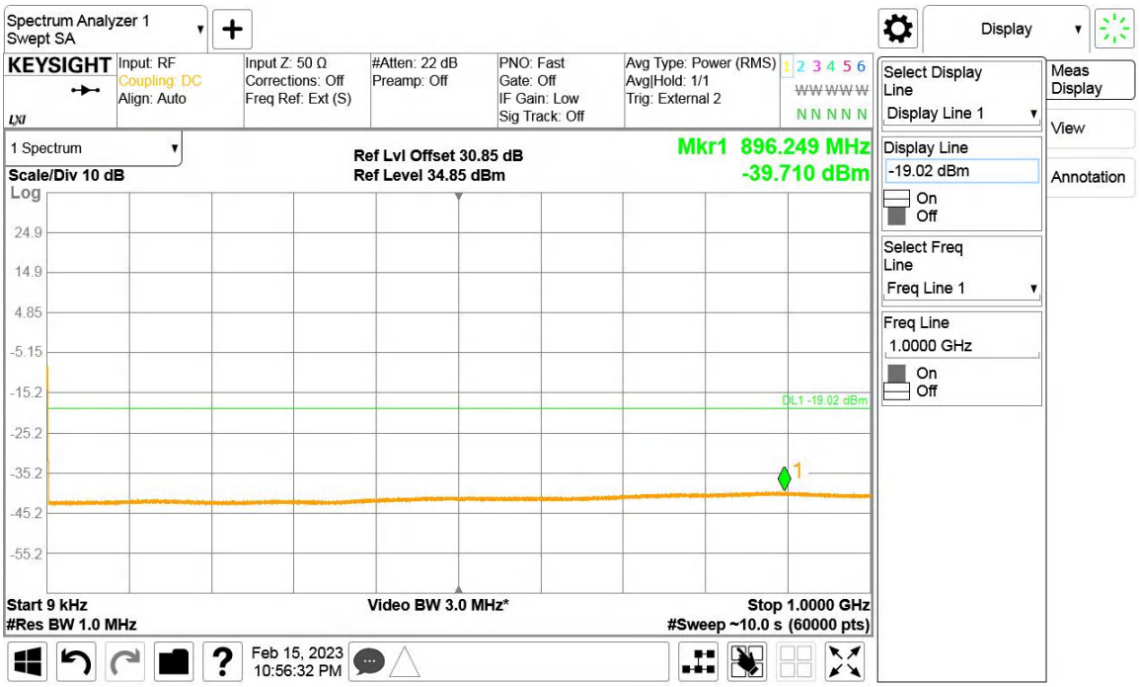
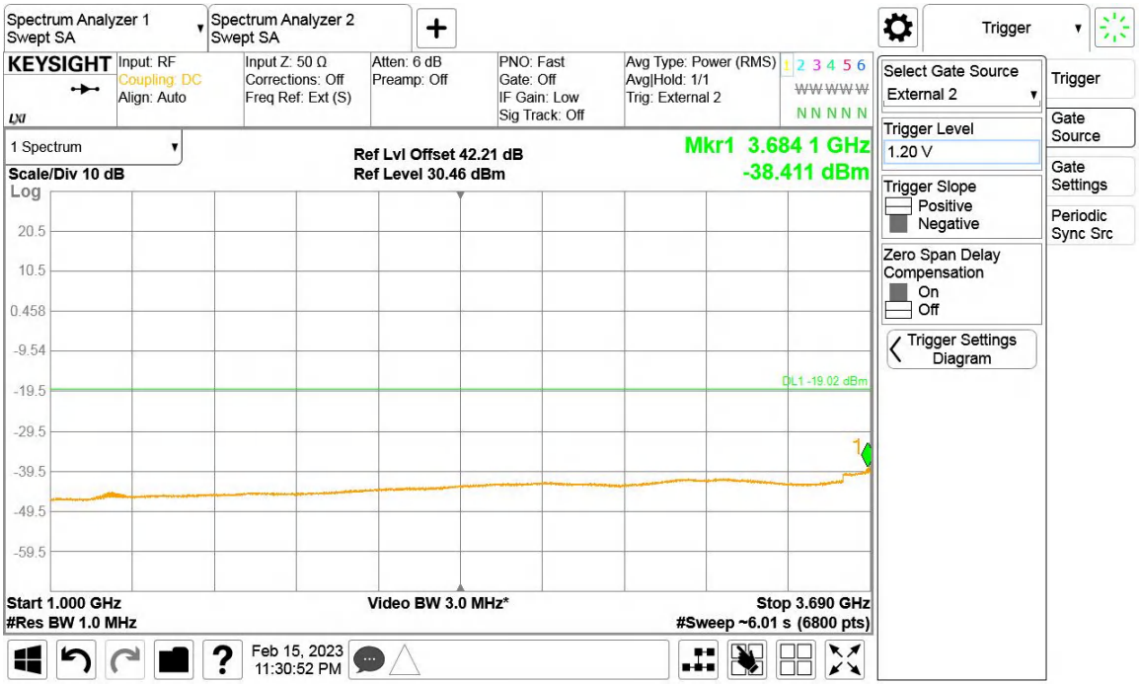
Configuration NR-MIMO-3C-UE

Antenna Port	Channel Position	Modulation	Carrier Bandwidth (MHz)	RBW (kHz)	Limit (dBm)
B	B	64QAM	40	1000	-19.02
B	T	64QAM	40	1000	-19.02

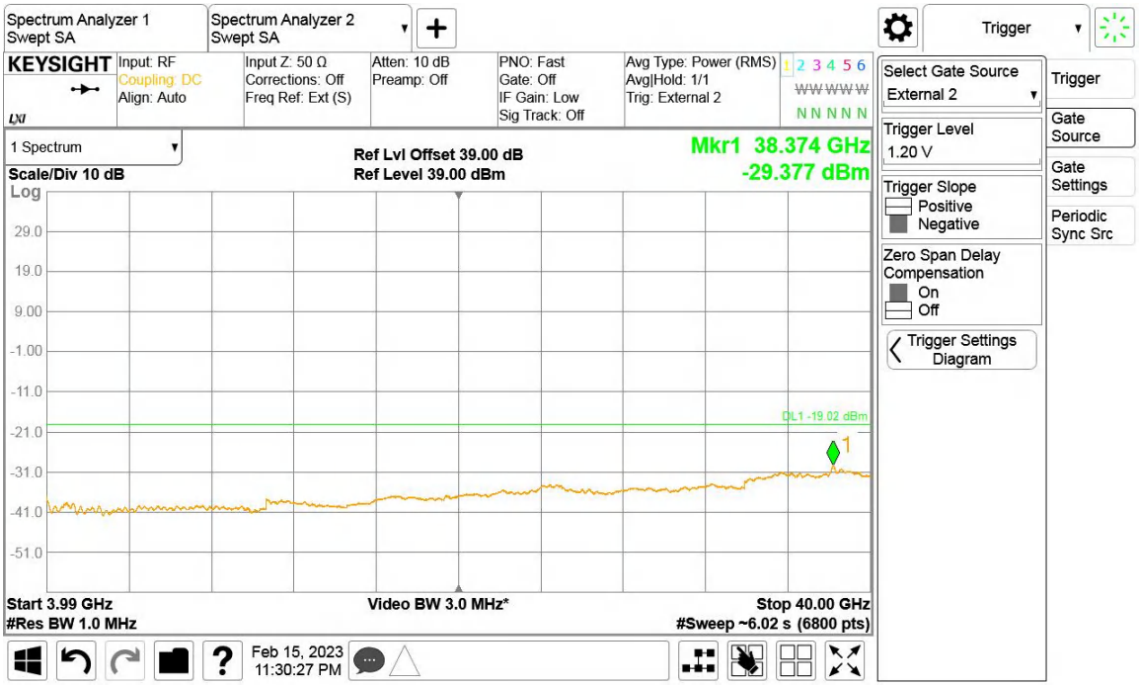
Test figure as below:



