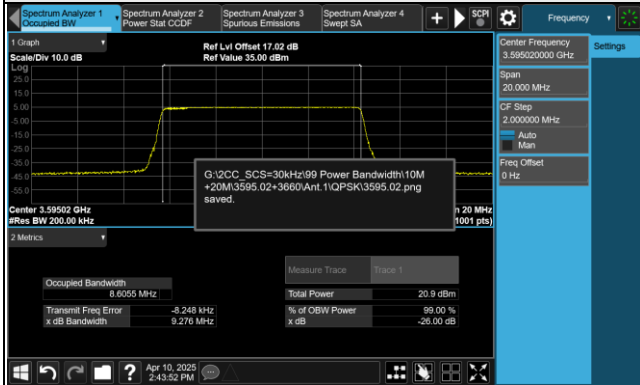


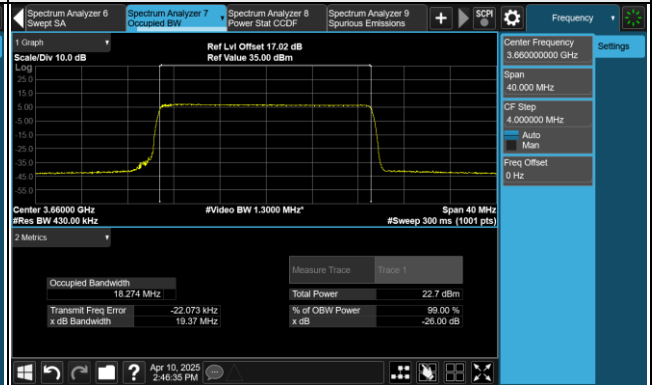
Spectrum Plot of Worst Value

10MHz+20MHz / Antenna 2 / 64QAM

3595.02 MHz

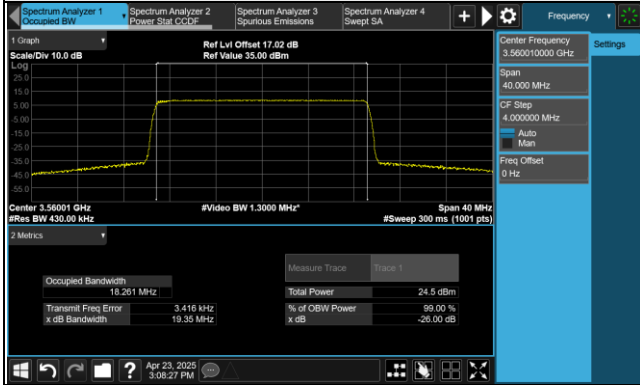


3660 MHz

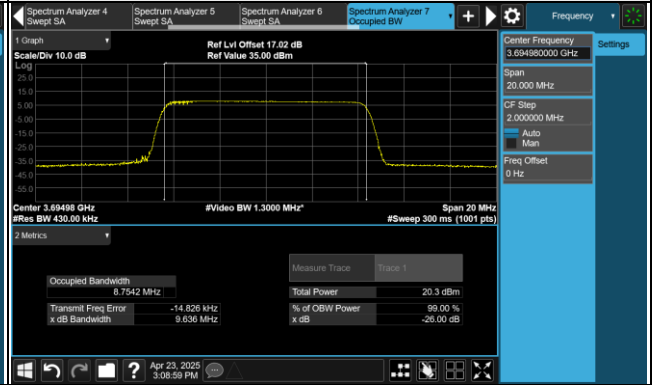


20MHz+10MHz / Antenna 1 / QPSK

3560.01 MHz

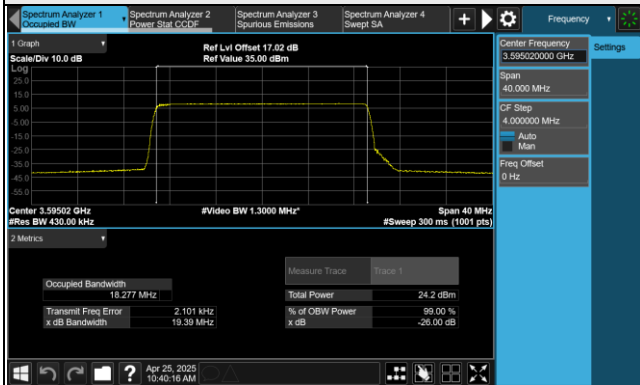


3694.98 MHz

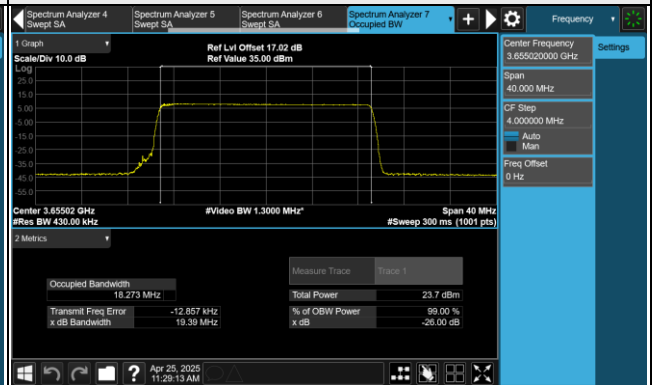


20MHz+20MHz / Antenna 3 / 256QAM

3595.02 MHz



3655.02 MHz

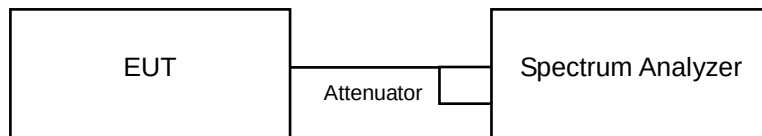


4.6 Peak to Average Ratio Measurement

4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedures

- Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.6.7 Test Results

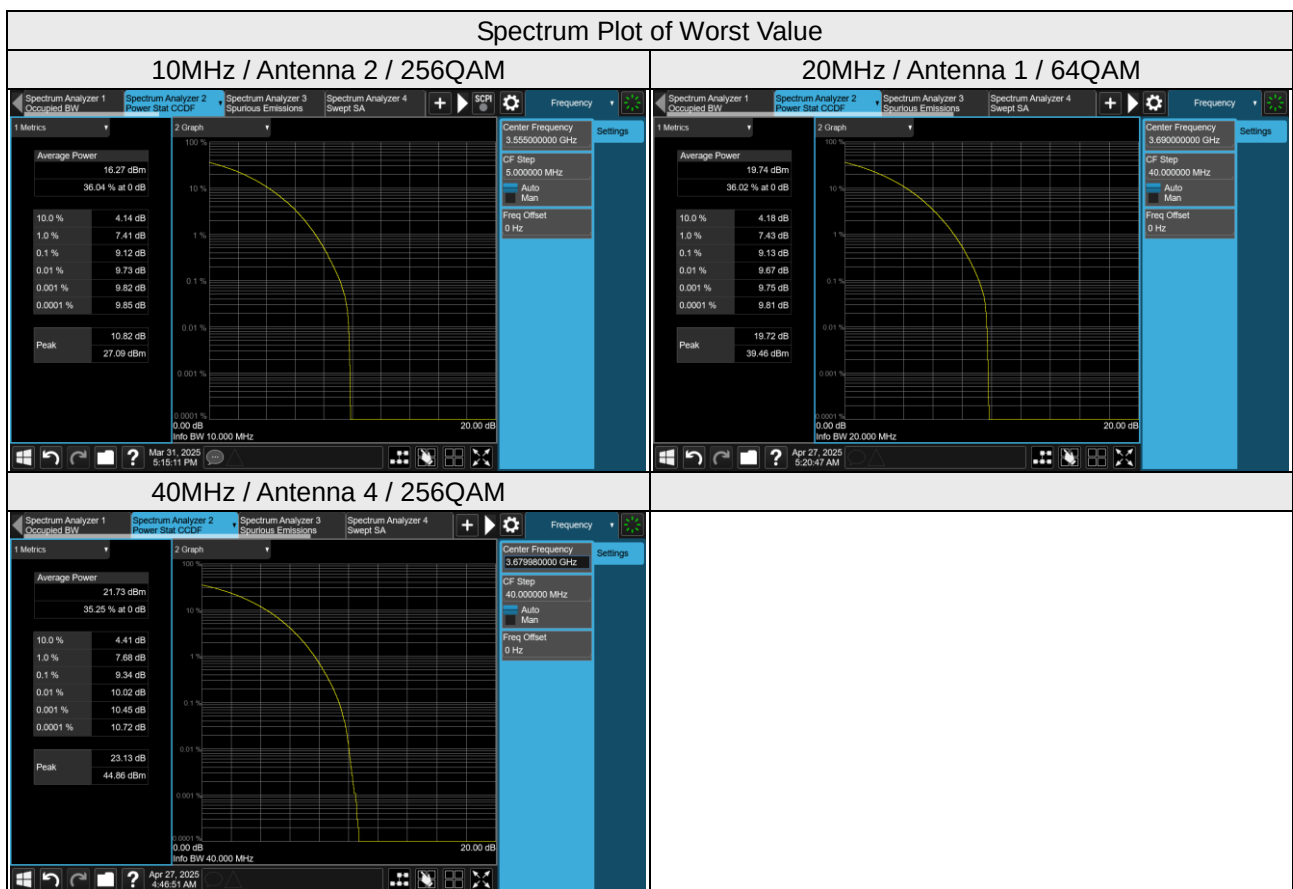
Input Power:	12 Vdc	Environmental Conditions:	22°C, 73% RH	Tested By:	Noah Chang
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Mode A1

