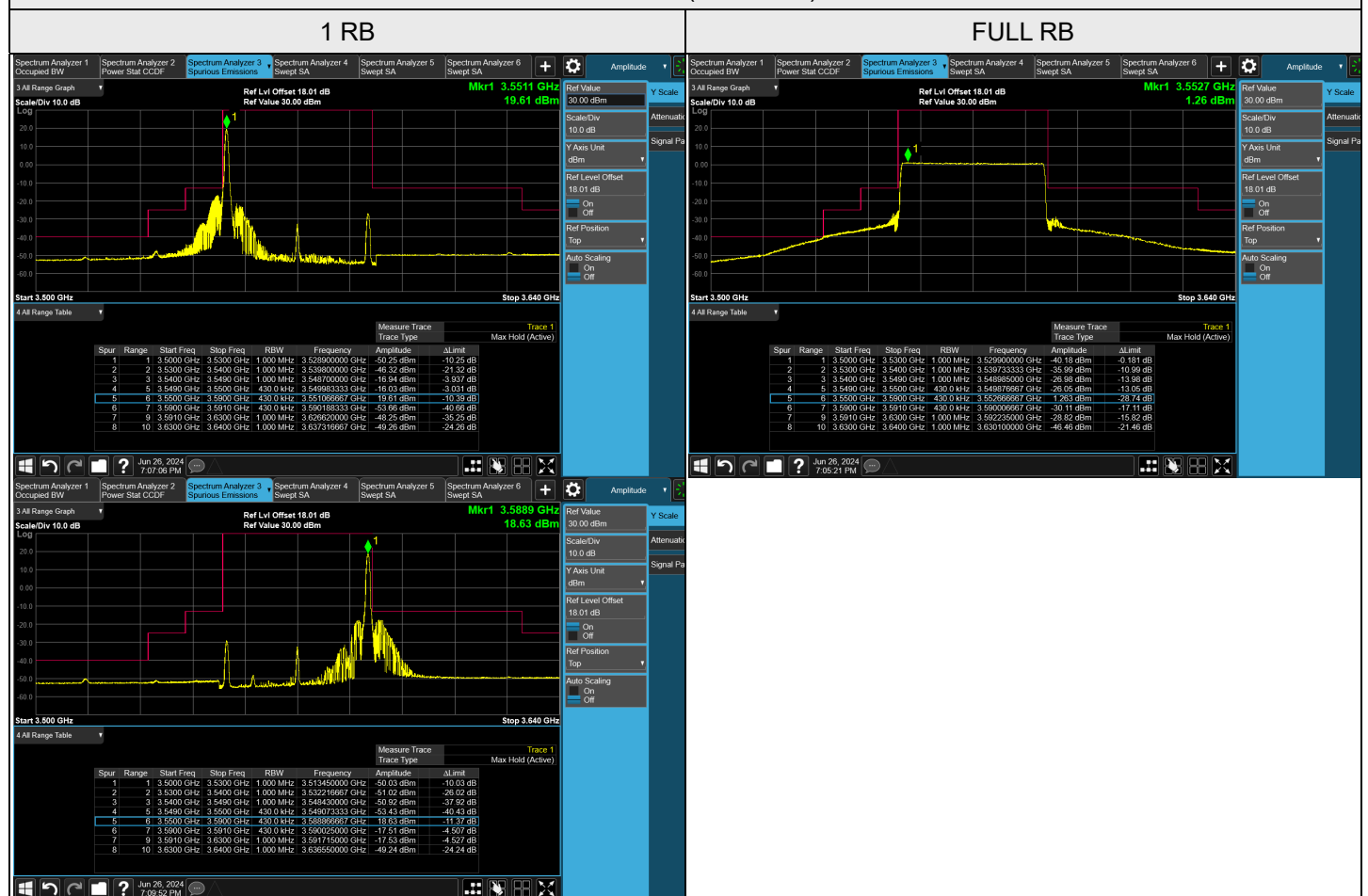


CH 645332 (3679.98 MHz)

Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz) - MIMO_Ant 7, Channel Bandwidth: 40 MHz

CH 638000 (3570 MHz)