Channel Position B, 9kHz to 1GHz

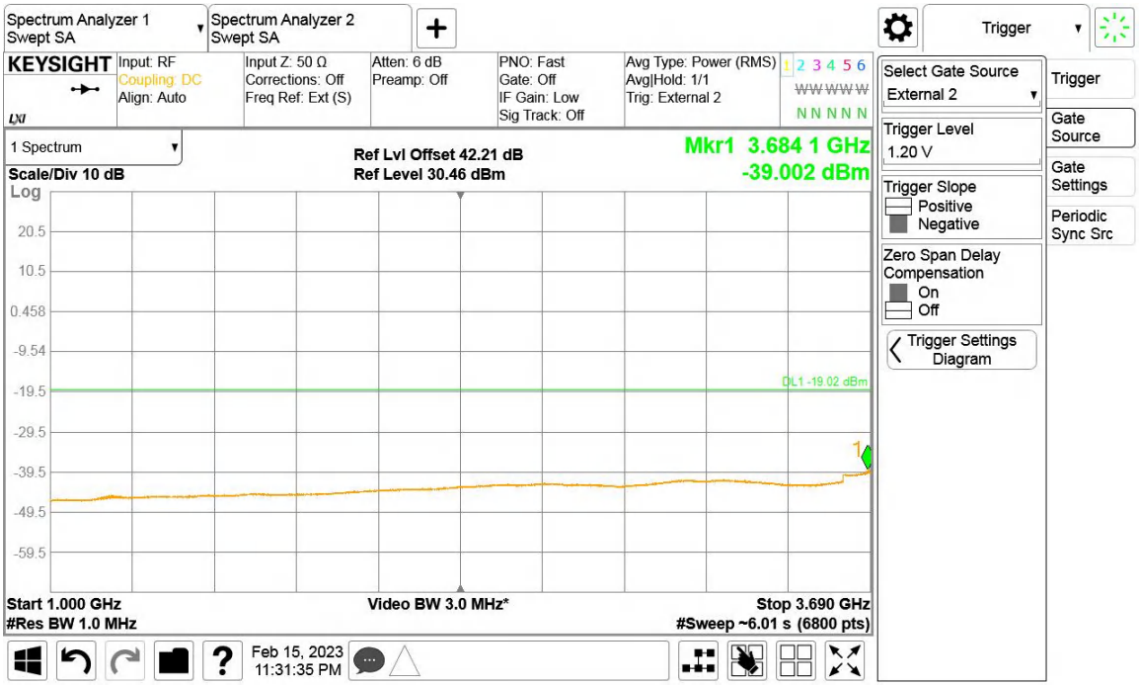


Channel Position B, 1GHz to 3690MHz

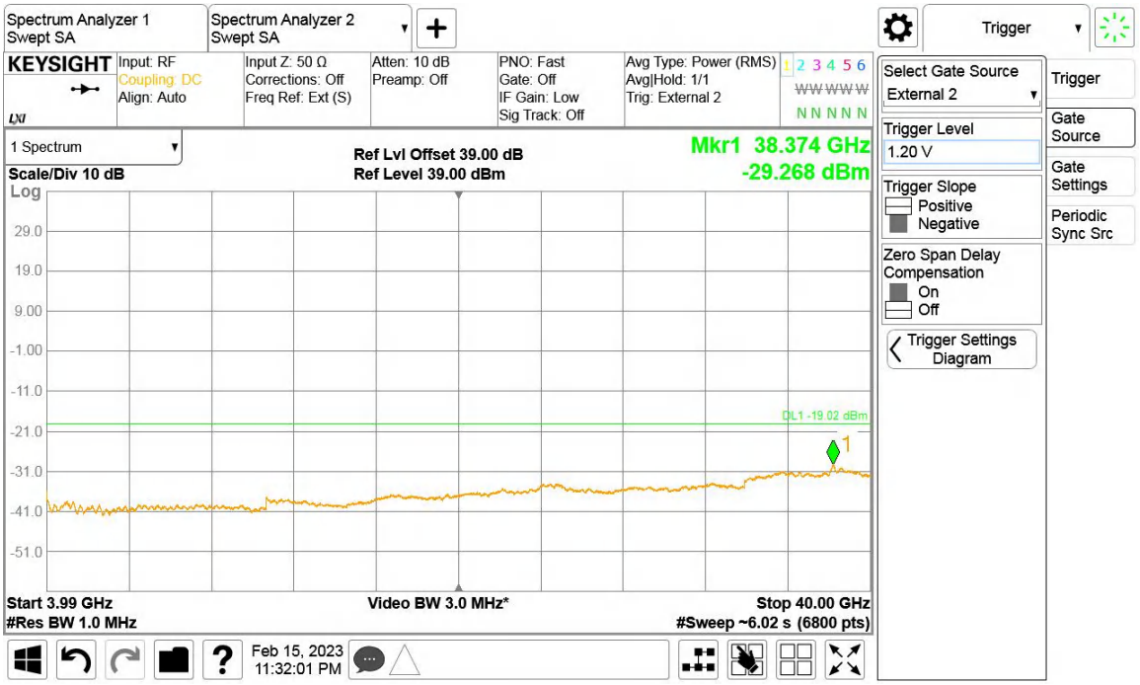


Channel Position B, 3990MHz to 40GHz

Channel Position T, 9kHz to 1GHz



Channel Position T, 1GHz to 3690MHz



Channel Position T, 3990MHz to 40GHz

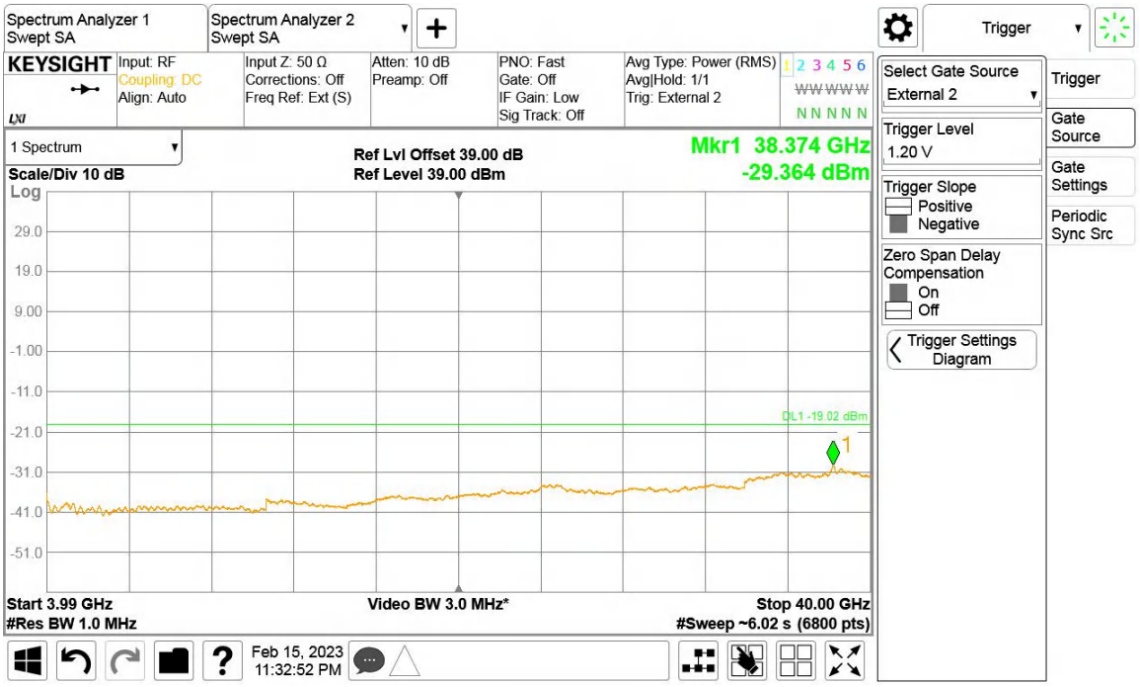
Configuration NR-MIMO-3C-UE

Antenna Port	Channel Position	Modulation	Carrier Bandwidth (MHz)	RBW (kHz)	Limit (dBm)
B	B	64QAM	50	1000	-19.02
B	T	64QAM	50	1000	-19.02

Test figure as below:

