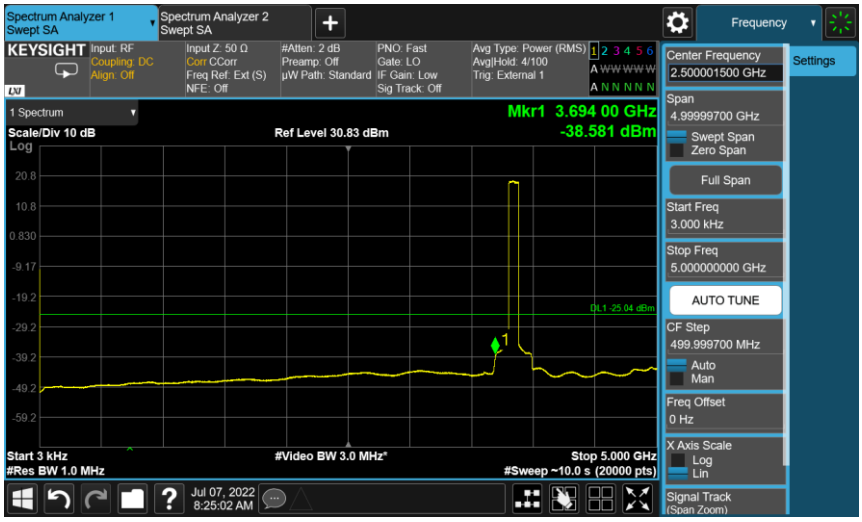
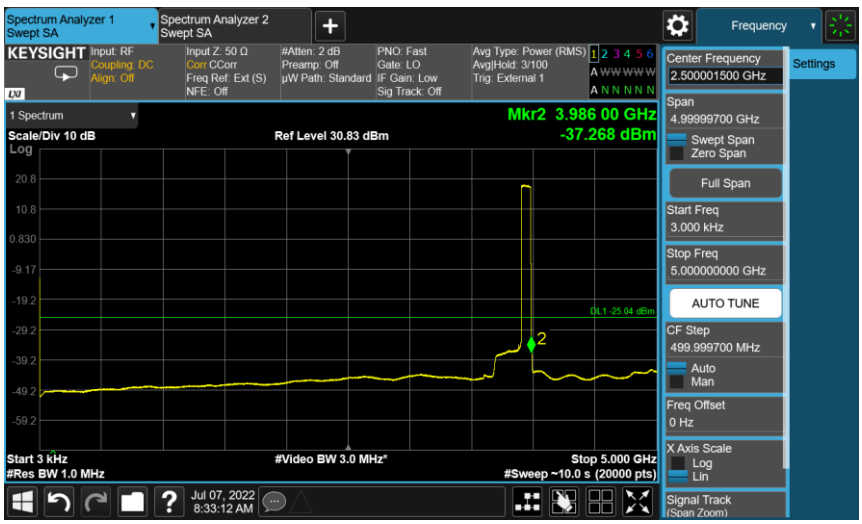
Port 10, Channel Position M



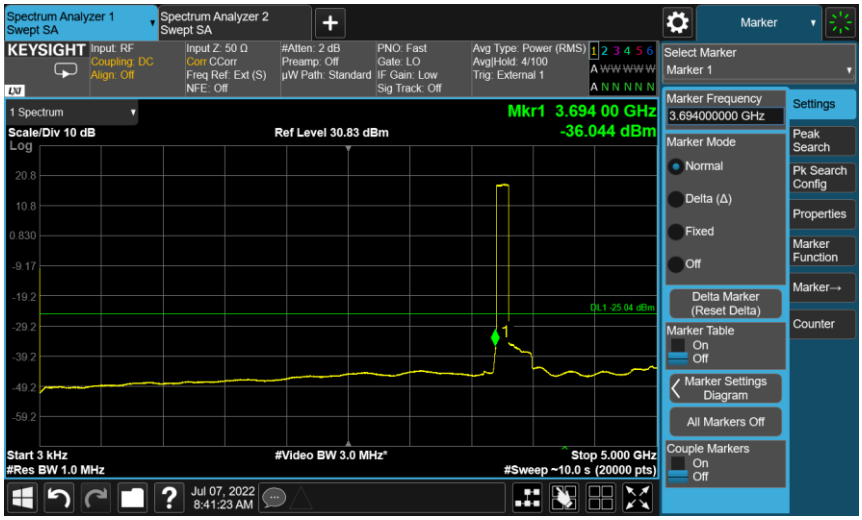
Port 10, Channel Position T



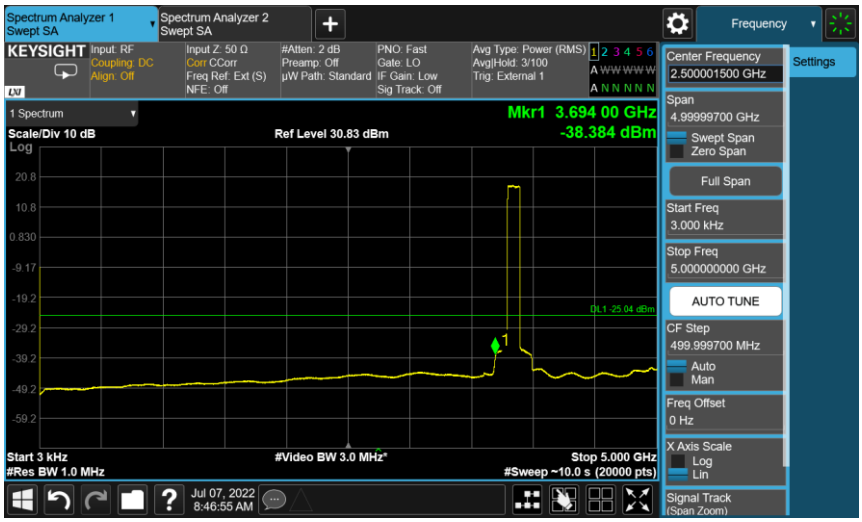
Configuration NR-MIMO-1C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
100.0 MHz	1.0	-25.04