NR Band 48, Channel Bandwidth 10MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.10	8.96	9.00	8.97	8.96	9.12
641666	3624.99	8.78	9.03	8.69	8.72	8.87	8.84
646332	3694.98	8.67	8.92	8.57	8.78	8.78	8.95
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.05	9.06	8.99	8.70	8.78	8.94
641666	3624.99	9.04	8.91	9.06	8.94	8.86	8.99
646332	3694.98	8.68	8.70	8.70	8.92	9.07	8.92

NR Band 48, Channel Bandwidth 20MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	8.75	8.82	8.64	8.89	8.54	8.96
641666	3624.99	8.49	8.63	8.51	8.51	8.71	8.58
646000	3690.00	8.86	9.13	8.87	8.73	8.63	8.89
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	8.68	8.68	8.53	8.71	8.97	8.75
641666	3624.99	8.82	8.75	8.73	8.70	8.73	8.88
646000	3690.00	8.74	8.79	8.79	8.45	8.84	8.76

NR Band 48, Channel Bandwidth 40MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	8.46	8.62	8.54	8.70	8.66	8.59
641666	3624.99	8.33	8.71	8.53	8.83	8.71	8.66
645332	3679.98	8.56	8.98	8.58	8.53	8.49	9.20
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	8.55	8.71	9.21	8.83	8.77	8.61
641666	3624.99	8.61	8.48	8.88	8.16	8.40	8.82
645332	3679.98	8.24	8.67	8.99	8.45	8.95	9.34



Mode A2

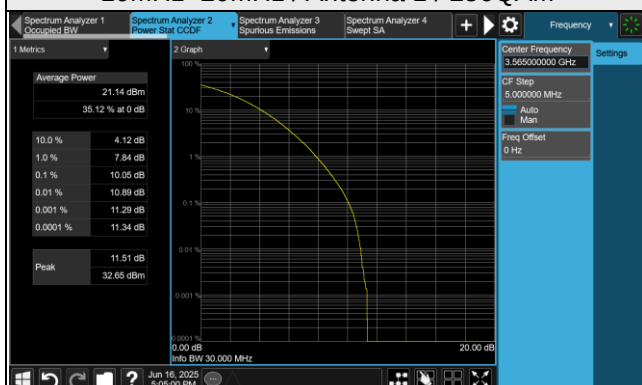
NR Band 48, Channel Bandwidth 10MHz+20MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000+638000	3555+3570	9.76	9.87	10.05	9.59	9.69	9.70
645000+646000	3675+3690	8.81	8.94	8.77	9.30	9.34	9.49
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000+638000	3555+3570	9.68	9.70	9.27	9.61	9.82	9.64
645000+646000	3675+3690	9.56	9.48	8.96	9.02	9.60	9.34

NR Band 48, Channel Bandwidth 20MHz+10MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334+638334	3560.01+3575.01	8.68	8.45	8.90	8.81	8.47	8.67
645332+646332	3679.98+3694.98	8.48	8.51	8.49	8.99	8.65	8.59
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334+638334	3560.01+3575.01	8.64	8.64	8.76	8.73	8.90	8.54
645332+646332	3679.98+3694.98	8.69	8.63	8.52	8.72	8.66	8.70

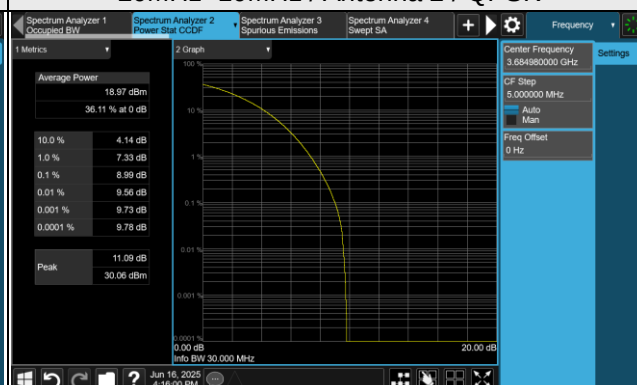
NR Band 48, Channel Bandwidth 20MHz+20MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334+638668	3560.01+3580.02	9.21	8.55	8.73	8.55	8.38	9.03
644668+646000	3670.02+3690	9.05	8.65	9.01	8.78	8.99	8.70
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334+638668	3560.01+3580.02	9.21	8.73	8.56	8.96	8.43	8.83
644668+646000	3670.02+3690	8.32	8.84	8.82	8.47	8.74	8.40

Spectrum Plot of Worst Value

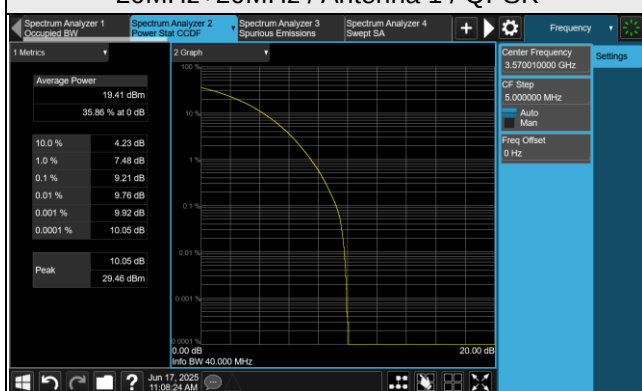
10MHz+20MHz / Antenna 1 / 256QAM



20MHz+10MHz / Antenna 2 / QPSK



20MHz+20MHz / Antenna 1 / QPSK



Mode A3

NR Band 48, Channel Bandwidth 10MHz+20MHz													
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637000+646000	3555+3690	8.98	8.58	9.06	8.81	9.07	8.71	9.51	8.77	9.13	8.57	8.82	8.67
639668+644000	3595.02+3660	8.89	8.85	8.90	8.73	8.90	8.93	8.91	8.56	8.91	8.94	8.94	8.50
641168+642502	3617.52+3637.53	8.98	8.69	8.97	8.74	8.86	8.56	9.00	8.55	8.66	8.82	8.81	8.76
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637000+646000	3555+3690	8.80	8.57	8.78	8.64	8.76	8.37	8.98	8.72	8.90	8.70	8.94	8.46
639668+644000	3595.02+3660	8.89	8.79	9.05	8.62	8.92	8.48	8.96	8.64	8.83	8.65	8.84	8.95
641168+642502	3617.52+3637.53	8.73	8.71	8.67	8.85	8.79	8.47	8.50	8.85	8.88	8.85	8.54	8.66