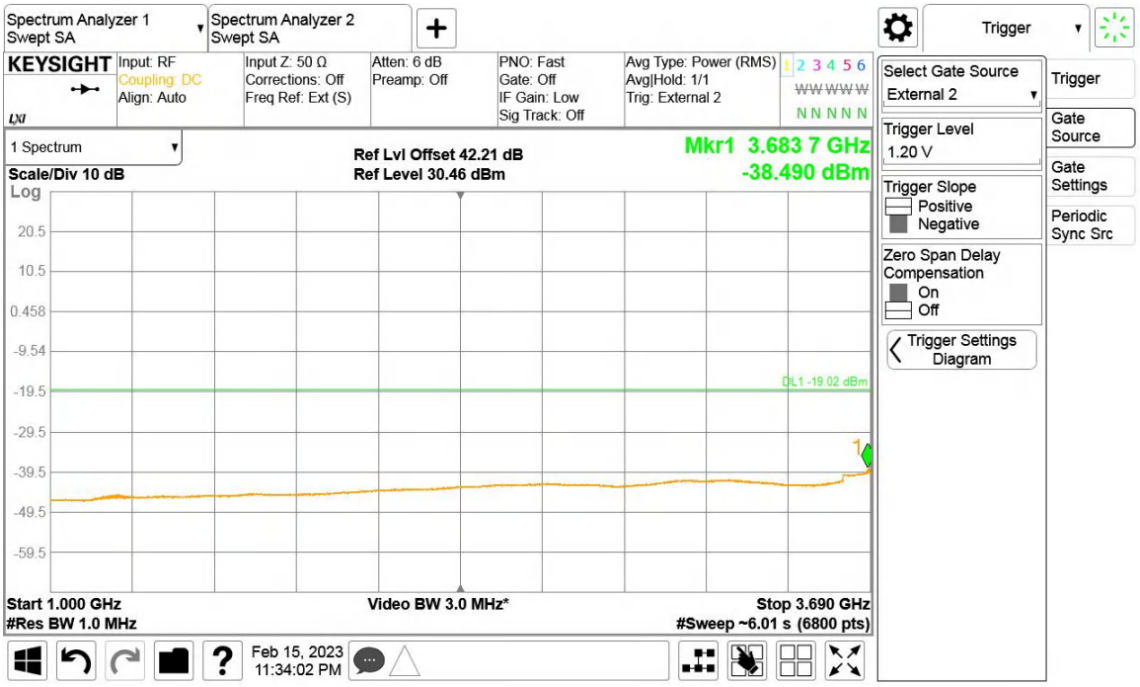
Channel Position B, 9kHz to 1GHz

Channel Position B, 1GHz to 3690MHz

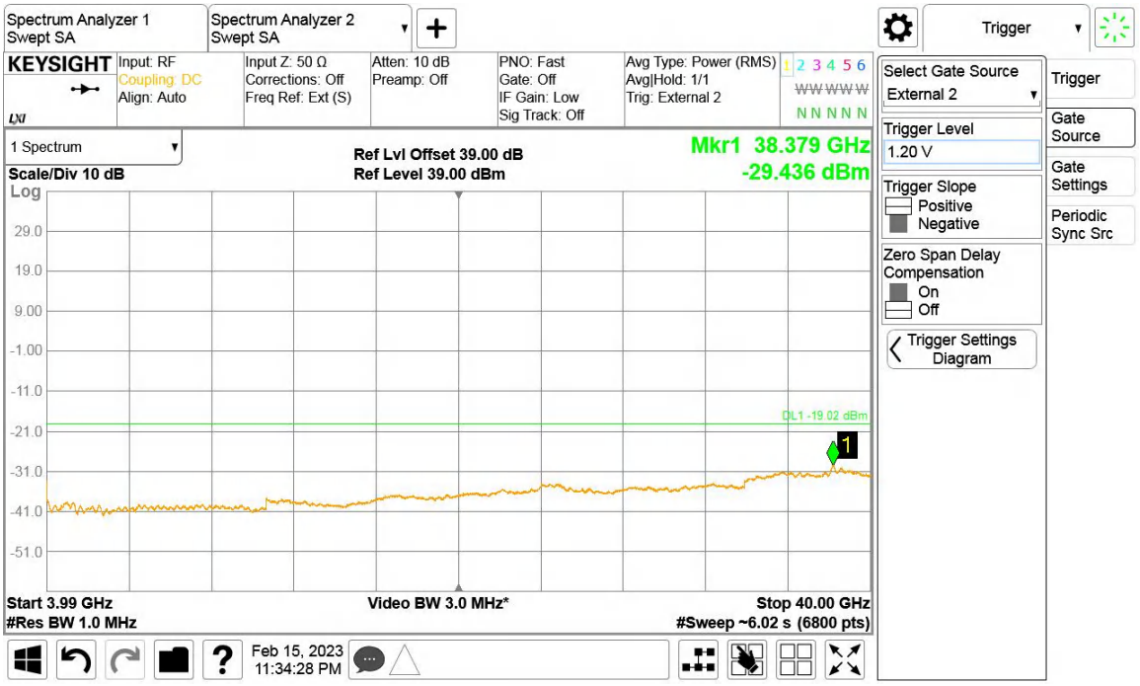


Channel Position B, 3990MHz to 40GHz

Channel Position T, 9kHz to 1GHz



Channel Position T, 1GHz to 3690MHz

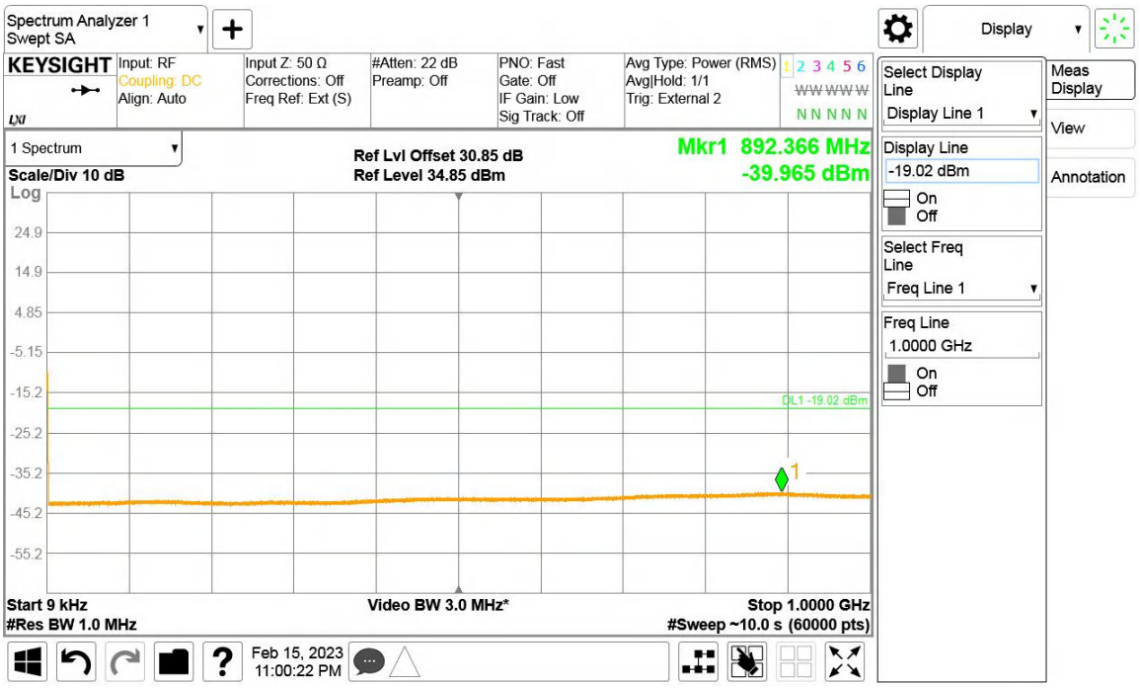