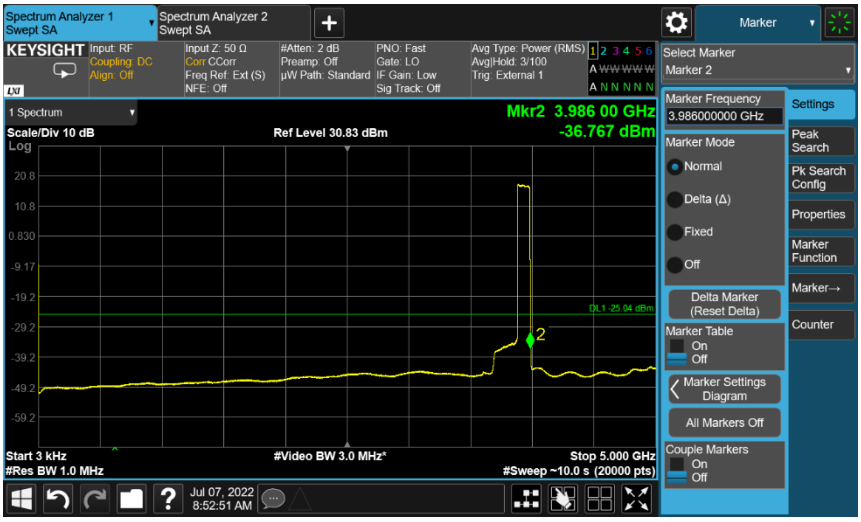
Port 10, Channel Position B

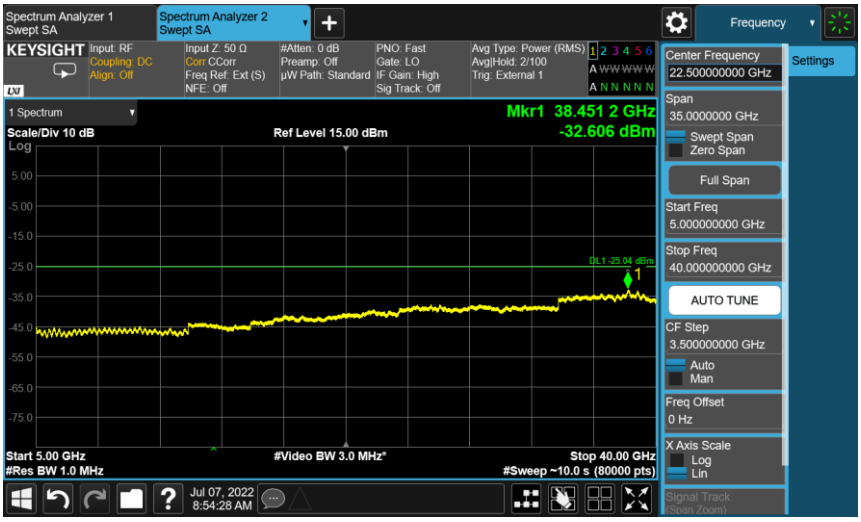


Port 10, Channel Position M



Port 10, Channel Position T



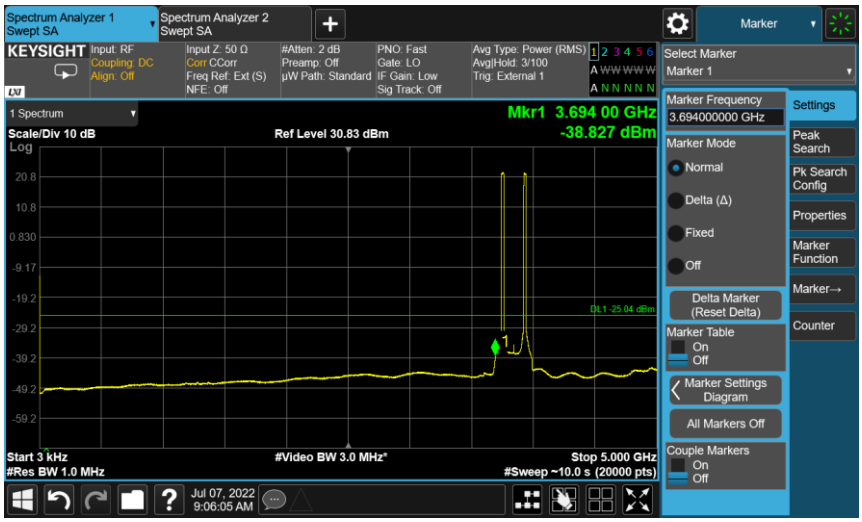


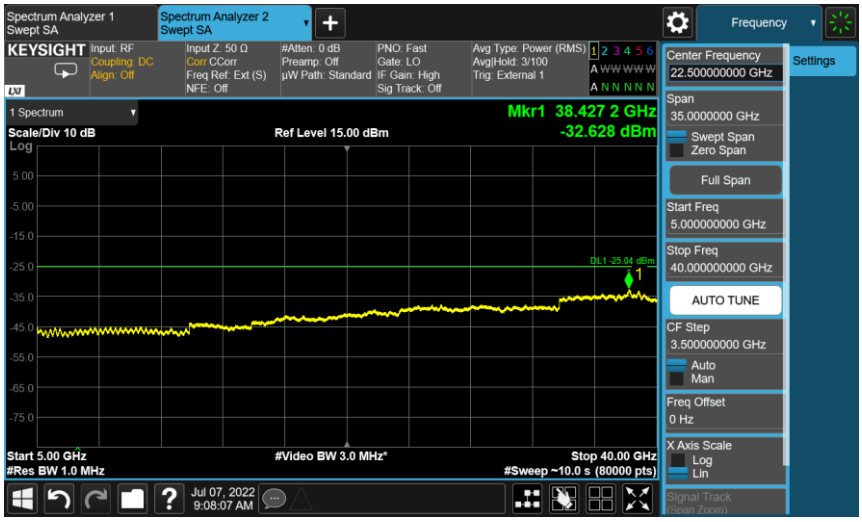
Configuration NR-MIMO-2C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
20.0 MHz	1.0	-25.04

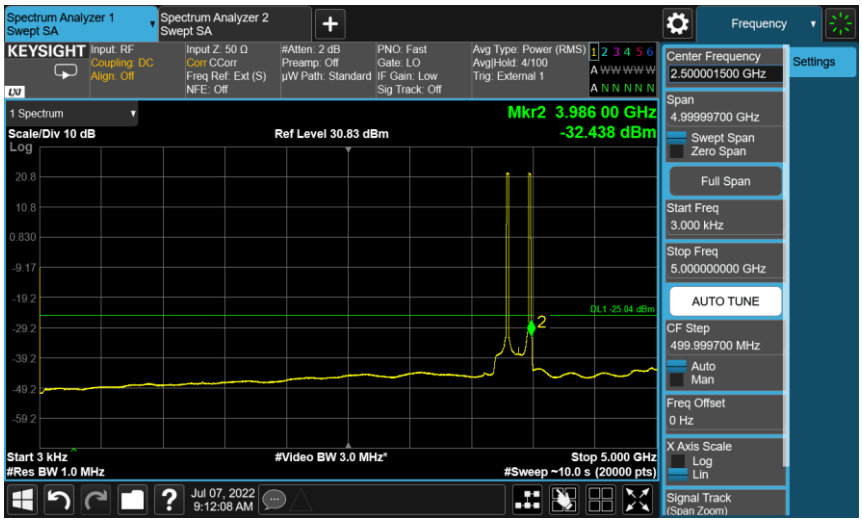
Port 10, Channel Position B

Port 10, Channel Position M





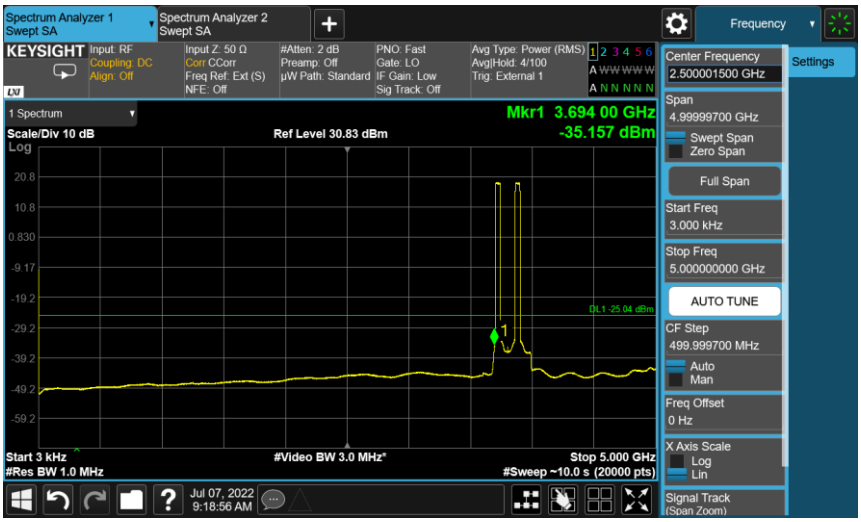
Port 10, Channel Position T



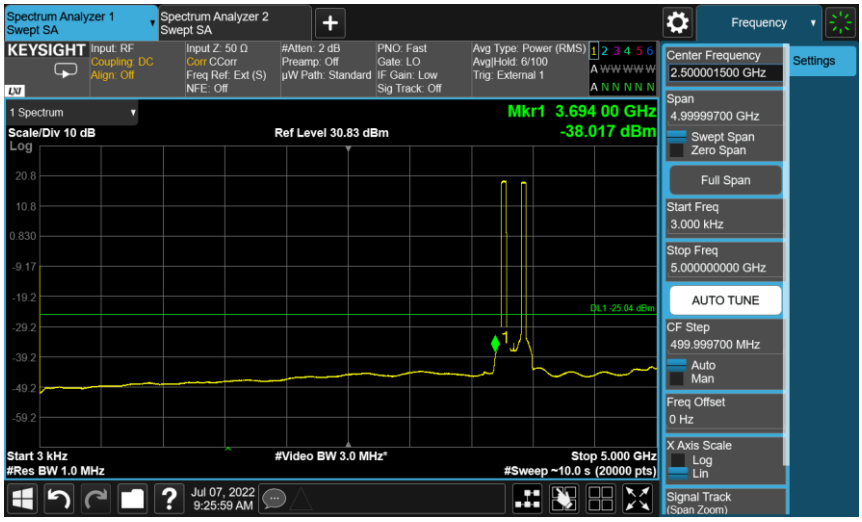
Configuration NR-MIMO-2C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
40.0 MHz	1.0	-25.04