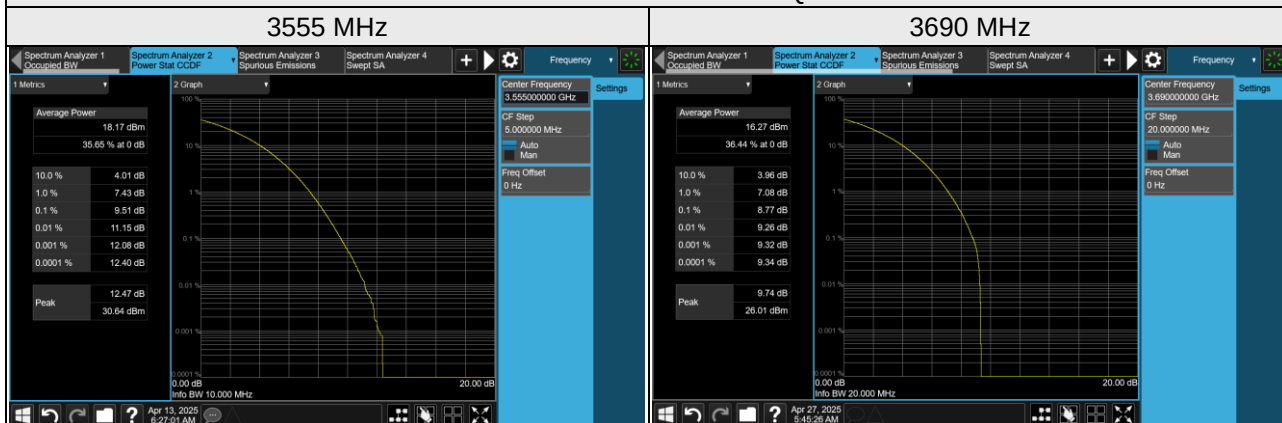
NR Band 48, Channel Bandwidth 20MHz+10MHz													
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+646332	3560.01+3694.98	9.02	8.76	8.82	8.89	8.67	8.84	9.02	8.76	8.82	8.89	8.67	8.84
639334+643668	3590.01+3655.02	8.49	8.54	8.44	8.64	8.65	8.56	8.56	8.79	8.44	8.94	8.87	8.60
640834+642168	3612.51+3632.52	8.52	8.56	8.65	8.61	8.77	8.75	8.67	8.83	8.31	8.71	8.52	8.71
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+646332	3560.01+3694.98	8.54	8.71	8.66	8.84	8.68	8.75	8.62	8.71	8.60	8.84	8.64	8.89
639334+643668	3590.01+3655.02	8.81	8.72	8.51	8.89	8.51	8.87	8.83	8.73	8.74	8.72	8.70	8.68
640834+642168	3612.51+3632.52	8.46	8.59	8.63	8.61	8.83	8.76	8.77	8.58	8.70	8.58	8.75	8.59

NR Band 48, Channel Bandwidth 20MHz+20MHz

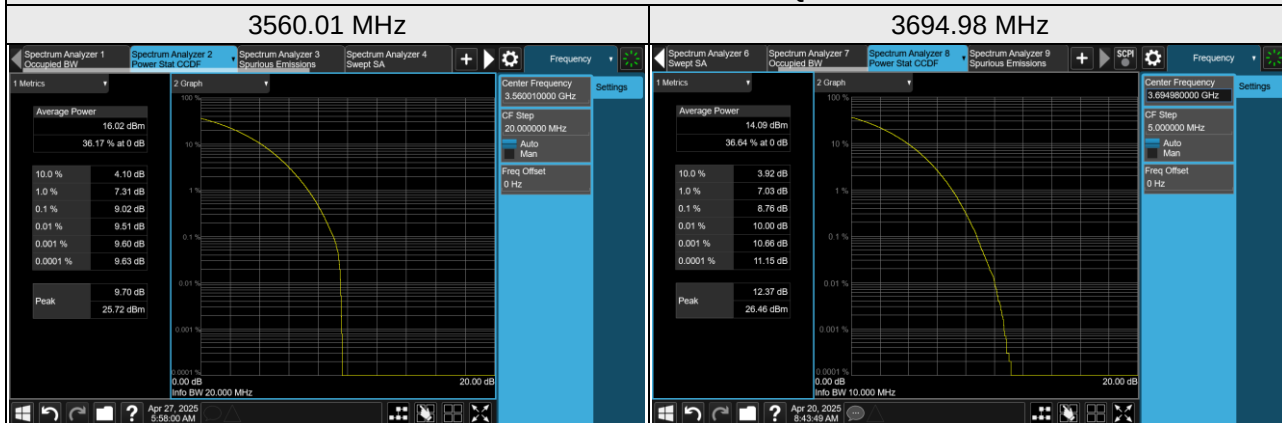
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646000	3560.01+ 3690	8.92	8.72	9.04	8.53	8.80	8.42	8.65	8.72	8.75	8.46	8.92	8.24
639668+ 643668	3595.02+ 3655.02	8.73	8.92	8.72	8.47	8.63	8.75	8.43	8.91	8.43	8.79	8.61	8.57
640834+ 642502	3612.51+ 3637.53	8.49	8.82	8.65	8.78	8.68	9.04	8.70	8.87	8.73	8.75	8.52	8.51
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646000	3560.01+ 3690	8.61	8.34	8.76	8.38	8.72	8.58	8.55	8.46	9.12	8.29	8.71	8.31
639668+ 643668	3595.02+ 3655.02	8.53	8.64	8.83	8.59	8.52	8.70	8.86	8.81	8.55	8.77	8.73	8.74
640834+ 642502	3612.51+ 3637.53	8.53	8.50	8.56	8.63	8.52	8.67	8.60	8.63	8.65	8.58	8.66	8.82

Spectrum Plot of Worst Value

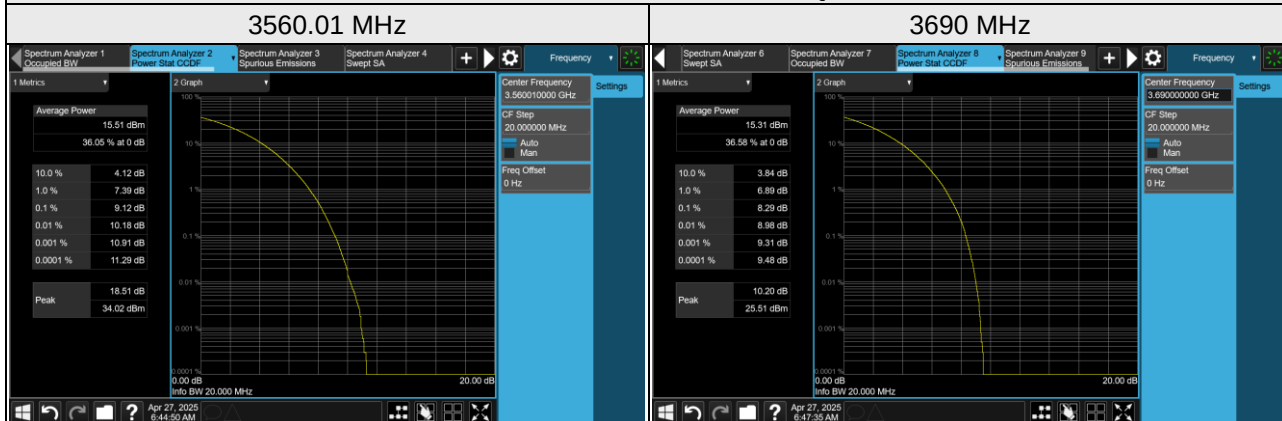
10MHz+20MHz / Antenna 2 / QPSK



20MHz+10MHz / Antenna 1 / QPSK



20MHz+20MHz / Antenna 4 / 64QAM

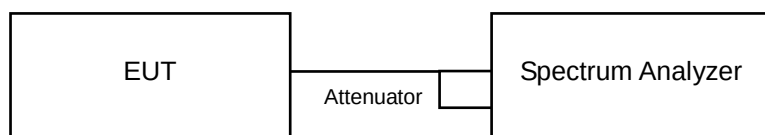


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

Power of any emissions outside the Fundamental	Limit
Within 0-10MHz above the Assigned Channel	-13 dBm/MHz
Within 0-10MHz below the Assigned Channel	
Greater than 10MHz above the Assigned Channel	-25 dBm/MHz
Greater than 10MHz below the Assigned Channel	
Power of any emission below 3530MHz	-40 dBm/MHz
Power of any emission above 3720MHz	

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

- a. Measurement refer to ANSI C63.26 section 5.7.
- b. All measurements were done at 3 channels: low, middle and high operational frequency range.
- c. Measuring frequency range is from 9 kHz up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. 20 dB attenuation pad is connected with spectrum.
- d. The fundamental frequency above 1 GHz, the spectrum set RBW = 1 MHz, VBW = 3 MHz, Detector = Average.
- e. The fundamental frequency below 1 GHz, the spectrum set RBW $\geq$ 100 kHz, VBW $\geq$ 3 x RBW, Detector = Average.
- f. Measuring frequency band edge, narrow RBW (no less than 1% of the OBW) is used for conducted emission measurement.
- g. For the emissions measurement method, certain channel BW modes demonstrate compliance by integrating with the smaller RBW allowed by the rule.
For example: Where Reference RBW = 1 MHz and a smaller RBW = 100 kHz is used, worst-case integrated BW power = [Max Measured Value (dBm) with RBW = 100 kHz] + $10 \cdot \log(1000/100)$. To compensate for this integration before comparison to the value, the adjusted reference level offset was increase by 10 dB accordingly.
- h. The device has MIMO function, so the limit of conducted spurious emissions need to be measurement add $10\log(\text{Numbers}_{\text{ANT}})$ according to FCC KDB 662911 D01 guidance. Therefore, the $10\log(\text{Numbers}_{\text{ANT}})$ value is added to the spectrum Ref. level offset during testing. For example, the band edge and conducted spurious emission plots for the MIMO (4TX) WWAN bands show that a reference level offset of 17.02 dB is used (15 dB includes attenuation and cable loss + $10 \cdot \log(4)$ to account for MIMO WWAN bands reference level = $11 + 6.02 = 17.02$ dB).
- i. Record the maximum power value test plot.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