Channel Position T, 3990MHz to 40GHz

Configuration NR-MIMO-6C-UE

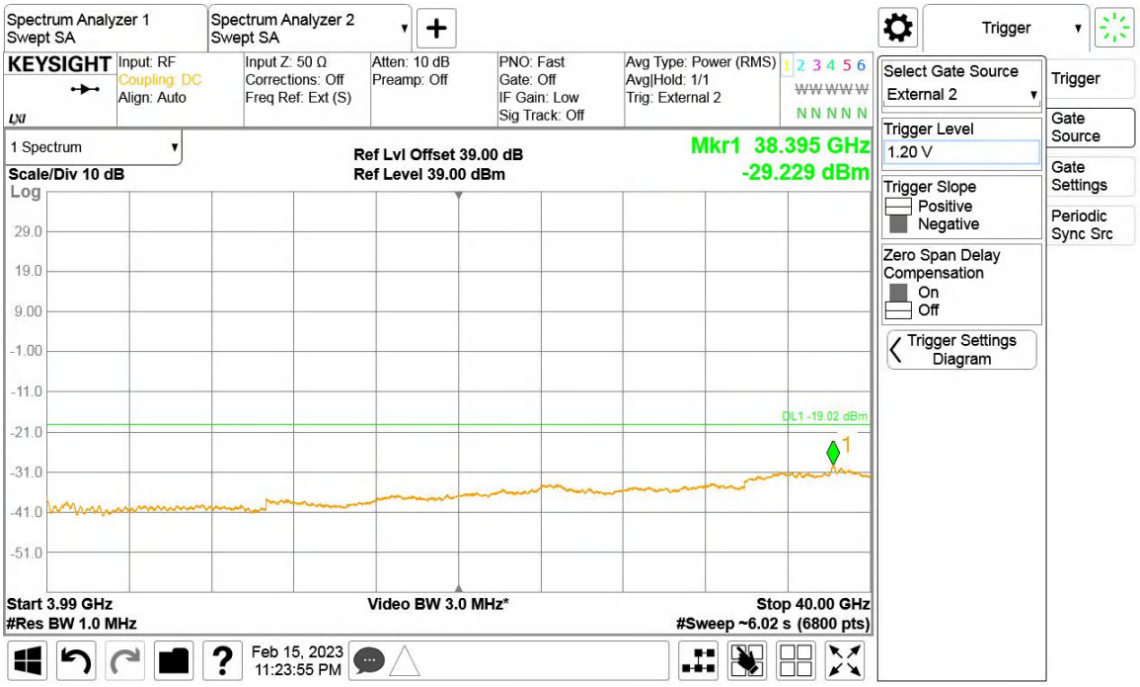
Antenna Port	Channel Position	Modulation	Carrier Bandwidth (MHz)	RBW (kHz)	Limit (dBm)
B	B	64QAM	20	1000	-19.02
B	T	64QAM	20	1000	-19.02

Test figure as below:



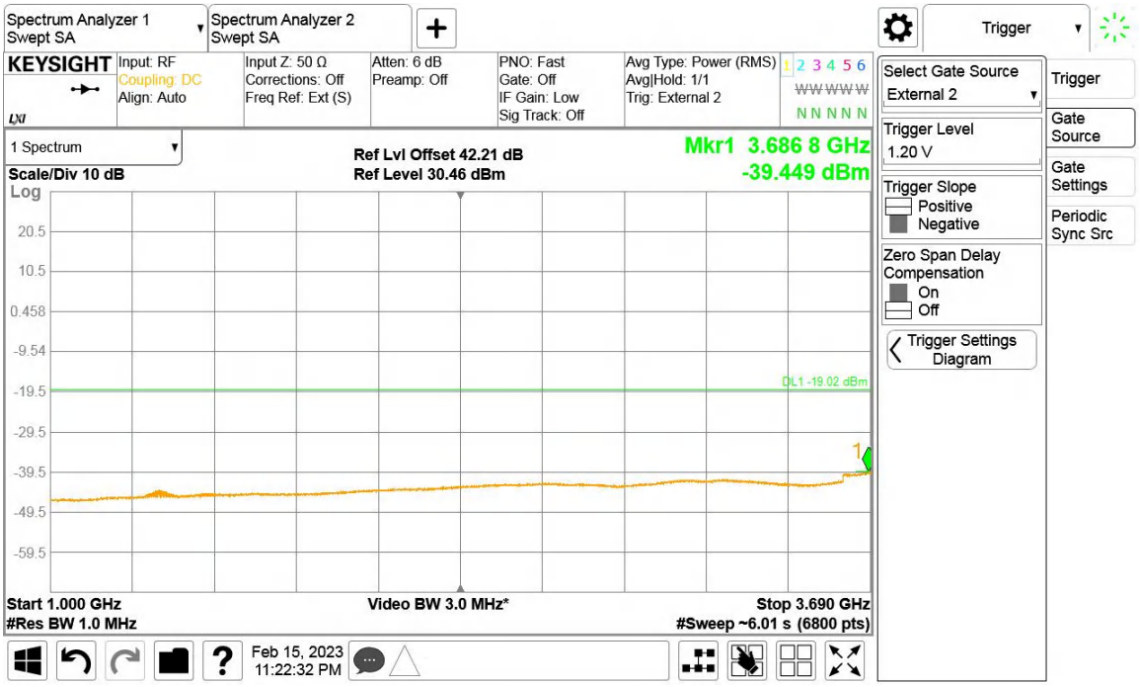
Channel Position B, 9kHz to 1GHz

Channel Position B, 1GHz to 3690MHz

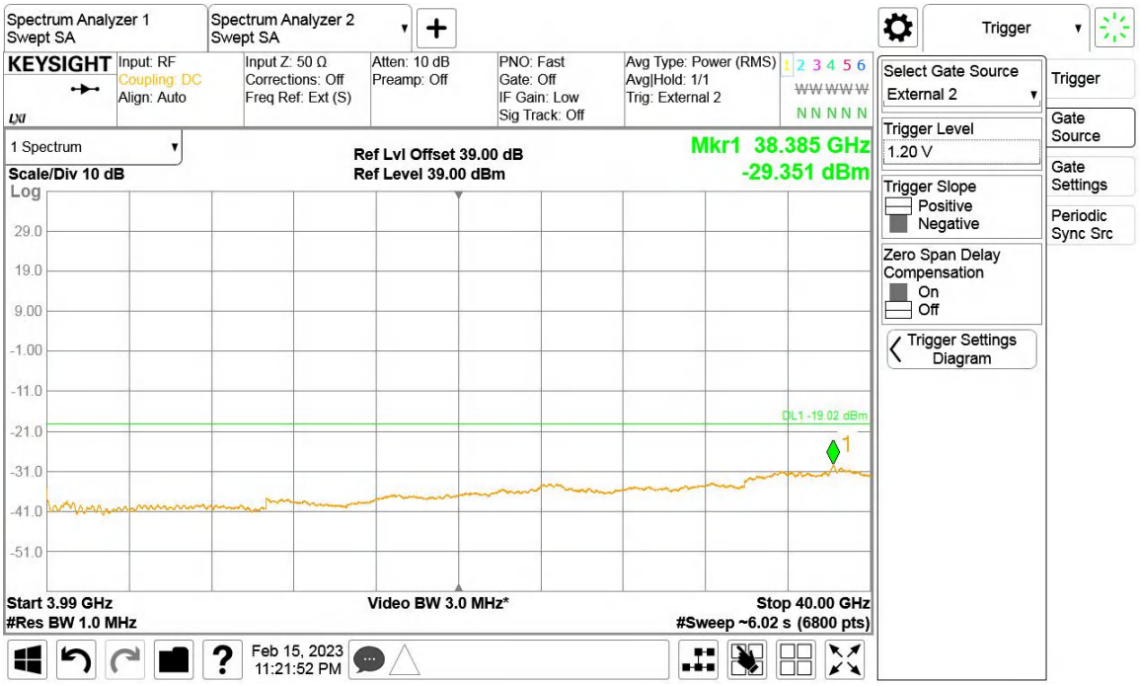


Channel Position B, 3990MHz to 40GHz

Channel Position T, 9kHz to 1GHz



Channel Position T, 1GHz to 3690MHz



Channel Position T, 3990MHz to 40GHz

9.5 Radiated Unwanted Emissions

Specification:	FCC Part 27.53(l),FCC Part 27.53(n)
Test Results:	Pass

9.5.1 Definitions and Limit

According to Part 27.53 (l):

As per FCC Part 27.53(l) 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.

According to Part 27.53 (n):

As per FCC Part 27.53(n) notwithstanding the channel edge requirement of −13 dBm per megahertz, for base station operations in the 3450-3550 MHz band, the conducted power of any emission below 3440 MHz or above 3560 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3430 MHz or above 3570 MHz shall not exceed −40 dBm/MHz.

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).

$E(V/m) = (30 \times Gi \times Po)0.5^2 / d$

Where

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

Po is the power out of the transceiver in W,

d is the measurement distance in meter.

Therefore, the limit at 3m measurement distance is:

Part 27.53 (l):

E(V/m) = 84.4 dBμV/m for the emissions of frequencies except 3700-3980 MHz.

Part 27.53 (n):

E(V/m) = 84.4 dBμV/m for the emissions of frequencies greater than 10 MHz above the 3440 MHz channel edge and less than 10 MHz below the 3560 MHz channel edge.

E(V/m) = 72.4 dBμV/m for the emissions of frequencies greater than 10 MHz above the 3430 MHz channel edge and less than 10 MHz below the 3570 MHz channel edge.

E(V/m) = 57.4 dBμV/m for the emissions below 3430 MHz or above 3570 MHz.

9.5.2 Method of Measurements:

This measurement is carried out in semi-anechoic chamber.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the chamber. Measurements of Emissions from the EUT were obtained with the measurement antenna in both horizontal and vertical polarizations.

The EUT was measured with the antenna height varied between 1 and 4 m with the turntable rotated between 0 and 360 degrees.

The Emissions of any outside a licensee's frequencies within 20dB of the limit were measured with the substitution method used according to the standard.

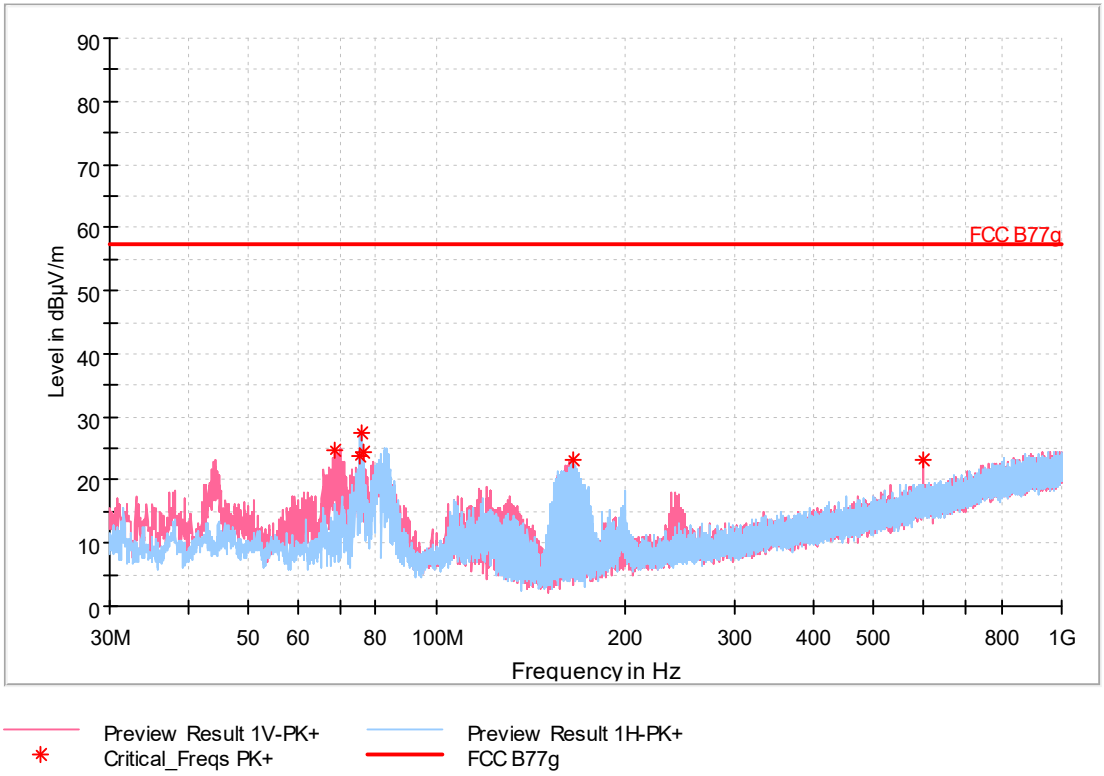
The measurements were performed at a 3m distance unless otherwise stated.