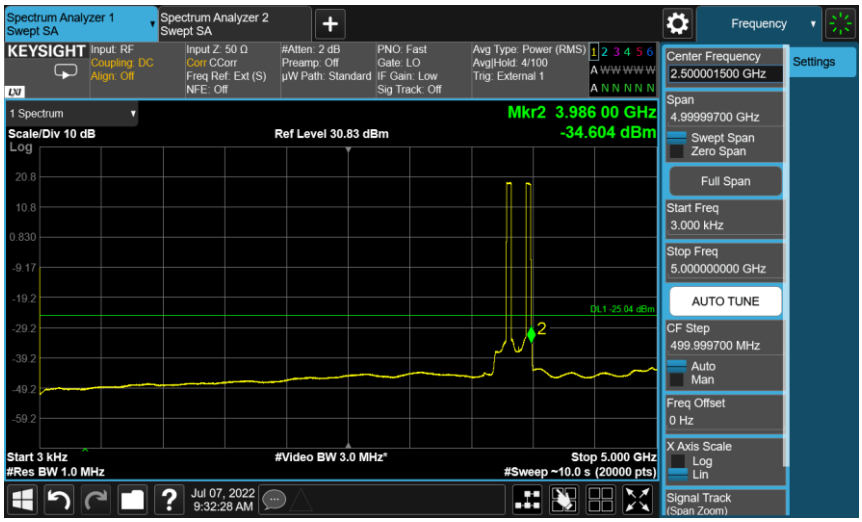
Port 10, Channel Position B

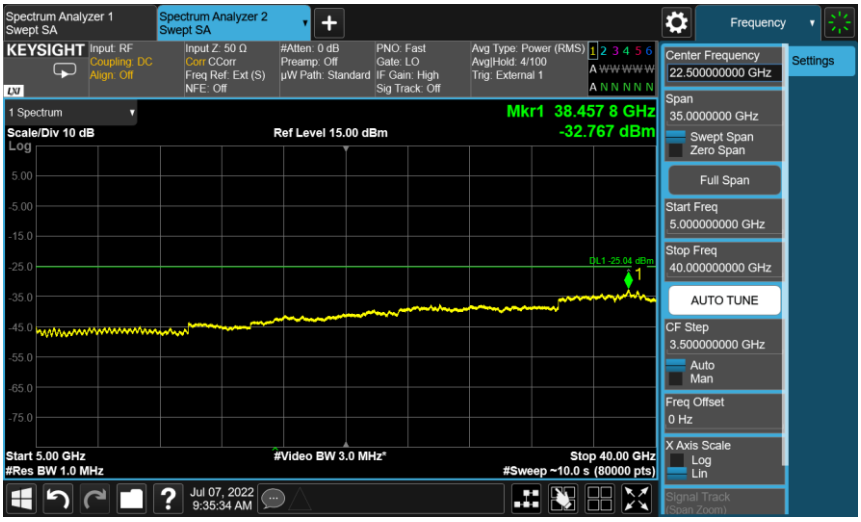


Port 10, Channel Position M



Port 10, Channel Position T

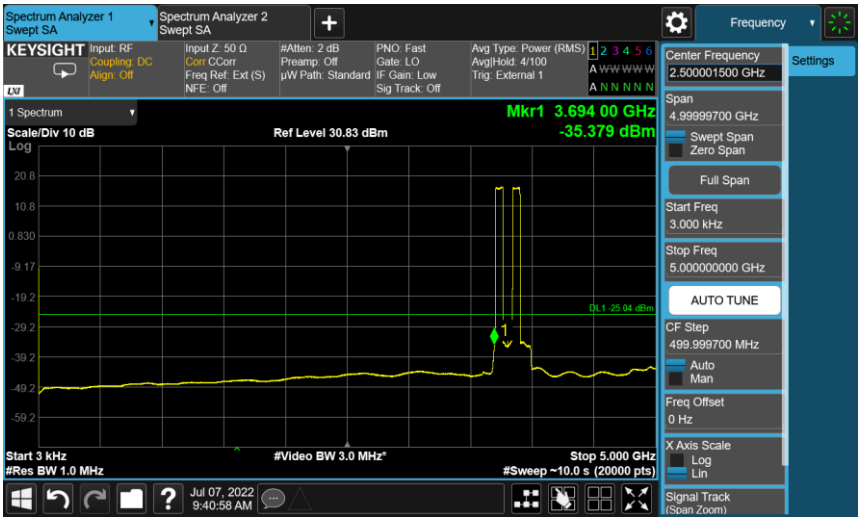


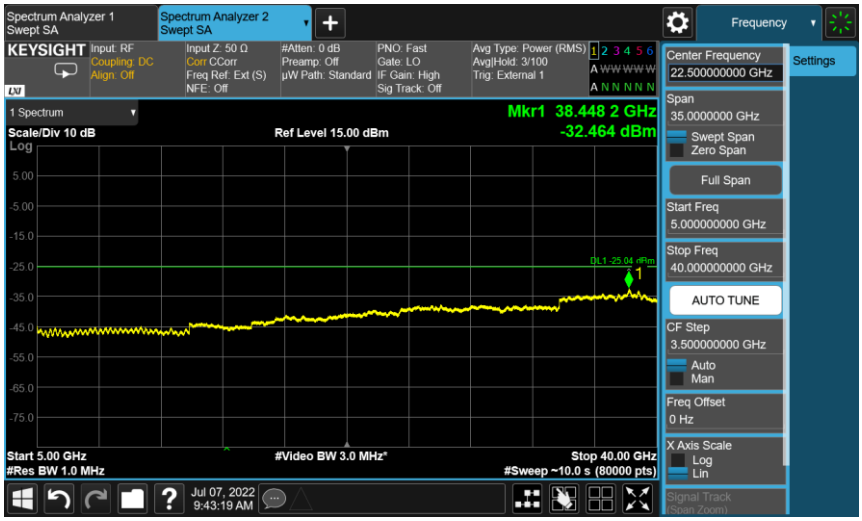


Configuration NR-MIMO-2C, 256QAM

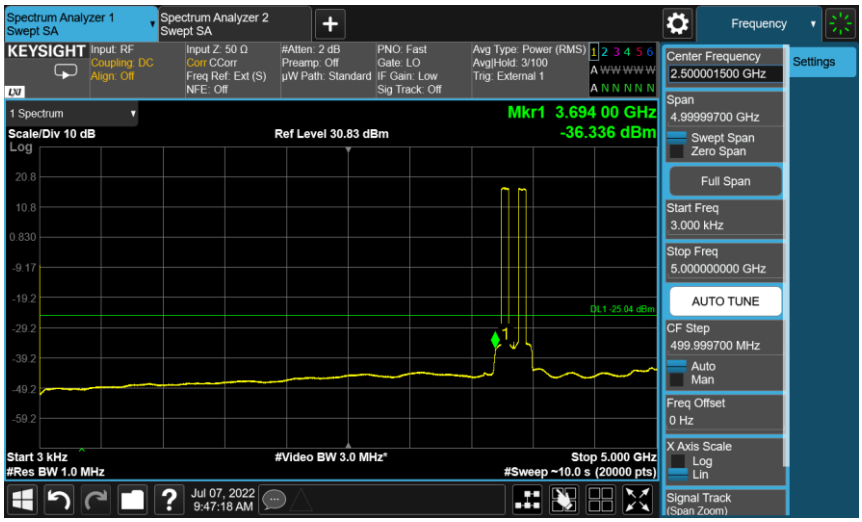
Channel Bandwidth	RBW (MHz)	Limit (dBm)
60.0 MHz	1.0	-25.04