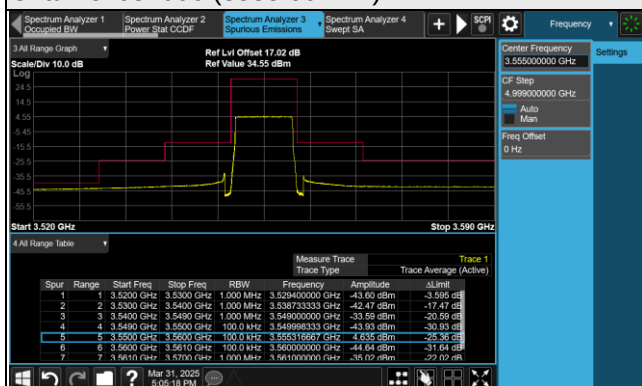
4.7.7 Test Results

Input Power:	12 Vdc	Environmental Conditions:	22°C, 73% RH	Tested By:	Noah Chang
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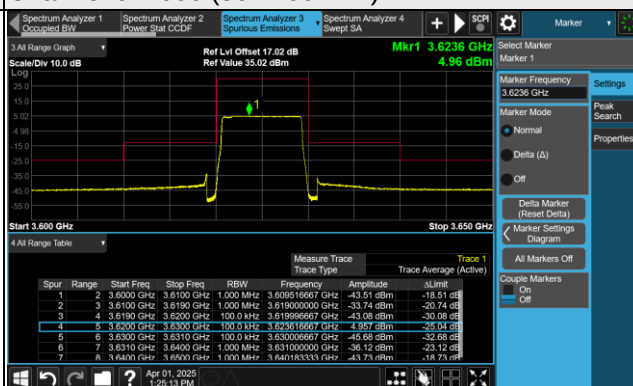
Mode A1 Antenna 1

NR Band 48, Channel Bandwidth 10MHz

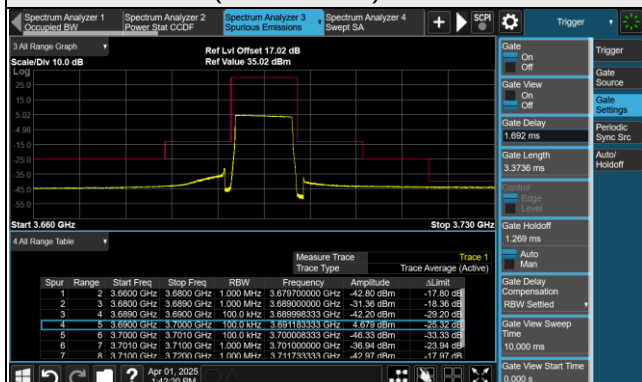
Channel 637000 (3555.00MHz)



Channel 641666 (3624.99MHz)



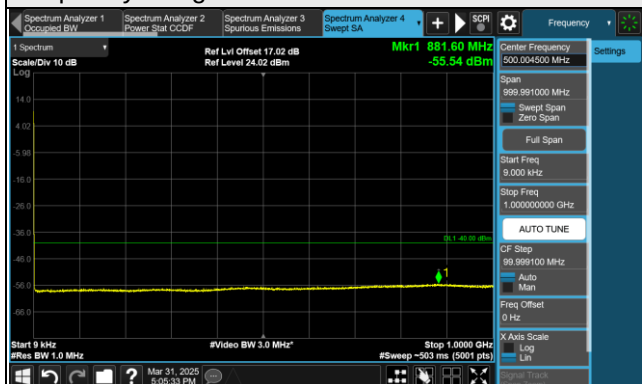
Channel 646332 (3694.98MHz)



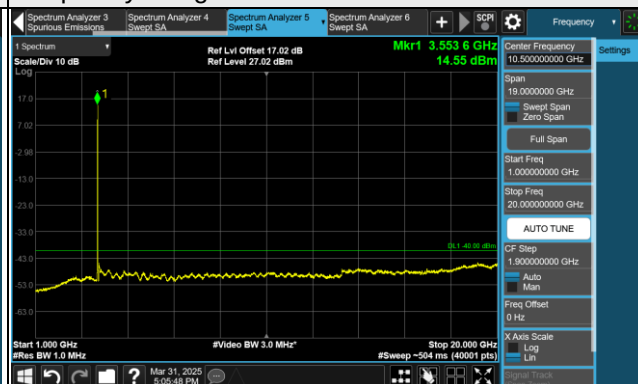
NR Band 48, Channel Bandwidth 10MHz

Channel 637000 (3555.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

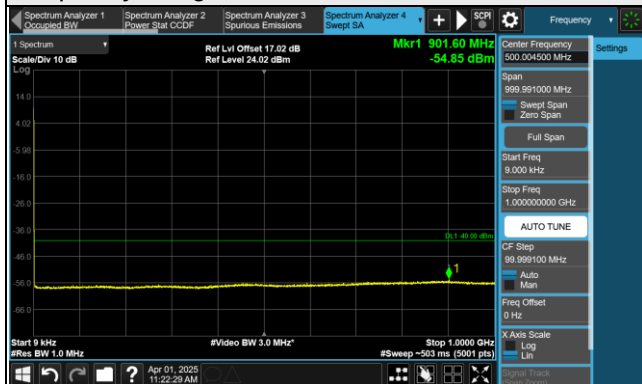


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

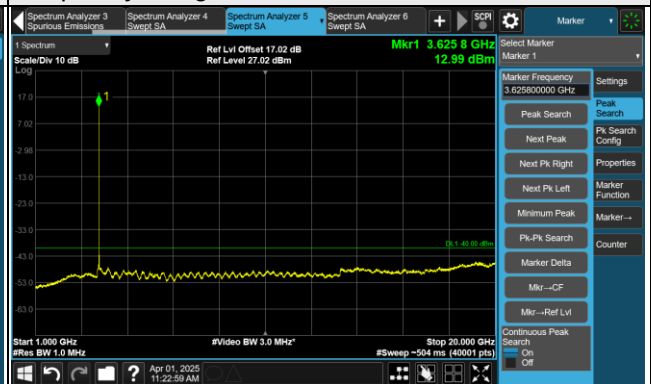
NR Band 48, Channel Bandwidth 10MHz

Channel 641666 (3624.99MHz)

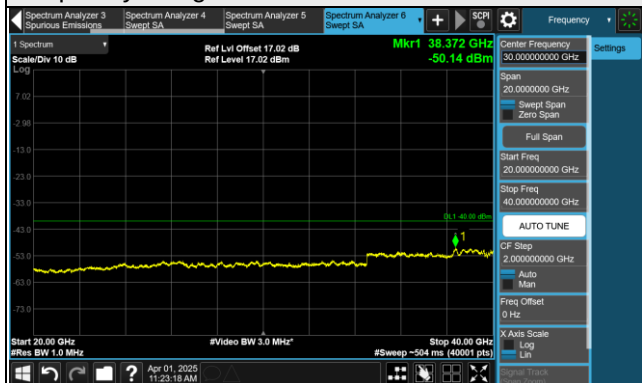
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

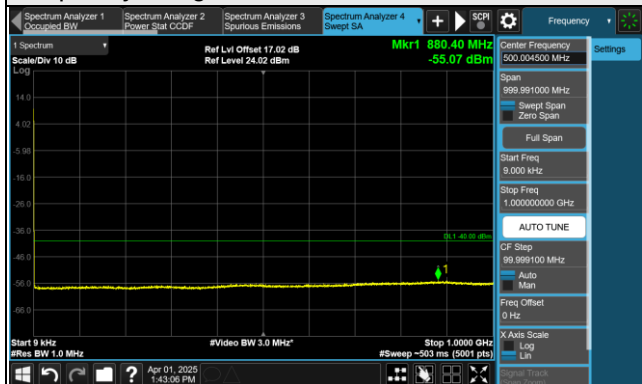


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

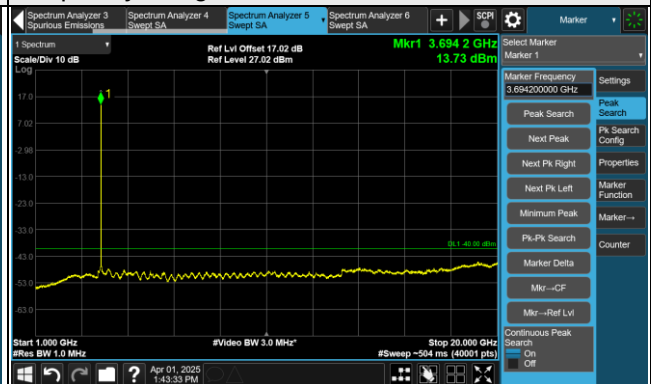
NR Band 48, Channel Bandwidth 10MHz

Channel 646332 (3694.98MHz)