9.5.3 Measurement result

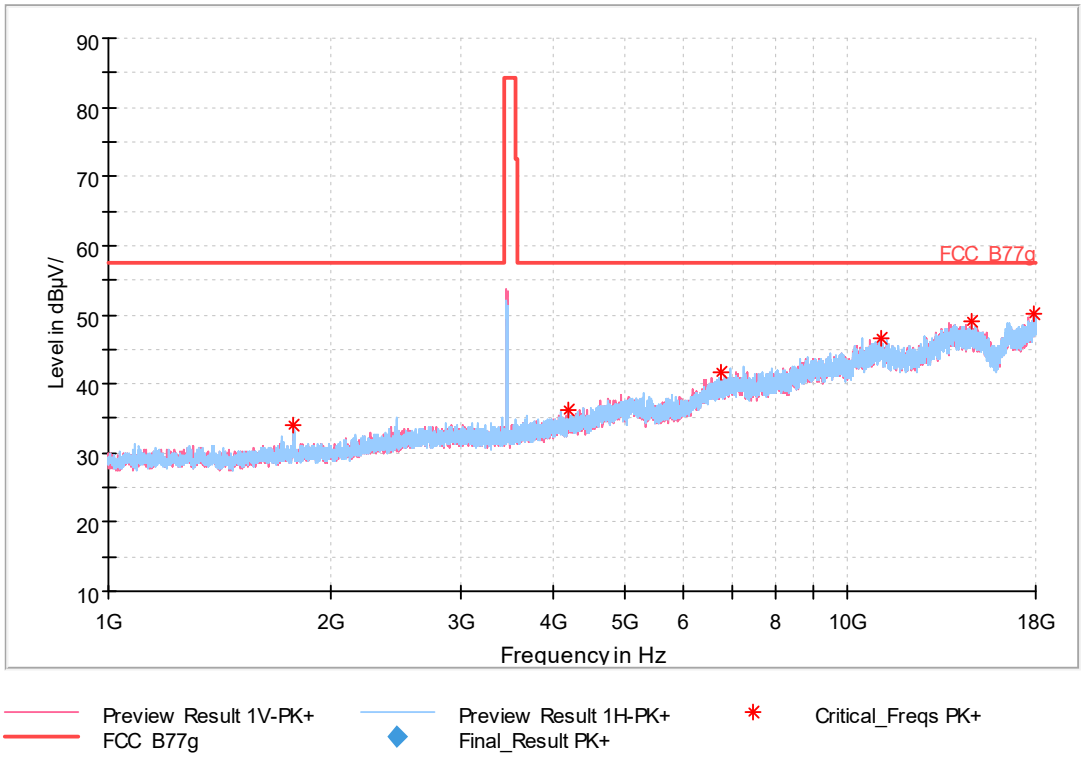
B77G NR mode:

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-1C-UE	B	1	20	64QAM
NR-MIMO-1C-UE	B	1	60	64QAM
NR-MIMO-1C-UE	B	1	100	64QAM
NR-MIMO-1C-UE	M	1	100	64QAM

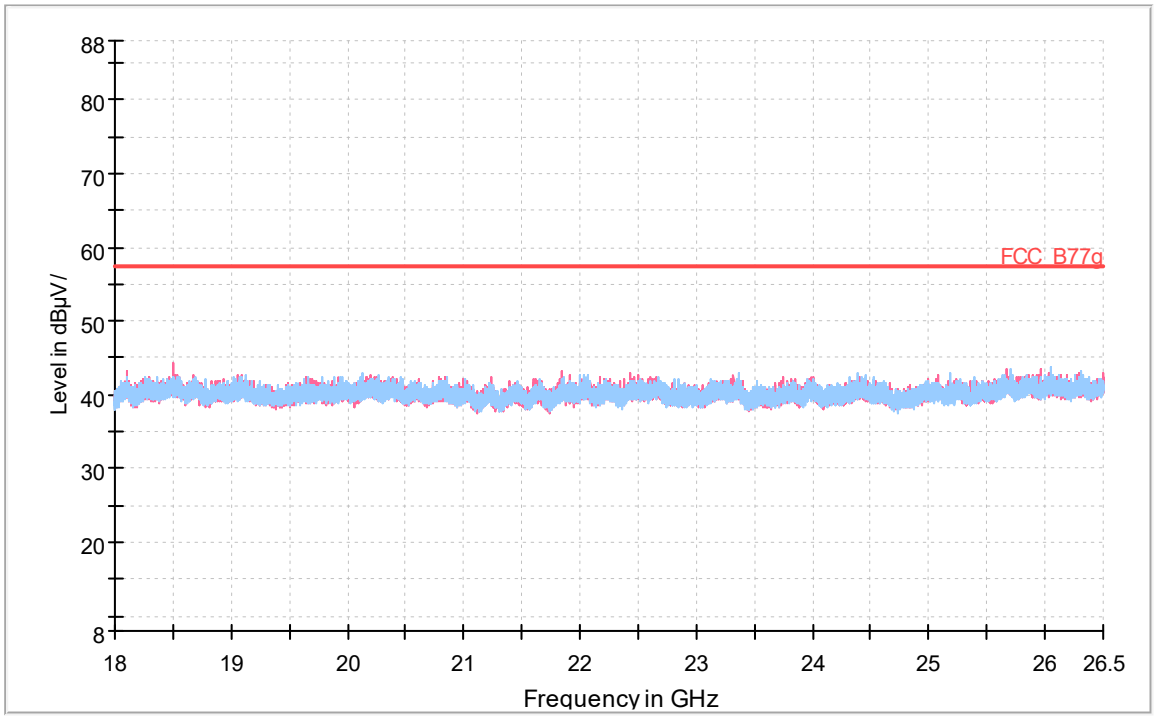
Test figure as below:



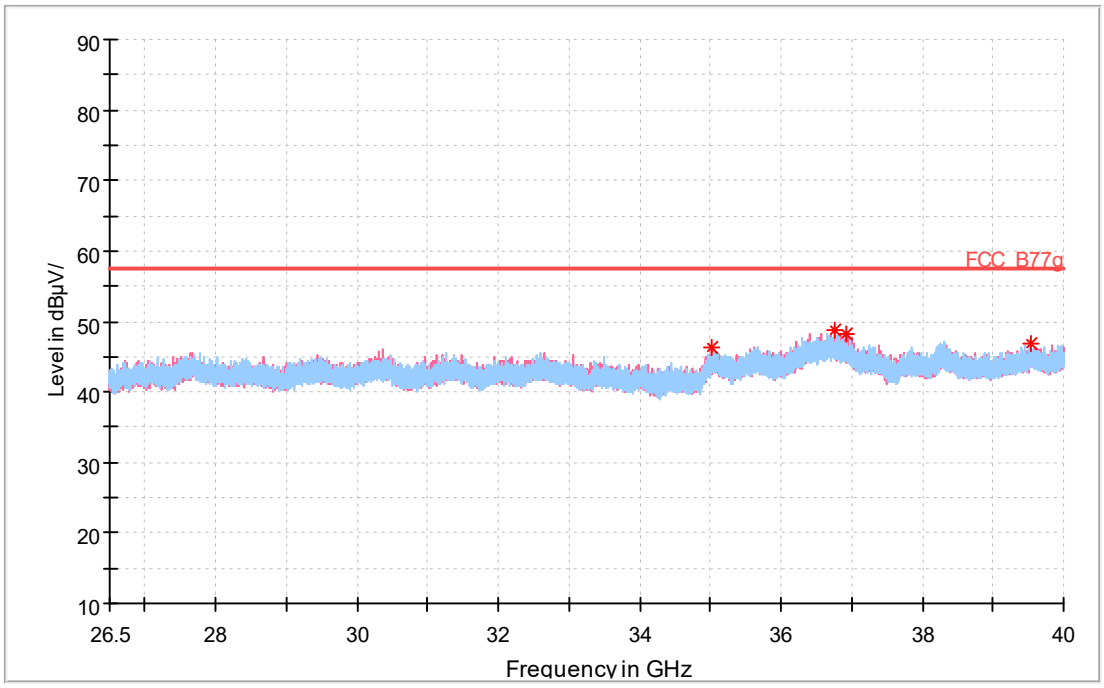
30MHz-1GHz-B77G-NR-MIMO-1C-UE-B-20M-64QAM