Port 10, Channel Position B

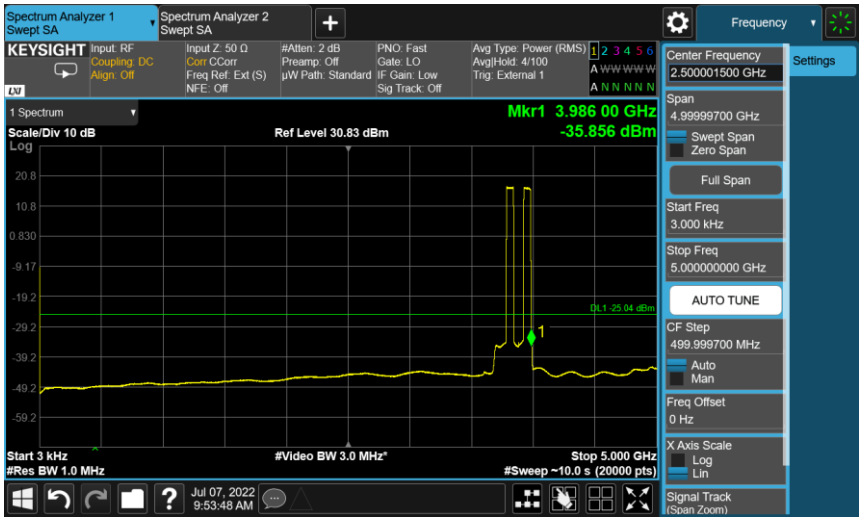




Port 10, Channel Position M



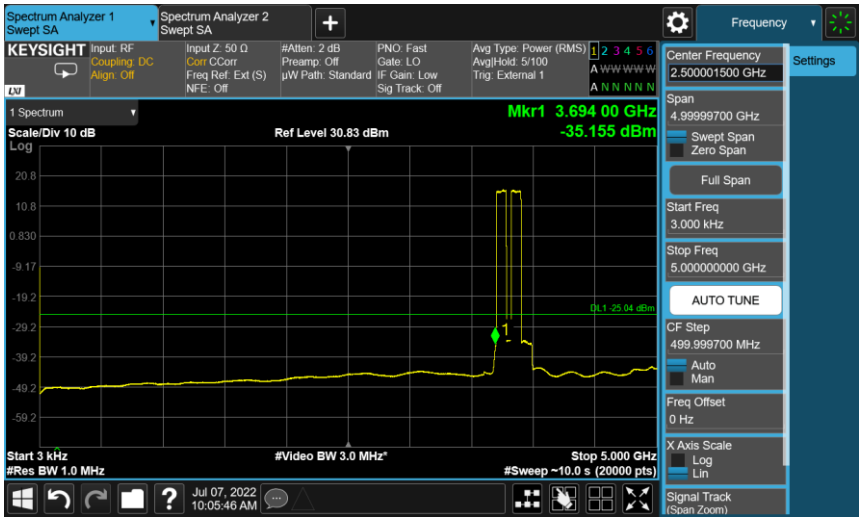
Port 10, Channel Position T



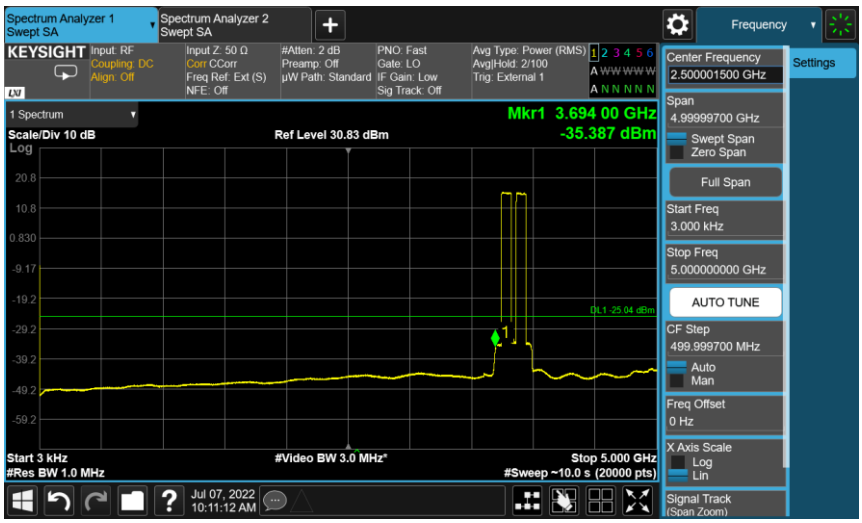
Configuration NR-MIMO-2C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
80.0 MHz	1.0	-25.04