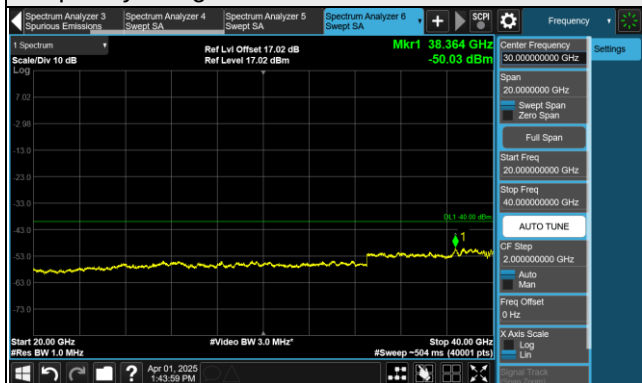
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



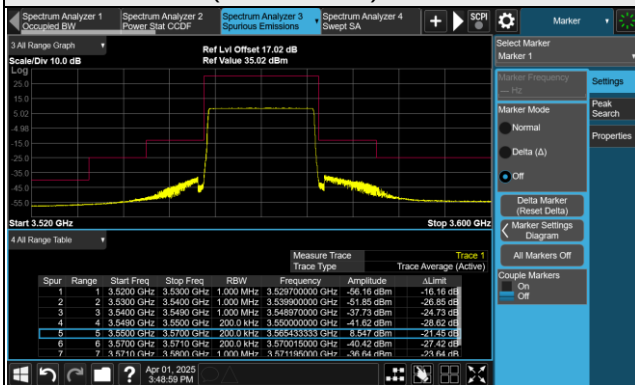
Frequency Range : 20GHz ~ 40GHz



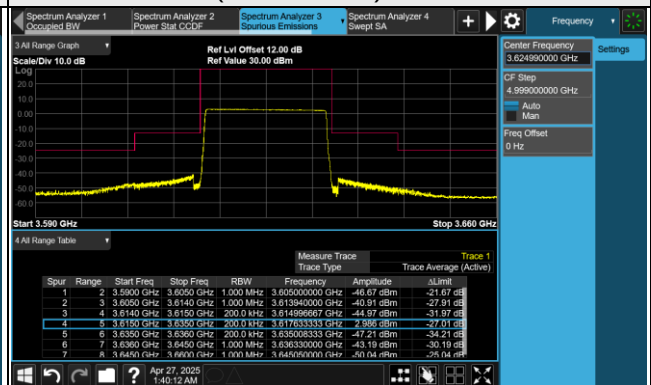
Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 20MHz

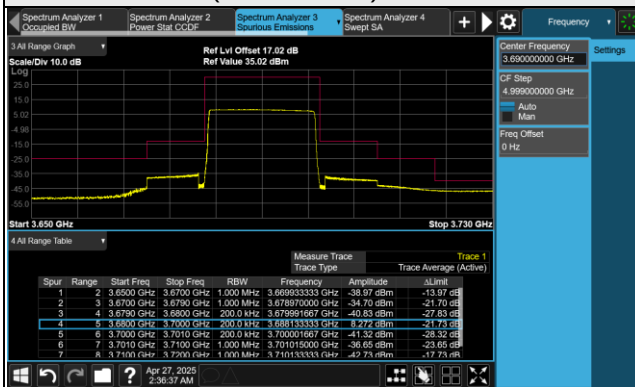
Channel 637334 (3560.01MHz)



Channel 641666 (3624.99MHz)



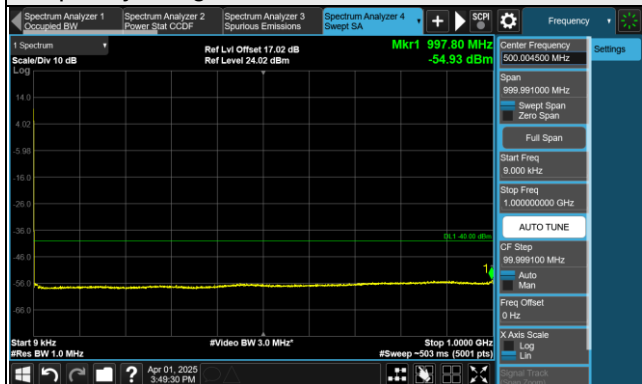
Channel 646000 (3690.00MHz)



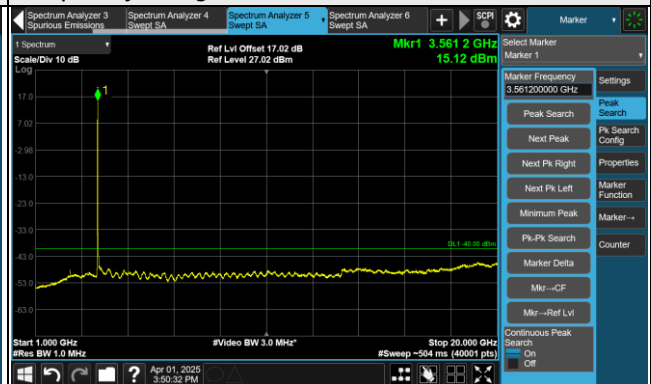
NR Band 48, Channel Bandwidth 20MHz

Channel 637334 (3560.01MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz



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

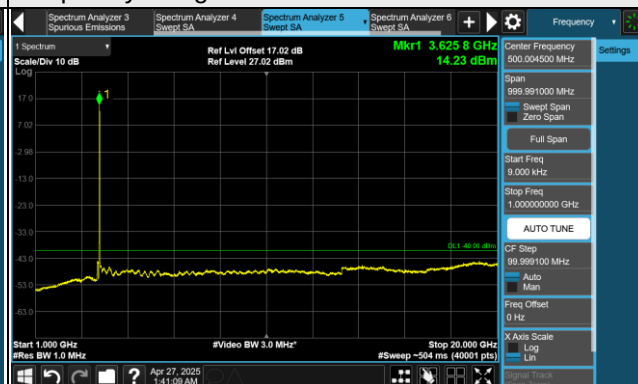
NR Band 48, Channel Bandwidth 20MHz

Channel 641666 (3624.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

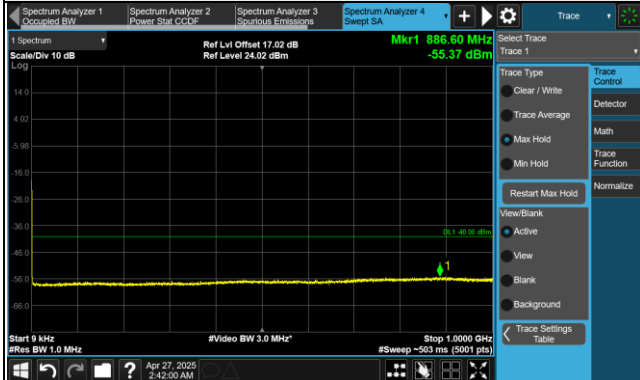


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

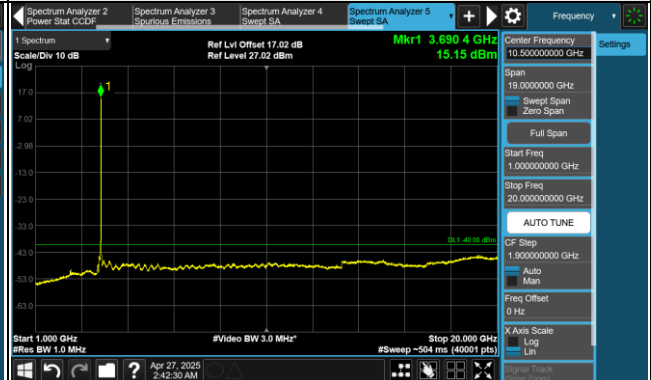
NR Band 48, Channel Bandwidth 20MHz

Channel 646000 (3690.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



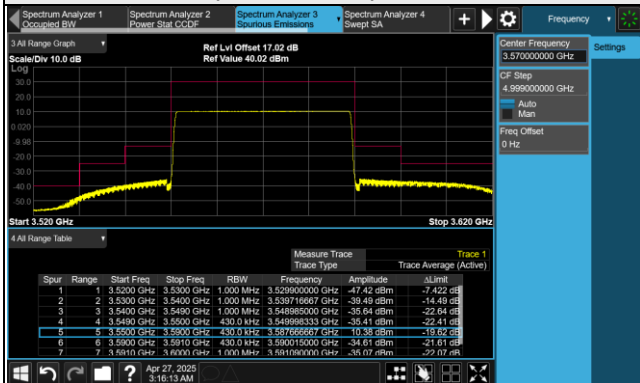
Frequency Range : 20GHz ~ 40GHz



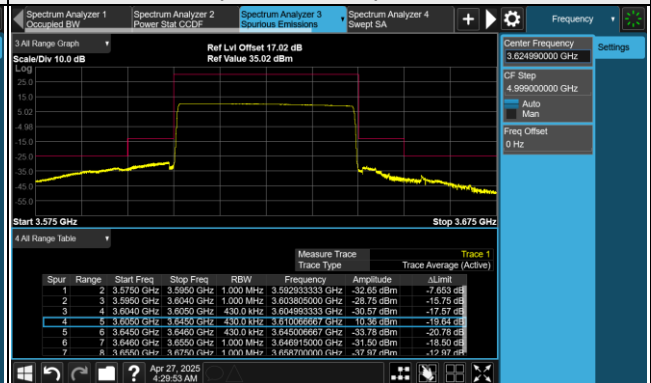
Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 40MHz