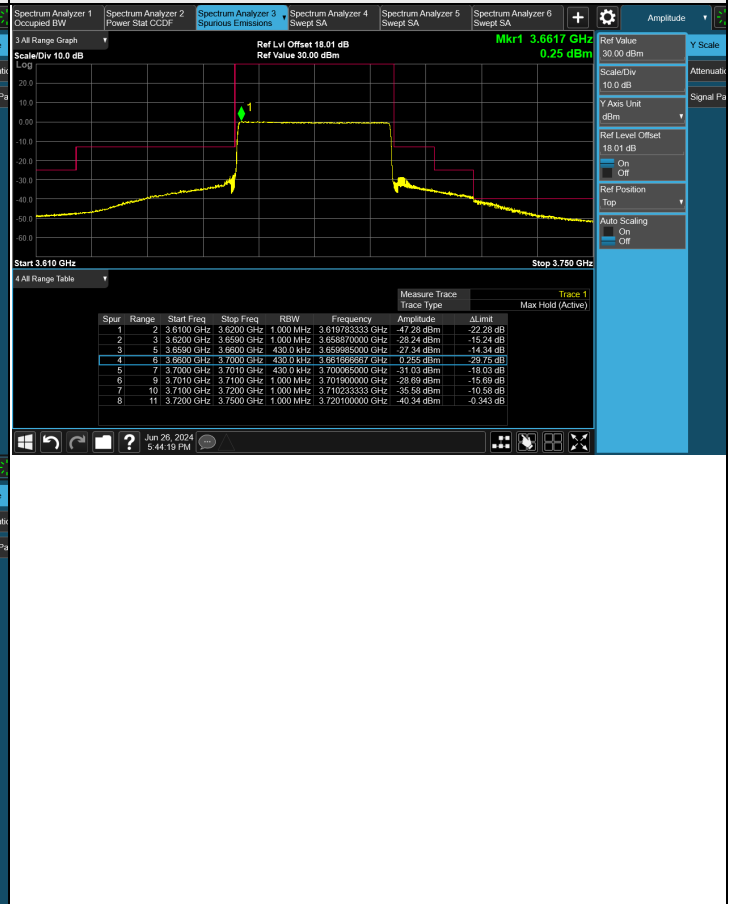


CH 645332 (3679.98 MHz)

1 RB



FULL RB



7.6 Radiated Spurious Emissions below 1GHz

MIMO

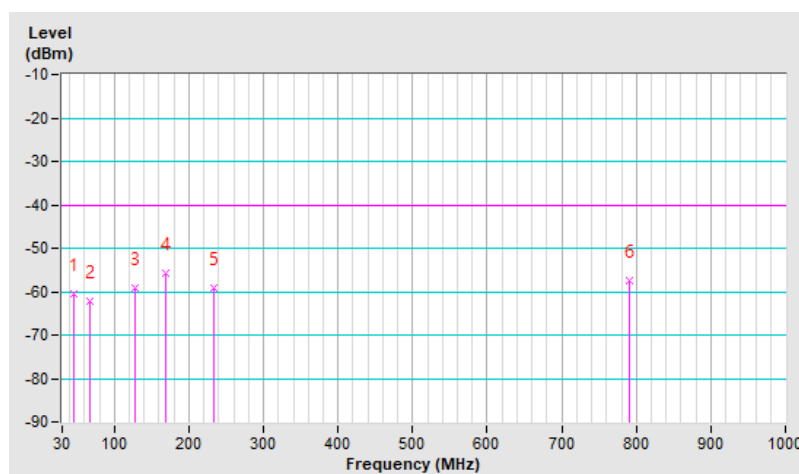
7.6.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

RF Mode	NR n48 Channel Bandwidth: 20MHz	Channel	CH 646000 : 3690 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	46.49	-60.41	-40.00	-20.41	1.50 H	18	47.83	-108.24
2	66.86	-62.20	-40.00	-22.20	1.00 H	208	47.79	-109.99
3	127.00	-59.25	-40.00	-19.25	1.00 H	263	50.68	-109.93
4	168.71	-55.71	-40.00	-15.71	1.00 H	270	52.54	-108.25
5	232.73	-59.30	-40.00	-19.30	1.00 H	240	50.96	-110.26
6	790.48	-57.40	-40.00	-17.40	1.00 H	350	39.94	-97.34