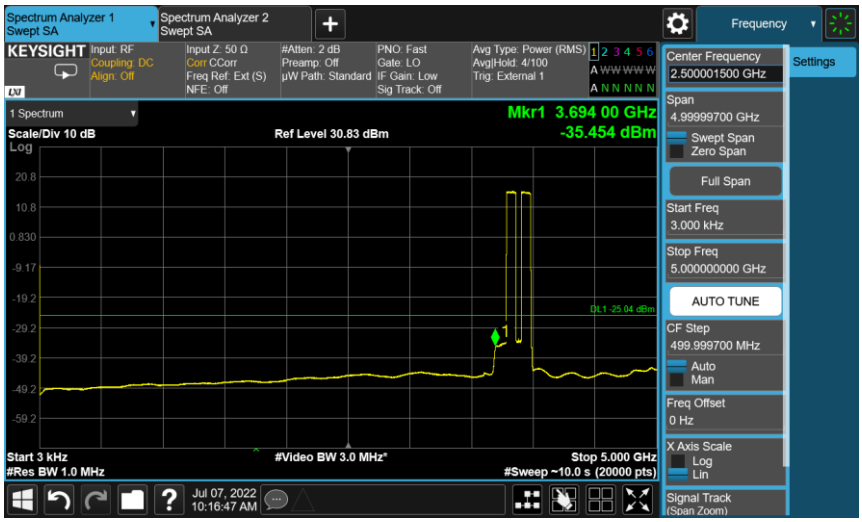
Port 10, Channel Position B



Port 10, Channel Position M



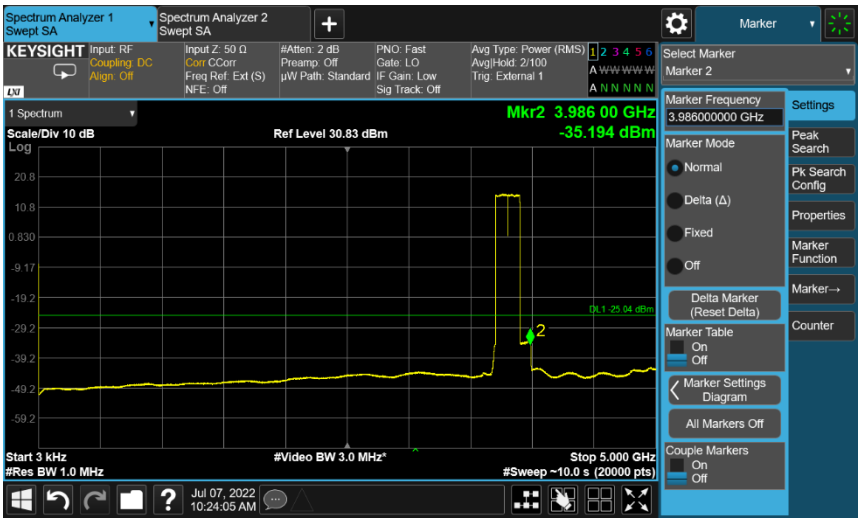
Port 10, Channel Position T



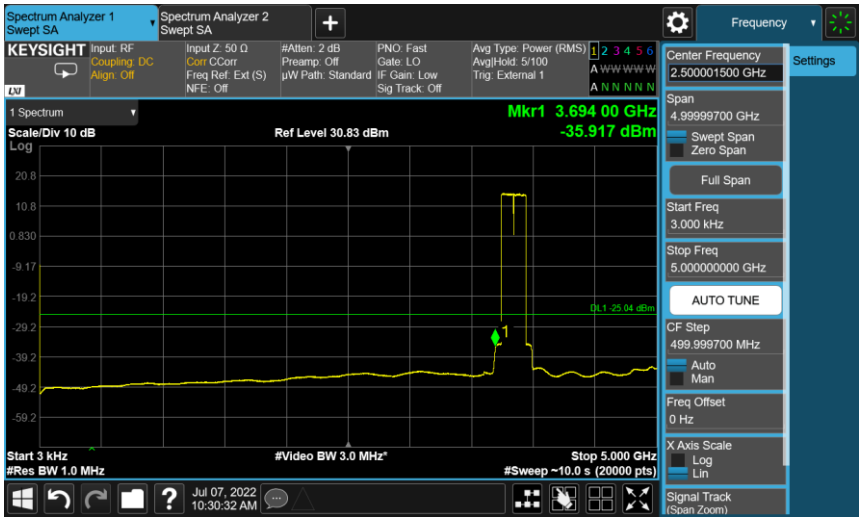
Configuration NR-MIMO-2C, 256QAM

Channel Bandwidth	RBW (MHz)	Limit (dBm)
100.0 MHz	1.0	-25.04

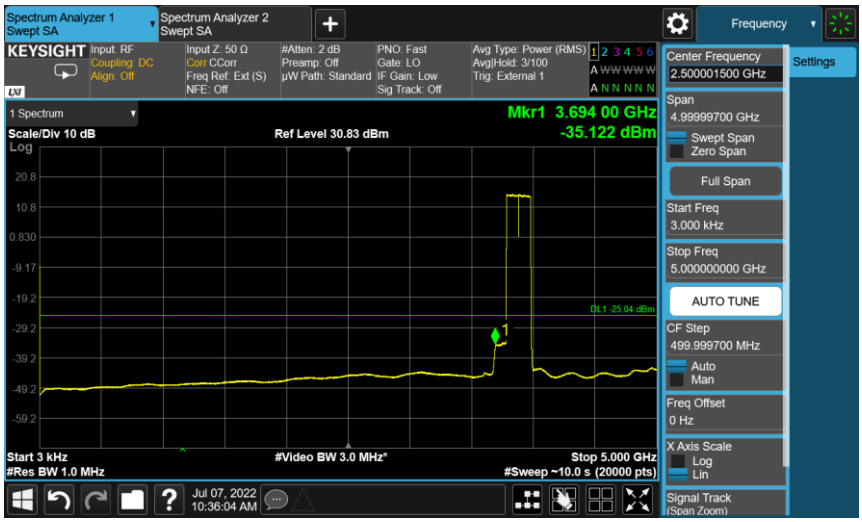
Port 10, Channel Position B



Port 10, Channel Position M



Port 10, Channel Position T



A.5 Radiated Spurious Emission

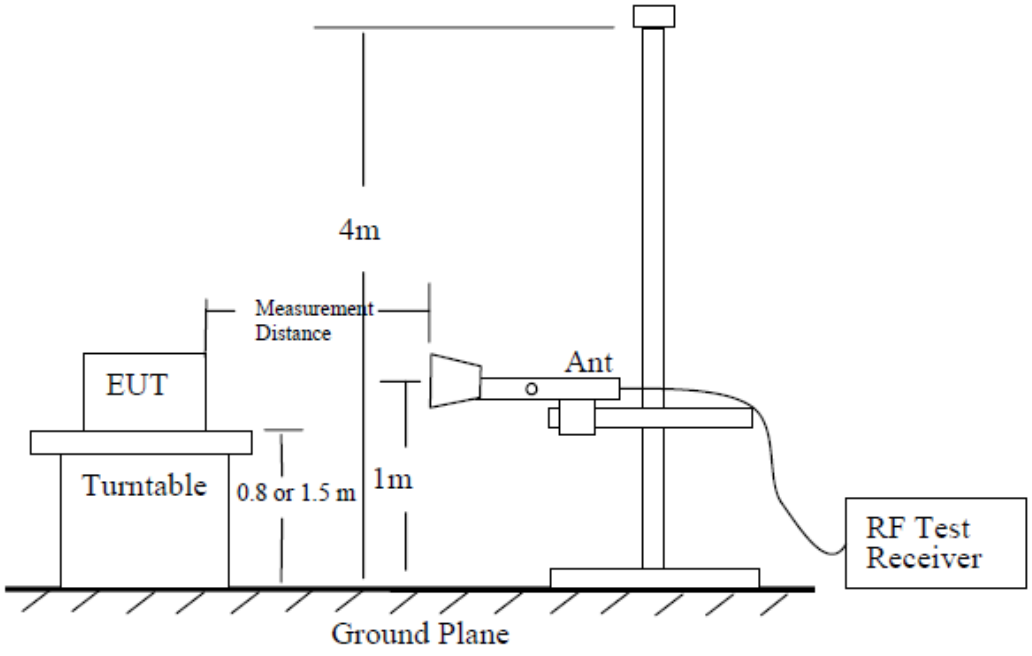
A.5.1 Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 27, Clause 27.53(l)

A.2.1 Measurement Method

The measurements procedures in C63.26 are used.
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The procedure of radiated spurious emissions is as follows:
Using the test configuration as follow, measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits.



The emission characteristics of the EUT can be identified from the pre-scan measurement information.

Exploratory radiated measurements (pre-scans) may be performed to determine the general EUT radiated emissions characteristics and, when necessary, the EUT-to-measurement antenna orientation that produces the maximum emission amplitude. Pre-scans shall only be used to determine the emission frequencies (i.e., not amplitude levels). The information garnered from a pre-scan can then be used to perform final compliance measurements using either the substitution or direct field strength method.

For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement

antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.

For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5 m above the ground plane. When maximizing the emissions from the EUT for measurement, the EUT and its transmitting antenna(s) shall be rotated through 360°. For each mode of operation to be tested, the frequency spectrum (based on findings from exploratory measurements) shall be monitored.
Final measurements shall be performed for the worst case combination(s) of variable technical parameters that result in the maximum measured emission amplitude, record the frequency and amplitude of the highest fundamental emission (if applicable), and the frequency and amplitude data for the six highest-amplitude spurious emissions.

The measurements in the frequency range 30 to 1000MHz was performed with a RBW of 100kHz. The measurements in the frequency range 1 to 40GHz was performed with a RBW of 1MHz. Emissions identified within the range 30MHz to 40GHz were then formally measured using a peak detector as the worst case.

A.5.3 Measurement limit

The limits for outside a licensee's frequency band(s) of operation the power of the spurious emissions have been calculated, as shown below using the following formula:

Field Strength of Carrier - (43 + 10 log (P) dB) dB

Where:

Field Strength is measured in dBμV/m

P is measured Transmitter Power in Watts

The field strength of the carrier has been calculated assuming that the power is to be fed to a half-wave tuned dipoles as per 2.1053 (a).

$E_{(v/m)}=(30 \times G_i \times P_o)^{0.5} / d$

Where

G_i is the antenna gain of ideal half-wave dipoles,

P_o is the power out of the transceiver in W,

d is the measurement distance in meter.

Therefore at 3m measurement distance the field strength using the lowest transceiver output power would be:

$E_{(v/m)}=(30 \times 1.64 \times 16.56)^{0.5} / 3 = 9.51V/m = 139.57 dBμV/m$

As Clause 27.53(l)(1) For operations in the 3700-3980 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) For base station operations in the 3700–3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz(43 + 10 log(P) dB):
43 + 10log(16.56) = 55.19 dB
Therefore the limit at 3m measurement distance is:
139.57 – 55.19 = 83.81 dBμV/m

These limits have been used to determine Pass or Fail for the harmonics measured and detailed in the following results.

A.5.4 Measurement results

Configuration NR-MIMO-1C 40.0M

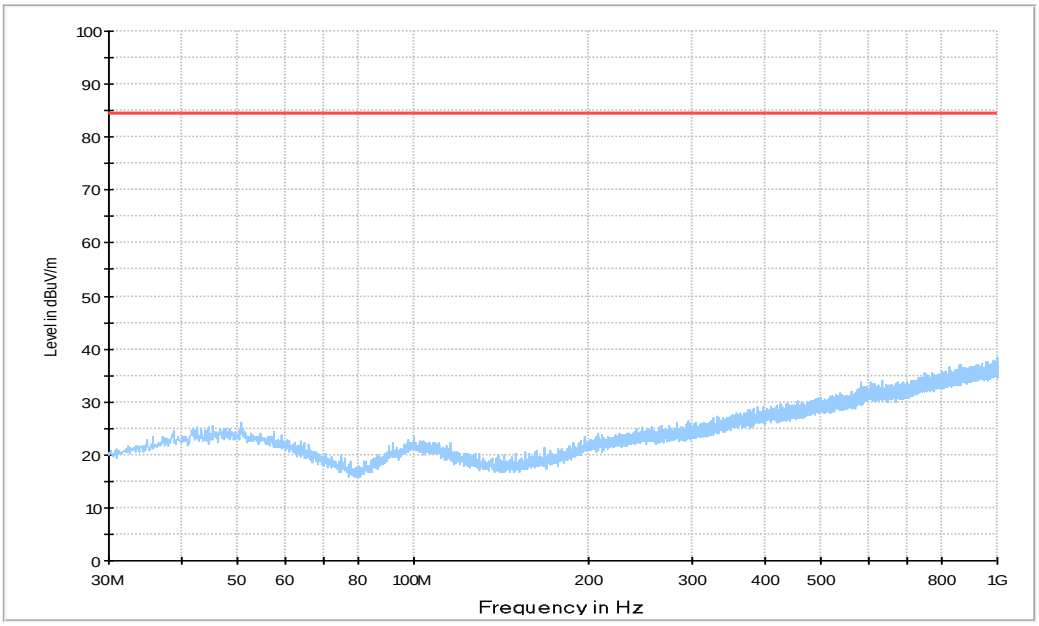
Channel Position	Channel Frequencies(MHz)
Channel Position B	3720.00
Channel Position M	3840.00
Channel Position T	3960.00

Channel Position B
No emissions were detected within 20dB of the limit.
Channel Position M
No emissions were detected within 20dB of the limit.
Channel Position T
No emissions were detected within 20dB of the limit.