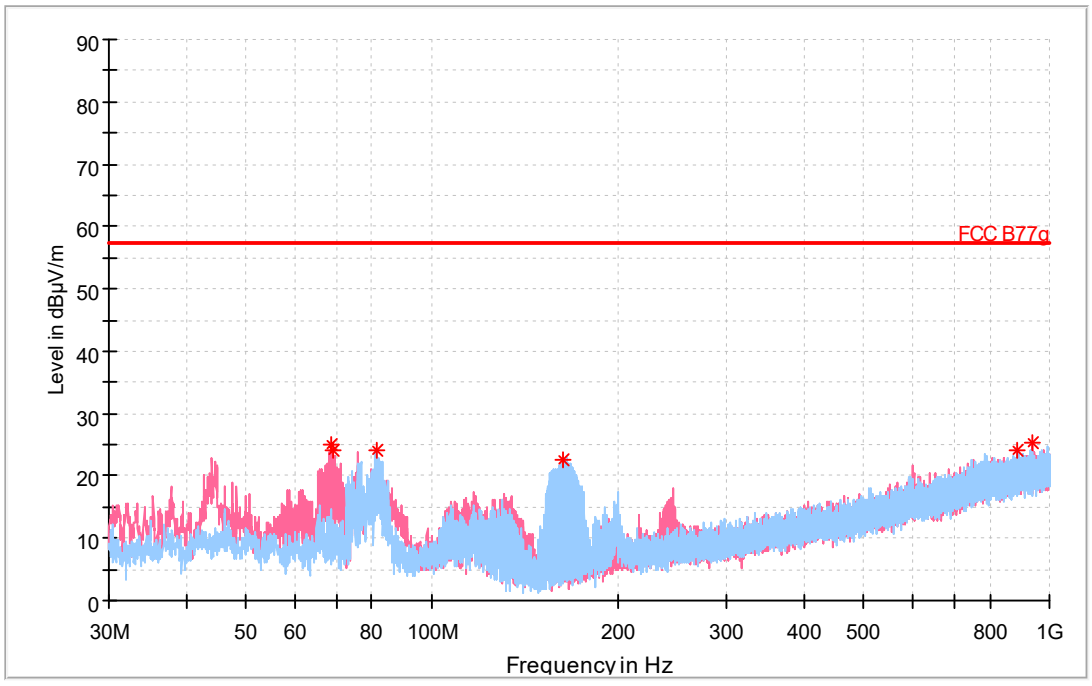
1GHz-18GHz-B77G--NR-MIMO-1C-UE-B-20M-64QAM



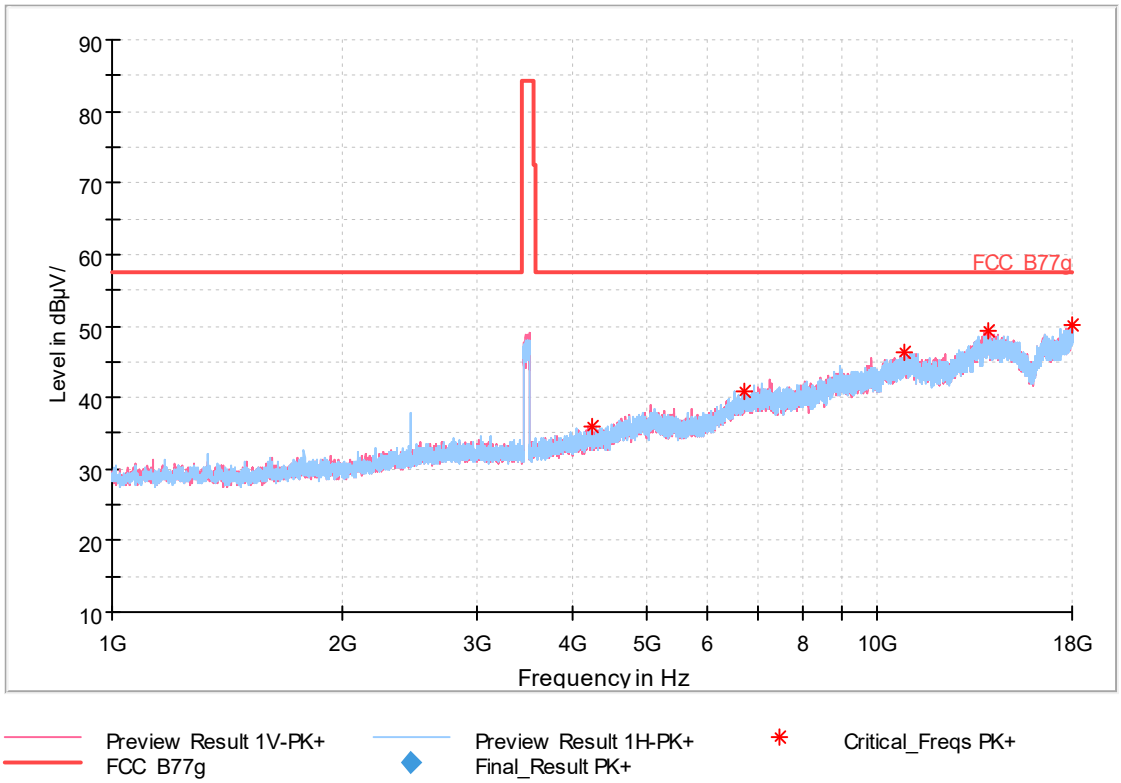
18GHz-26.5GHz-B77G-NR-MIMO-1C-UE-B-20M-64QAM