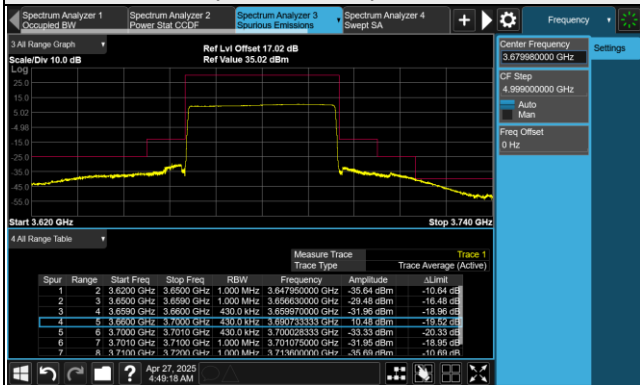
Channel 638000 (3570.00MHz)



Channel 641666 (3624.99MHz)



Channel 645332 (3679.98MHz)



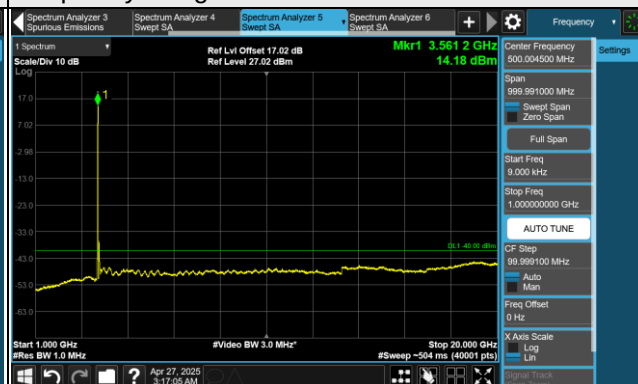
NR Band 48, Channel Bandwidth 40MHz

Channel 638000 (3570.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

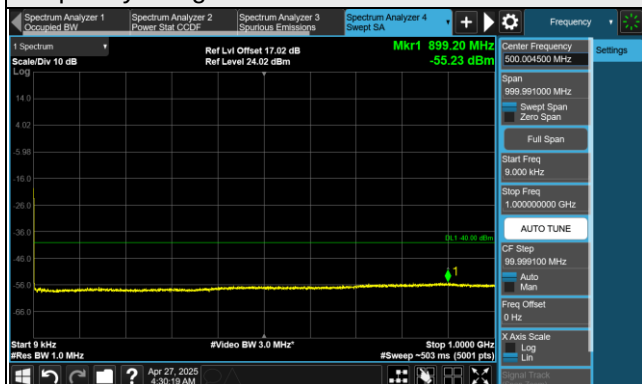


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

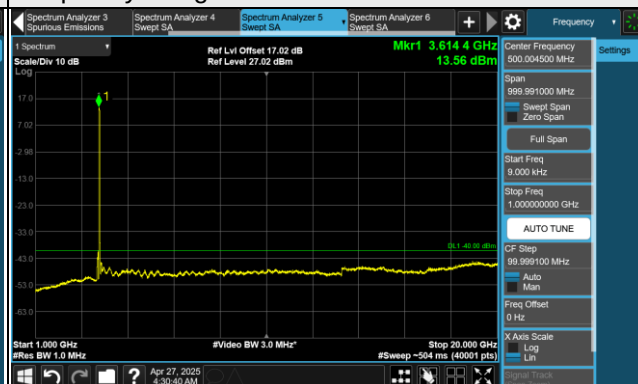
NR Band 48, Channel Bandwidth 40MHz

Channel 641666 (3624.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

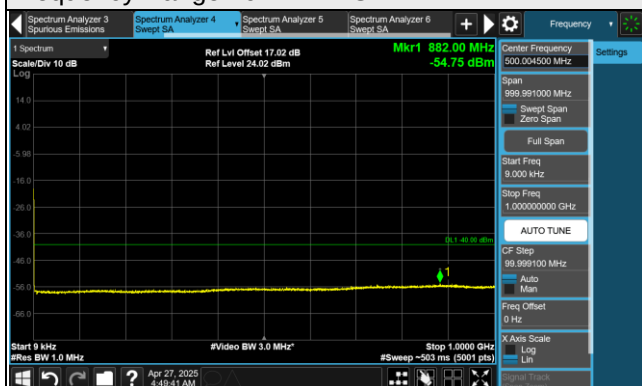


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

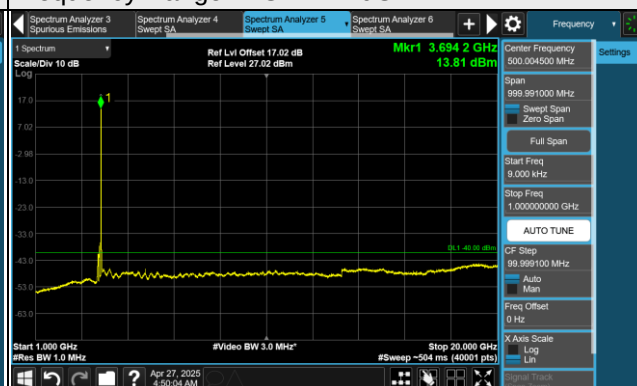
NR Band 48, Channel Bandwidth 40MHz

Channel 645332 (3679.98MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

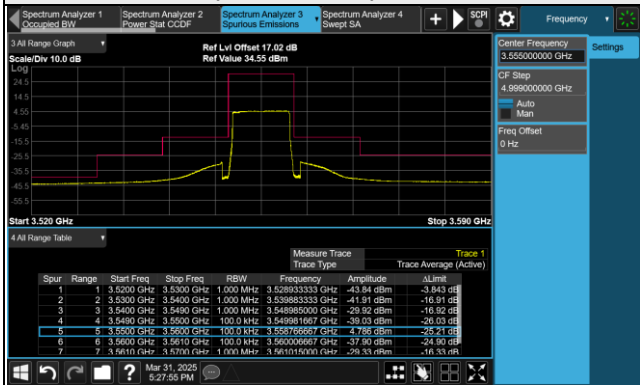


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

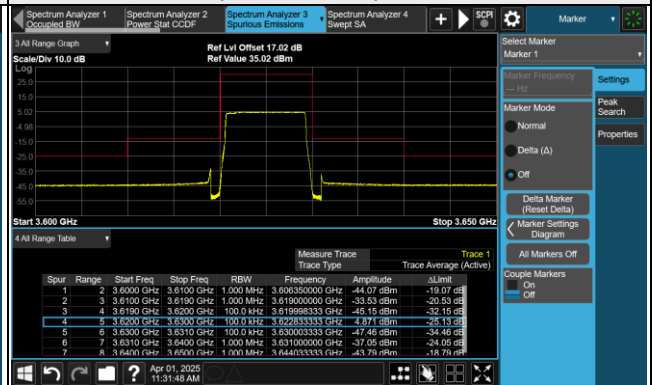
Antenna 2

NR Band 48, Channel Bandwidth 10MHz

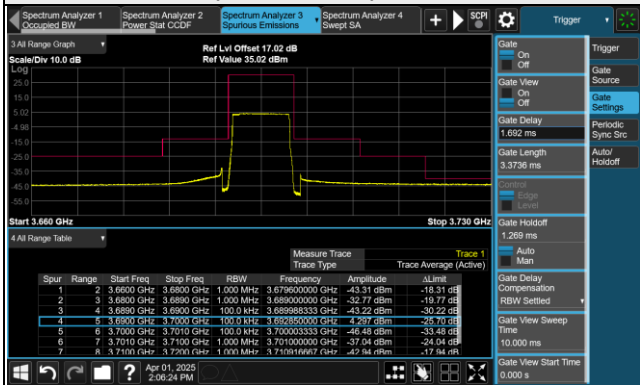
Channel 637000 (3555.00MHz)