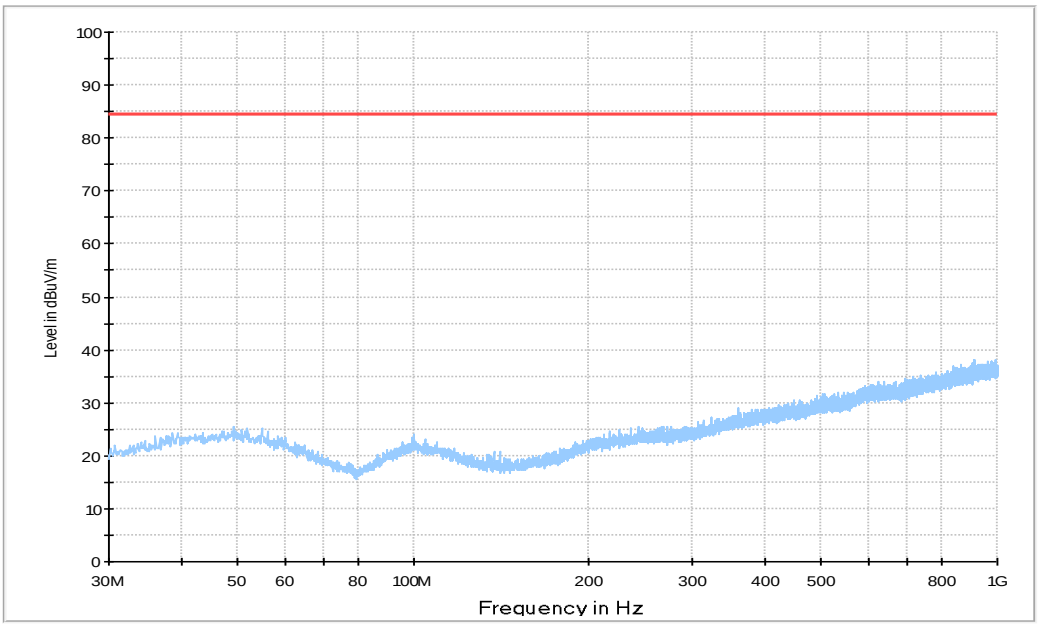
Configuration NR-MIMO-2C 20.0M

Channel Position	Channel Frequencies(MHz)
Channel Position B	3710.01+3890.01
Channel Position M	3750+3930
Channel Position T	3790.02+3970.02

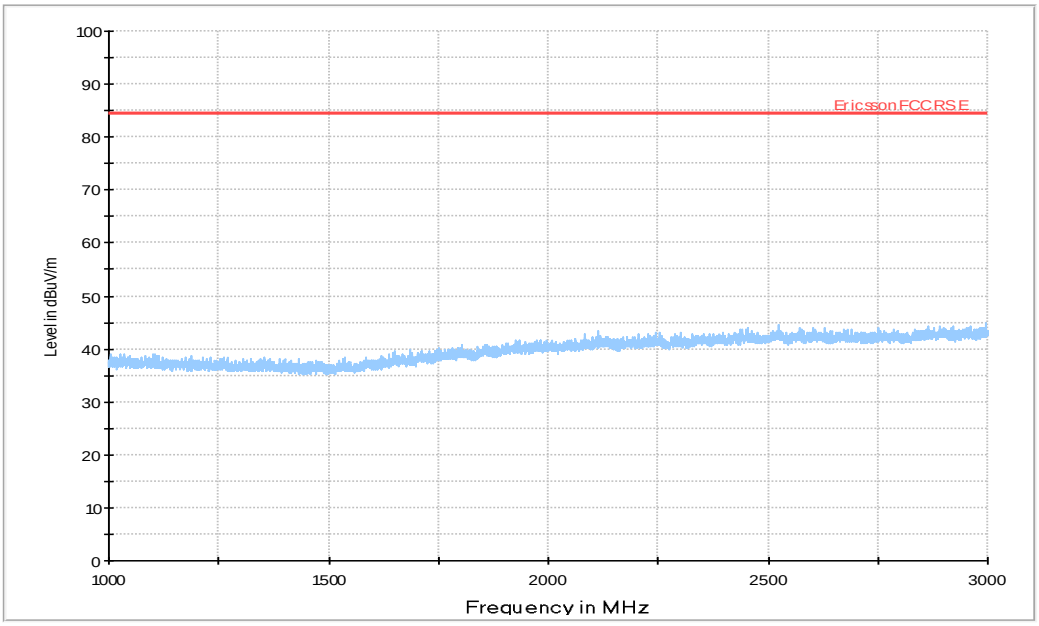
Channel Position B
No emissions were detected within 20dB of the limit.
Channel Position M
No emissions were detected within 20dB of the limit.
Channel Position T
No emissions were detected within 20dB of the limit.



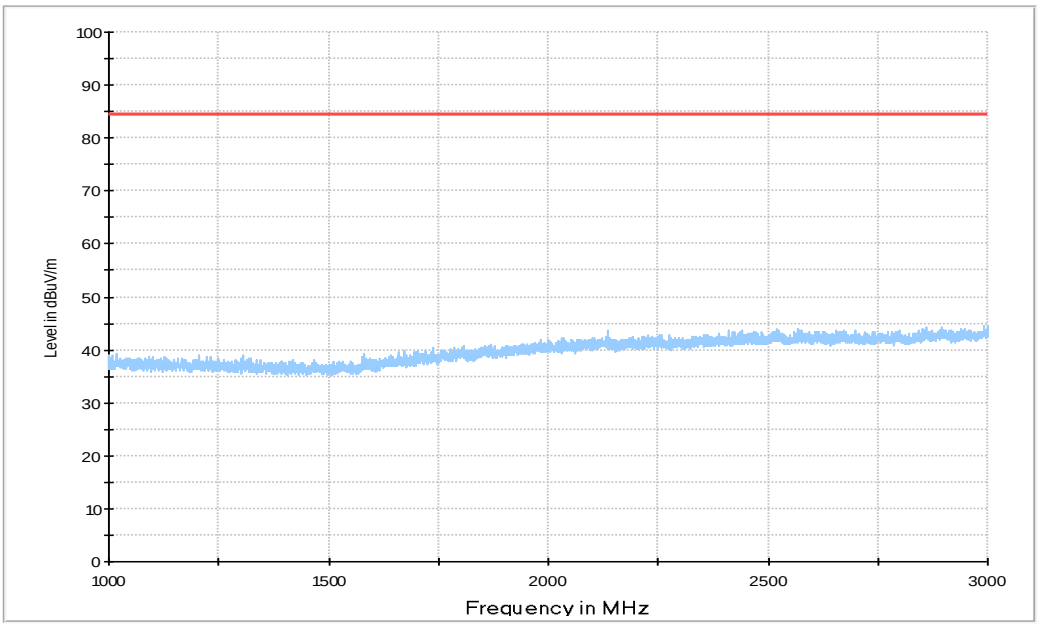
Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 30MHz-1GHz



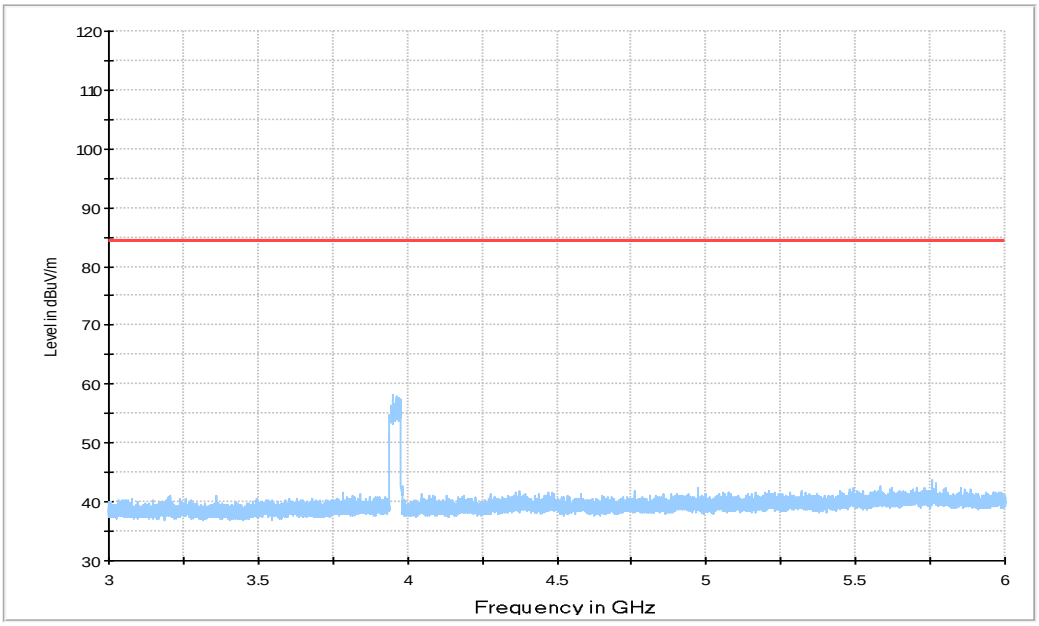
Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 30MHz-1GHz