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

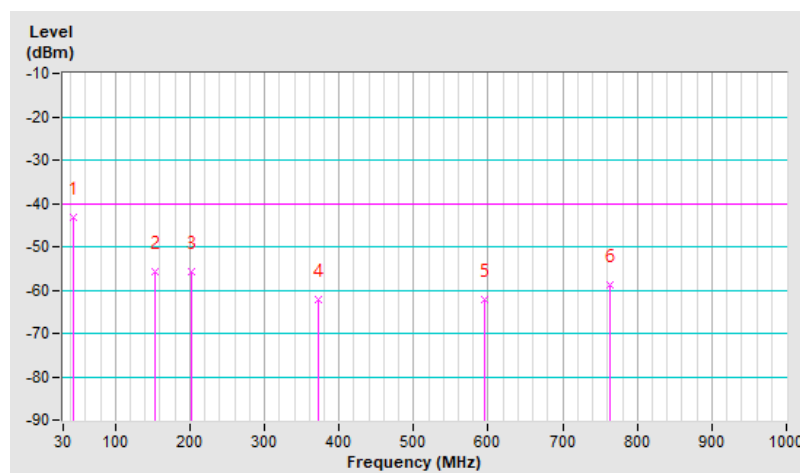


RF Mode	NR n48 Channel Bandwidth: 20MHz	Channel	CH 646000 : 3690 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	44.55	-43.14	-40.00	-3.14	1.00 V	170	65.21	-108.35
2	154.16	-55.90	-40.00	-15.90	1.00 V	185	51.94	-107.84
3	202.66	-55.87	-40.00	-15.87	1.00 V	162	55.98	-111.85
4	371.44	-62.15	-40.00	-22.15	1.00 V	180	43.59	-105.74
5	595.51	-62.05	-40.00	-22.05	1.00 V	19	38.41	-100.46
6	763.32	-58.69	-40.00	-18.69	1.50 V	46	38.79	-97.48

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.7 Radiated Spurious Emissions above 1GHz

MIMO

7.7.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

RF Mode	NR n48 Channel Bandwidth: 20MHz	Channel	CH 637334 : 3560.01 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	7120.02	-40.72	-40.00	-0.72	2.29 H	109	46.96	-87.68
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	7120.02	-41.29	-40.00	-1.29	3.46 V	160	46.39	-87.68

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	NR n48 Channel Bandwidth: 20MHz	Channel	CH 641666 : 3624.99 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	7249.98	-40.83	-40.00	-0.83	2.31 H	109	46.88	-87.71
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	7249.98	-41.55	-40.00	-1.55	3.41 V	163	46.16	-87.71

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	NR n48 Channel Bandwidth: 20MHz	Channel	CH 646000 : 3690 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	-40.15	-40.00	-0.15	2.34 H	109	47.32	-87.47
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	-41.18	-40.00	-1.18	3.39 V	160	46.29	-87.47

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	NR n48 Channel Bandwidth: 40MHz	Channel	CH 638000 : 3570 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	7140.00	-40.91	-40.00	-0.91	2.31 H	115	46.82	-87.73
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	7140.00	-41.61	-40.00	-1.61	3.46 V	162	46.12	-87.73

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	NR n48 Channel Bandwidth: 40MHz	Channel	CH 641666 : 3624.99 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	7249.98	-40.35	-40.00	-0.35	2.31 H	112	47.36	-87.71
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	7249.98	-41.35	-40.00	-1.35	3.39 V	156	46.36	-87.71

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	NR n48 Channel Bandwidth: 40MHz	Channel	CH 645332 : 3679.98 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 69 % RH
Tested By	Titan Hsu		

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	7359.96	-40.20	-40.00	-0.20	2.29 H	109	47.33	-87.53
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	7359.96	-41.31	-40.00	-1.31	3.40 V	159	46.22	-87.53

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 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 637334 (3560.01 MHz)		CH 646000 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.6	3560.010004	0.0011	3690.000005	0.0014
3.87	3560.009998	-0.0006	3690.000001	0.0003
4.4	3560.010002	0.0006	3690.000001	0.0003

Note: The applicant defined the normal working voltage is from 3.6 to 4.4 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 637334 (3560.01 MHz)		CH 646000 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010004	0.0011	3690.000008	0.0022
-20	3560.010001	0.0003	3690.000001	0.0003
-10	3560.009996	-0.0011	3689.999991	-0.0024
0	3560.010001	0.0003	3690.000006	0.0016
10	3560.009995	-0.0014	3689.999995	-0.0014
20	3560.009993	-0.002	3689.999993	-0.0019
30	3560.009994	-0.0017	3689.999992	-0.0022
40	3560.010006	0.0017	3690.000007	0.0019
50	3560.01	0	3689.999999	-0.0003

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 638000 (3570 MHz)		CH 645332 (3679.98 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.6	3570.000005	0.0014	3679.980007	0.0019
3.87	3569.999993	-0.002	3679.979994	-0.0016
4.4	3569.999991	-0.0025	3679.979995	-0.0014

Note: The applicant defined the normal working voltage is from 3.6 to 4.4 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 638000 (3570 MHz)		CH 645332 (3679.98 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3569.999996	-0.0011	3679.979995	-0.0014
-20	3570.000003	0.0008	3679.979998	-0.0005
-10	3569.999992	-0.0022	3679.97999	-0.0027
0	3569.999999	-0.0003	3679.979997	-0.0008
10	3569.999995	-0.0014	3679.979995	-0.0014
20	3570.000008	0.0022	3679.980006	0.0016
30	3570.000003	0.0008	3679.980004	0.0011
40	3569.999997	-0.0008	3679.980002	0.0005
50	3569.999993	-0.002	3679.979998	-0.0005

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.

If you have any comments, please feel free to contact us at the following:

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Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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