Channel 641666 (3624.99MHz)



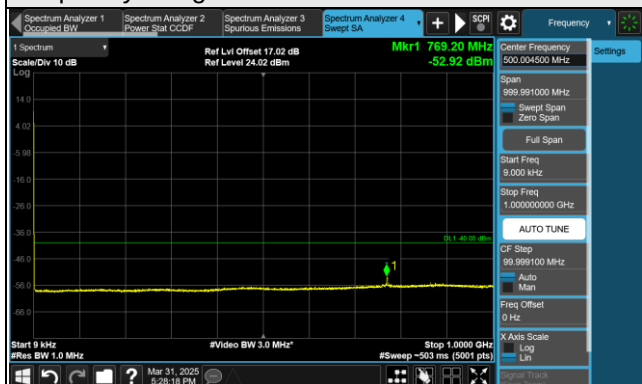
Channel 646332 (3694.98MHz)



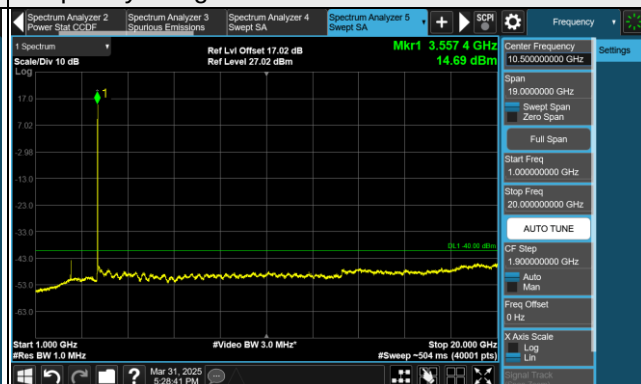
NR Band 48, Channel Bandwidth 10MHz

Channel 637000 (3555.00MHz)

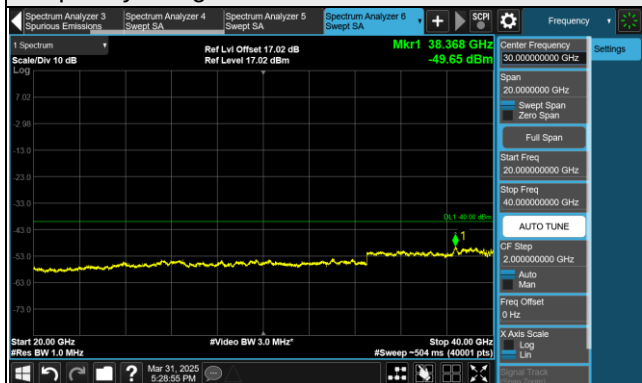
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

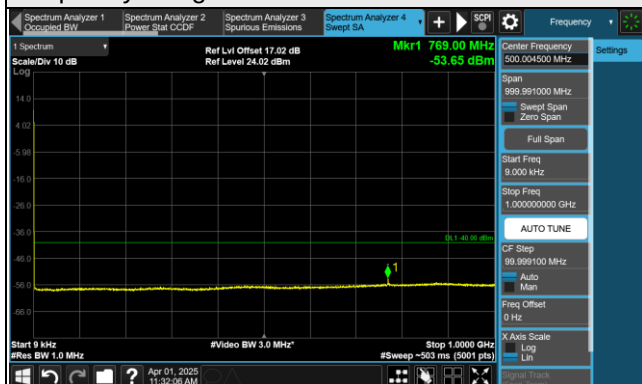


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

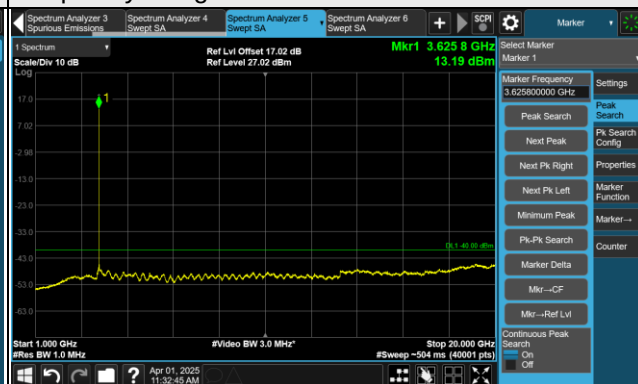
NR Band 48, Channel Bandwidth 10MHz

Channel 641666 (3624.99MHz)

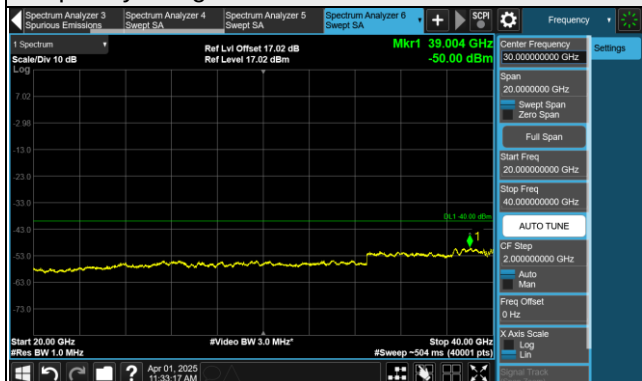
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

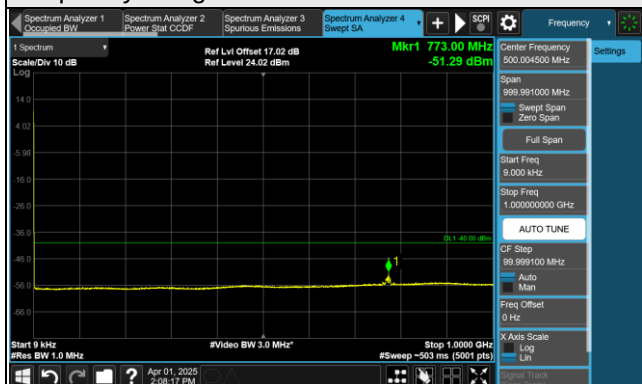


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

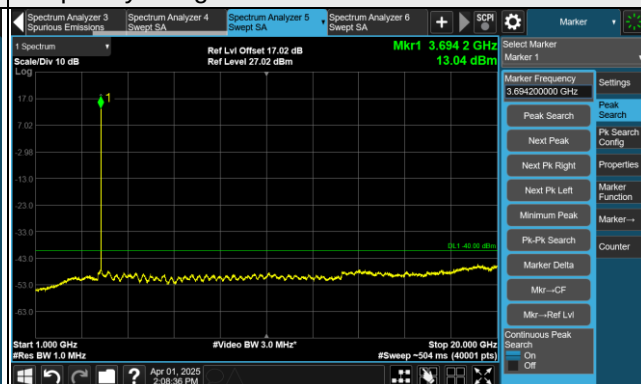
NR Band 48, Channel Bandwidth 10MHz

Channel 646332 (3694.98MHz)

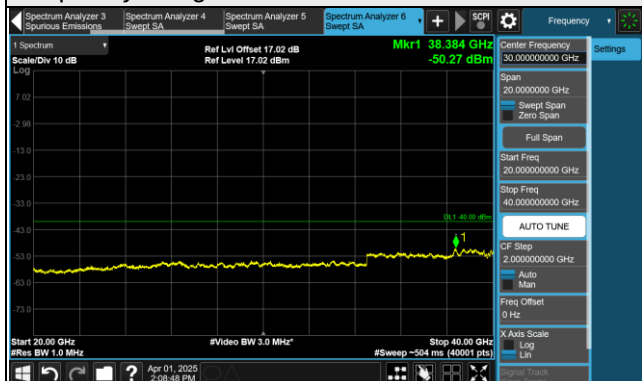
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



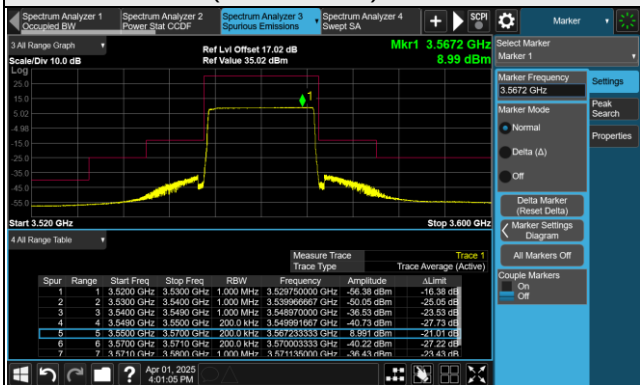
Frequency Range : 20GHz ~ 40GHz



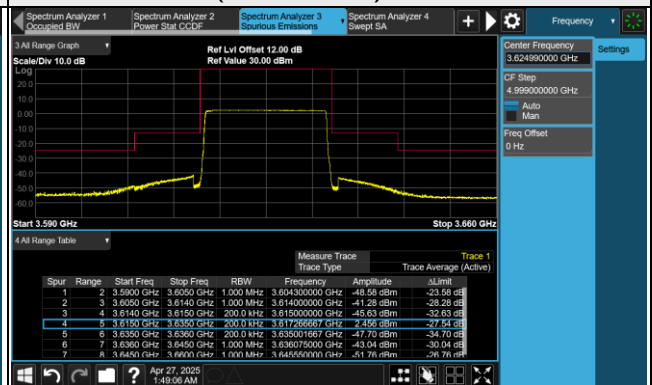
Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 20MHz