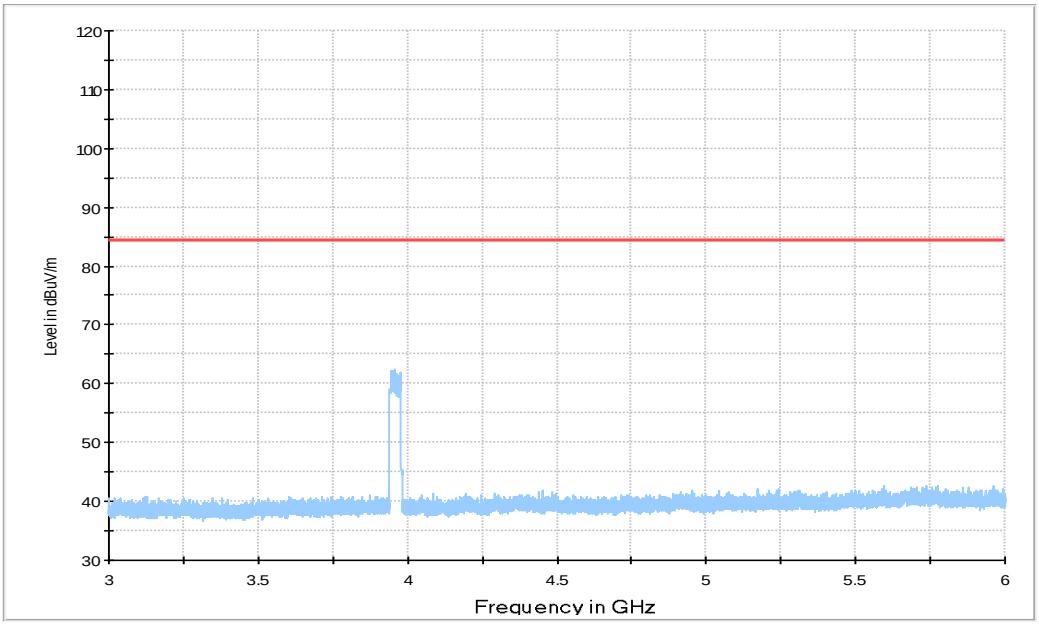
Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 1GHz-3GHz



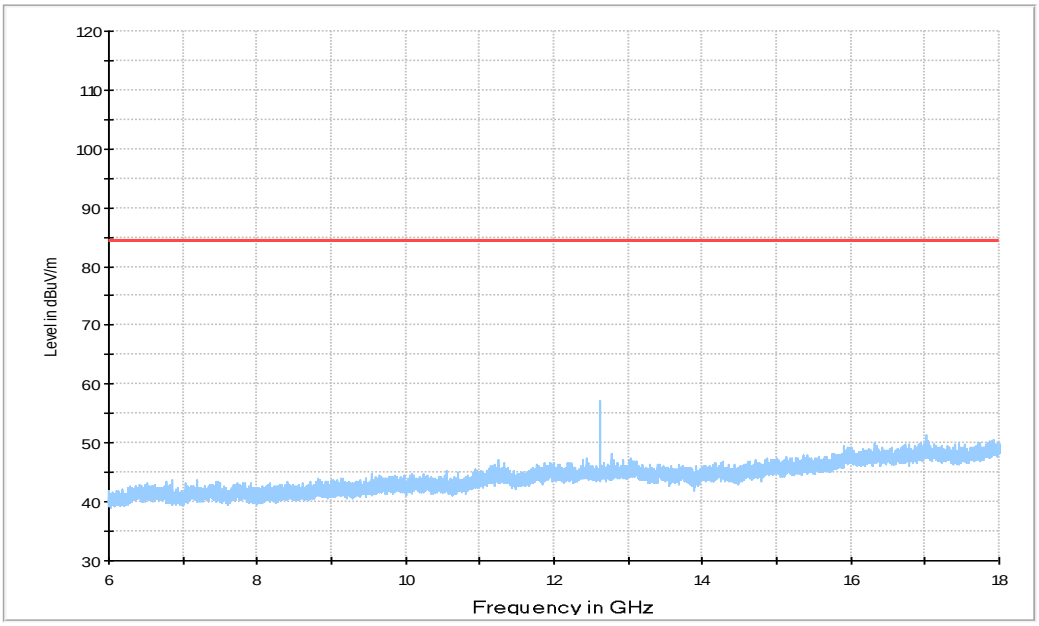
Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 1GHz-3GHz



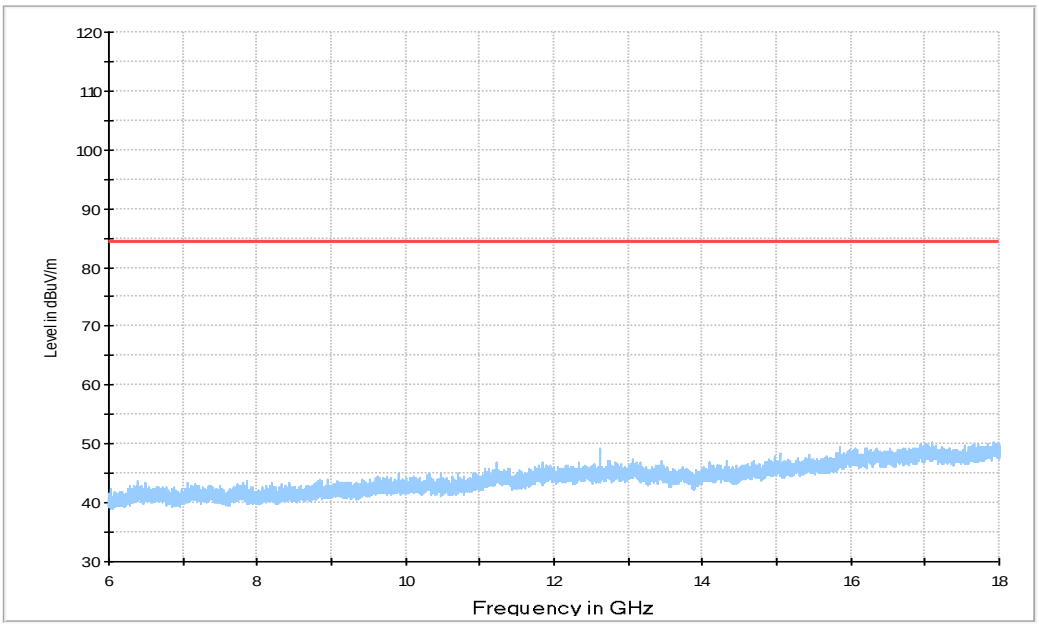
Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 3GHz-6GHz



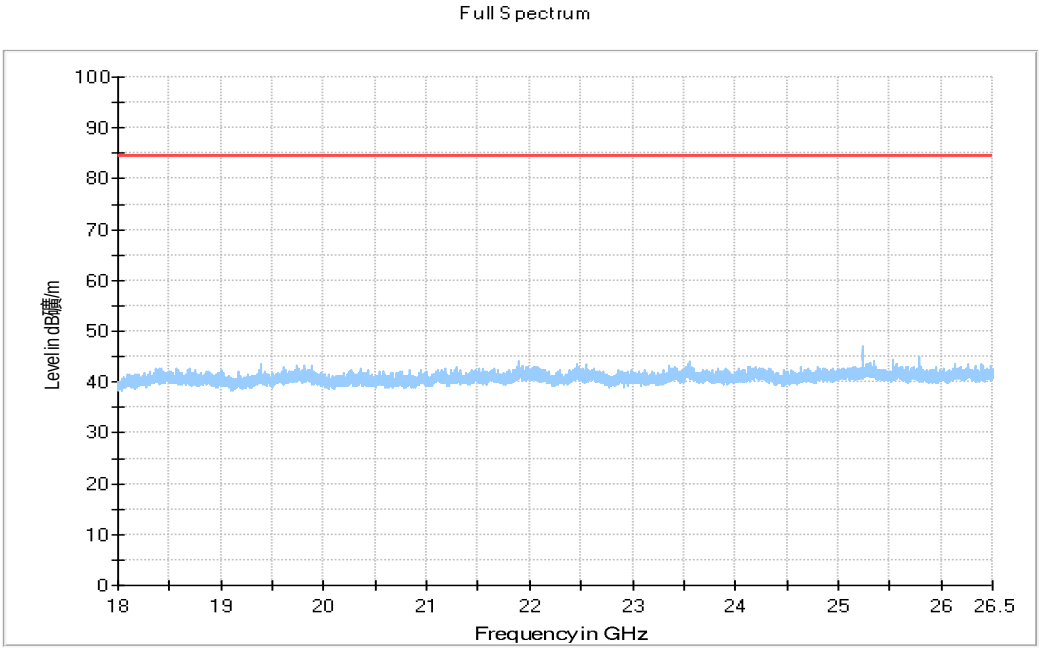
Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 3GHz-6GHz



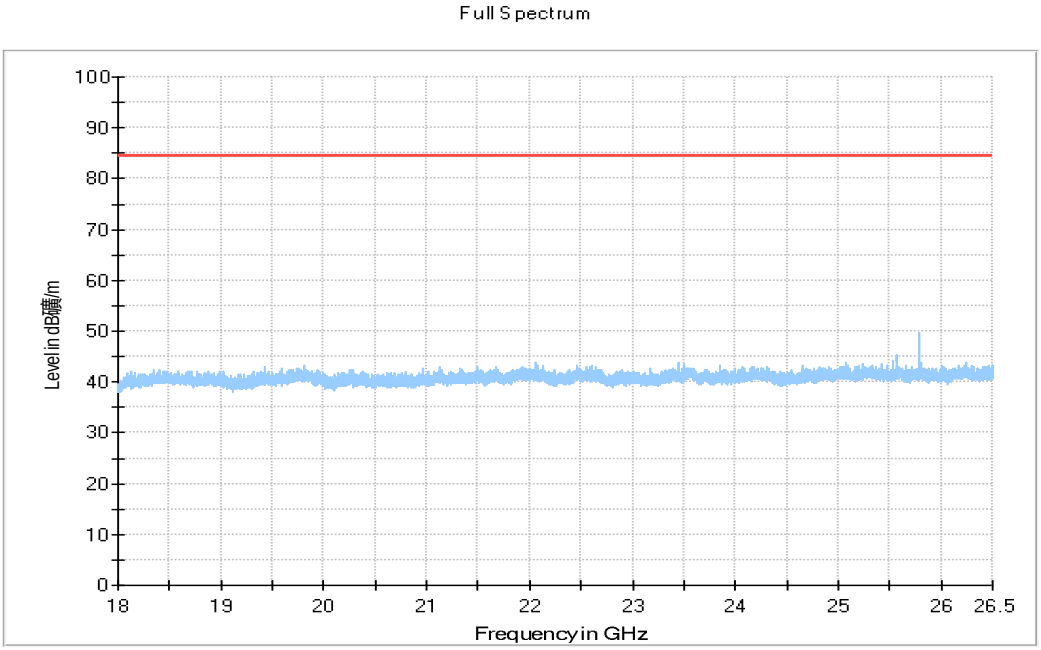
Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 6GHz-18GHz



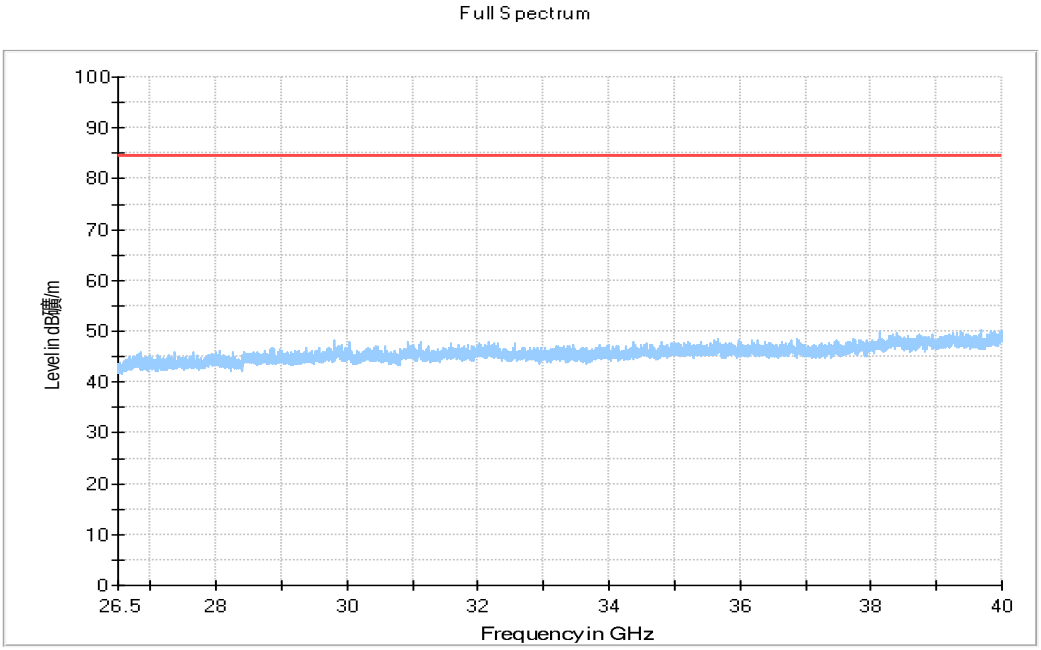
Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 6GHz-18GHz



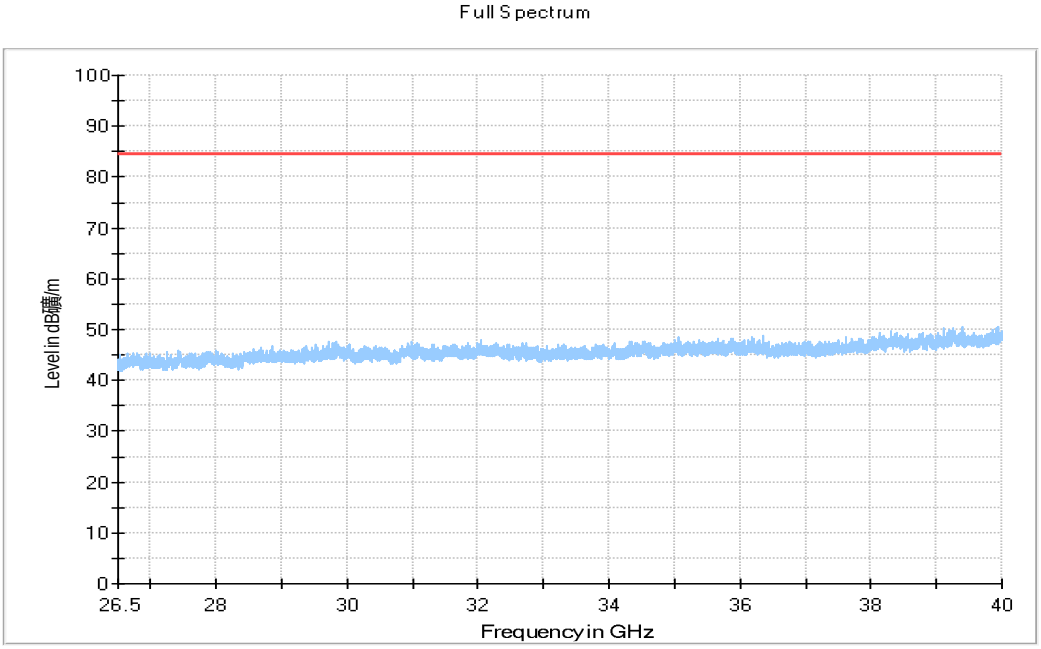
Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 18GHz-26.5GHz



Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 18GHz-26.5GHz



Configuration NR-MIMO-1C; 256QAM; 40MHz, Vertical, 26.5GHz-40GHz



Configuration NR-MIMO-1C; 256QAM; 40MHz, Horizontal, 26.5GHz-40GHz

A.6 Frequency Stability

A.6.1 Reference

FCC CFR 47 Part 2, Clause 2.1055
FCC CFR 47 Part 27, Clause 27.54

A.6.2 Method of measurement

Temperature Variation

The EUT was tested over the temperature range -30°C to +50°C in 10°C steps with 120 VAC Power Supply. At each temperature step, the Base Station was configured to transmit a [RAT]* at maximum power on the bottom, middle and top channel of the operating band. After achieving thermal balance, the averages of 200 transmission bursts were measured and the result recorded.

Voltage Variation

The EUT was tested at the supplied voltages varied from 85 to 115 percent of the nominal value of 120 VAC. At +20°C, the Base Station was configured to transmit a [RAT]* at maximum power on the bottom, middle and top channel of the operating band. The average of 200 transmission bursts was measured and the result recorded.

[RAT]*:
NR–256QAM modulation

A.6.3 Measurement limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

A.6.4 Measurement results

Frequency Error – Temperature Variation

Configuration NR-MIMO-1C, 256QAM

Maximum Output Power 33.98dBm per port for NR 20MHz, 36.99dBm per port for NR100MHz

Supply Voltage AC(V)	Temperature	Frequency Stability (Hz) Channel position M	
		Bandwidth 20MHz	Bandwidth 100MHz
120	-30	1.94	2.26
	-20	2.12	2.18
	-10	1.34	1.70
	0	1.92	2.15
	10	2.64	1.88
	20	1.75	1.59
	30	1.54	1.50
	40	1.93	1.69
	50	2.19	1.57

Frequency Error – Voltage Variation

Configuration NR-MIMO-1C, 256QAM

Maximum Output Power 33.98dBm per port for NR 20MHz, 36.99dBm per port for NR100MHz

Supply Voltage AC(V)	Temperature(°C)	Frequency Stability (Hz) Channel position M	
		Bandwidth 20MHz	Bandwidth 100MHz
102	20	2.55	1.19
138	20	4.19	2.54

ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2021-09-29 through 2022-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

*****END OF REPORT*****