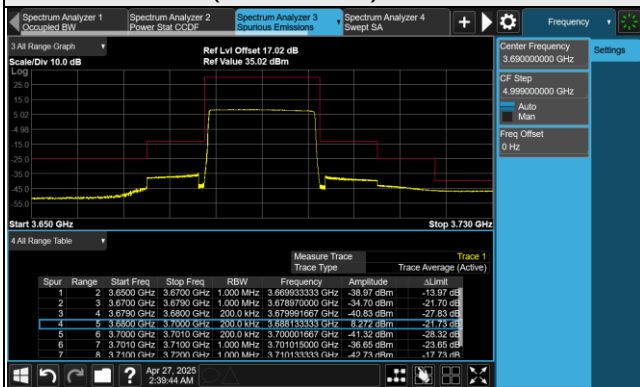
Channel 637334 (3560.01MHz)



Channel 641666 (3624.99MHz)



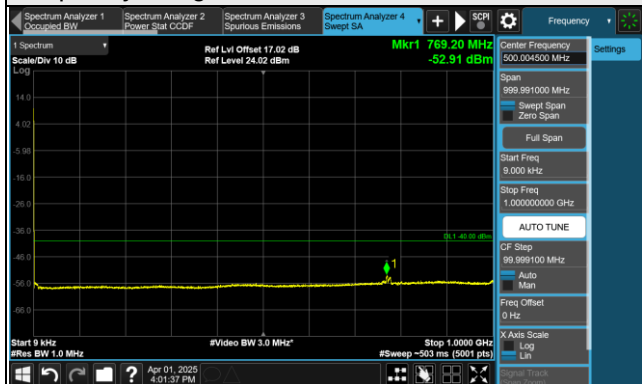
Channel 646000 (3690.00MHz)



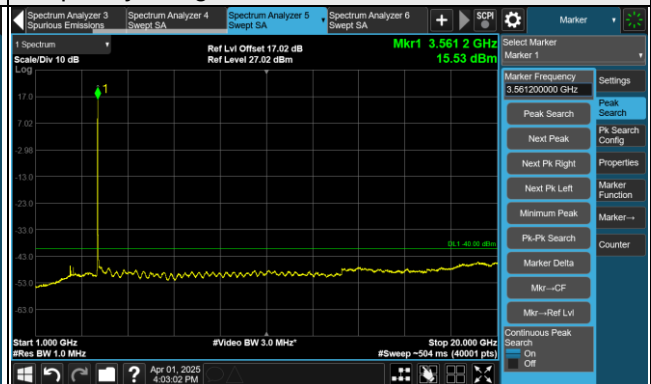
NR Band 48, Channel Bandwidth 20MHz

Channel 637334 (3560.01MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

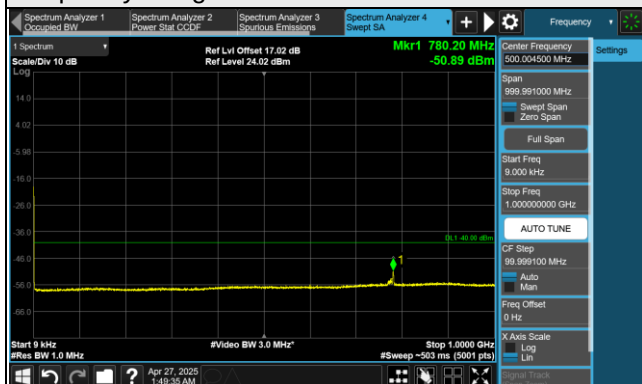


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

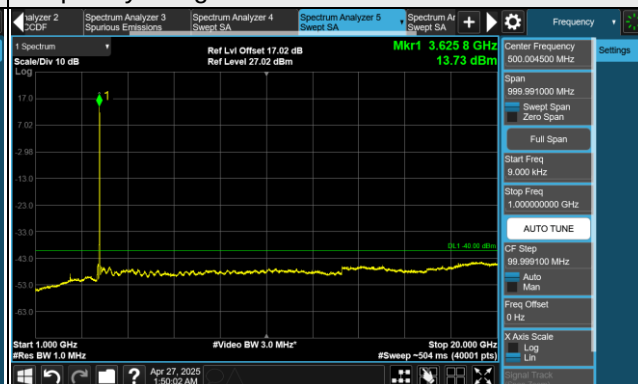
NR Band 48, Channel Bandwidth 20MHz

Channel 641666 (3624.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



Frequency Range : 20GHz ~ 40GHz

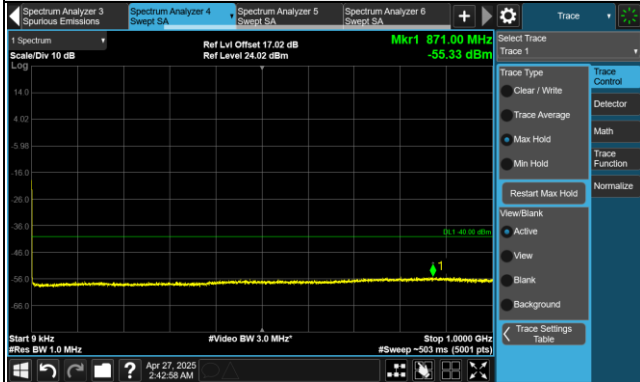


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

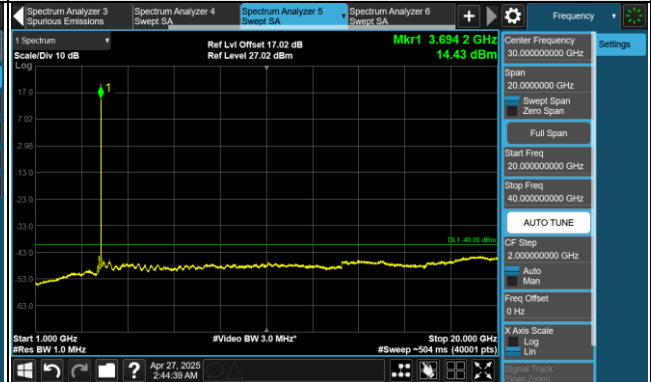
NR Band 48, Channel Bandwidth 20MHz

Channel 646000 (3690.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 20GHz



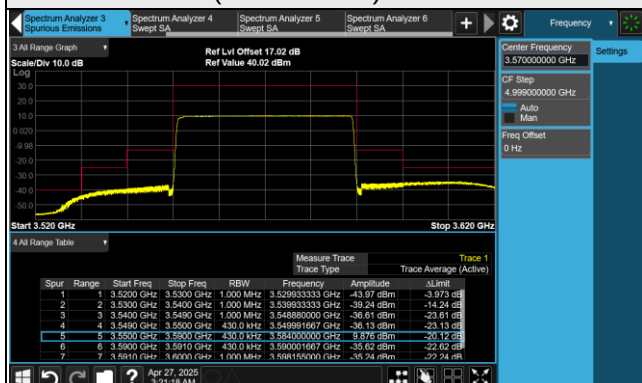
Frequency Range : 20GHz ~ 40GHz



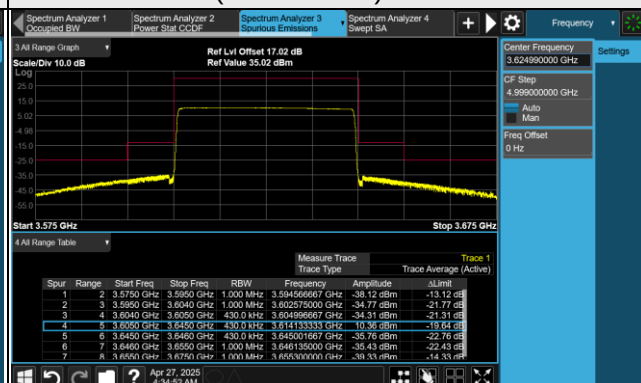
Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 40MHz

Channel 638000 (3570.00MHz)



Channel 641666 (3624.99MHz)



Channel 645332 (3679.98MHz)