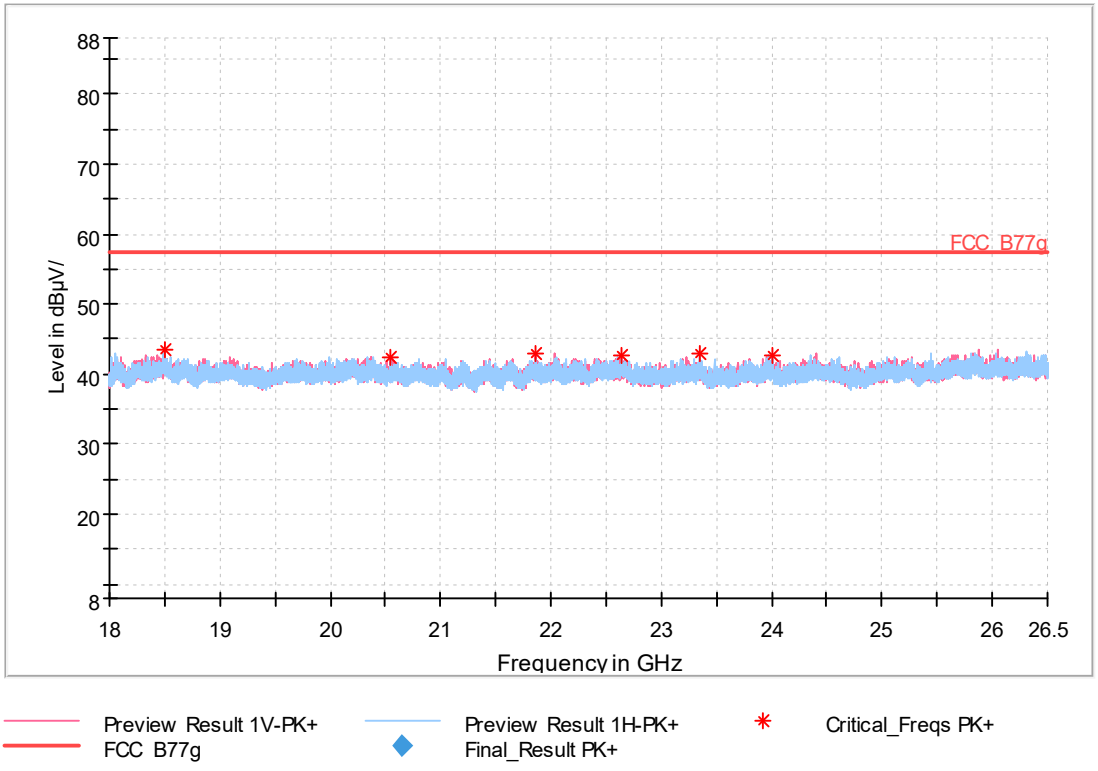
26.5GHz-40GHz-B77G-NR-MIMO-1C-UE-B-20M-64QAM



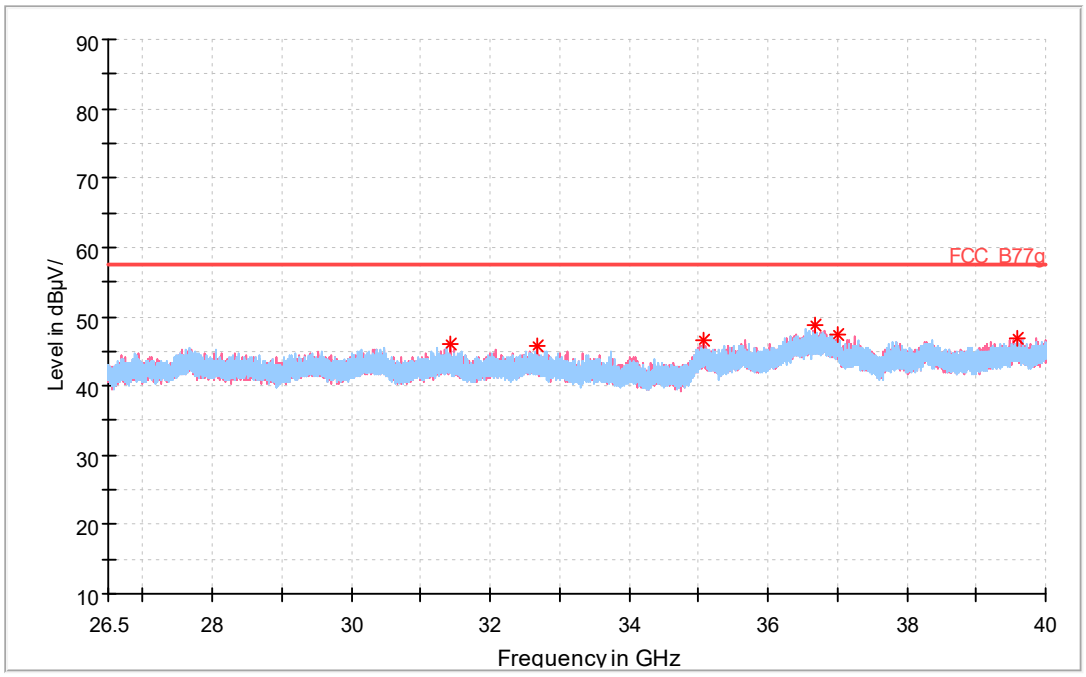
30MHz-1GHz-B77G-NR-MIMO-1C-UE-B-60M-64QAM



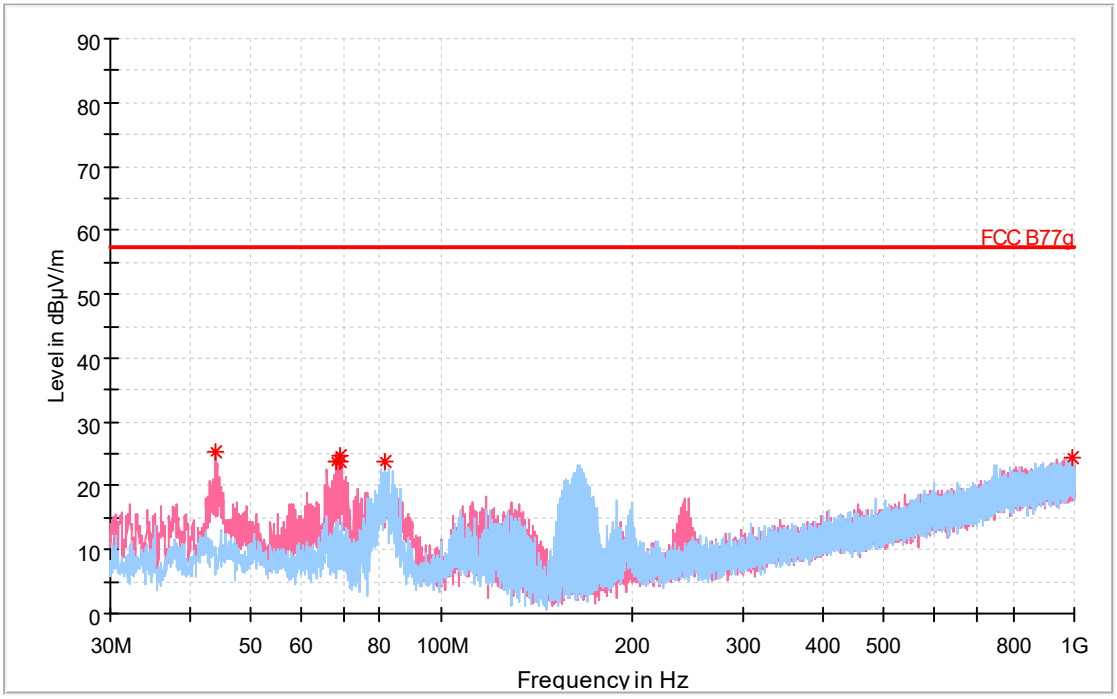
1GHz-18GHz-B77G-NR-MIMO-1C-UE-B-60M-64QAM



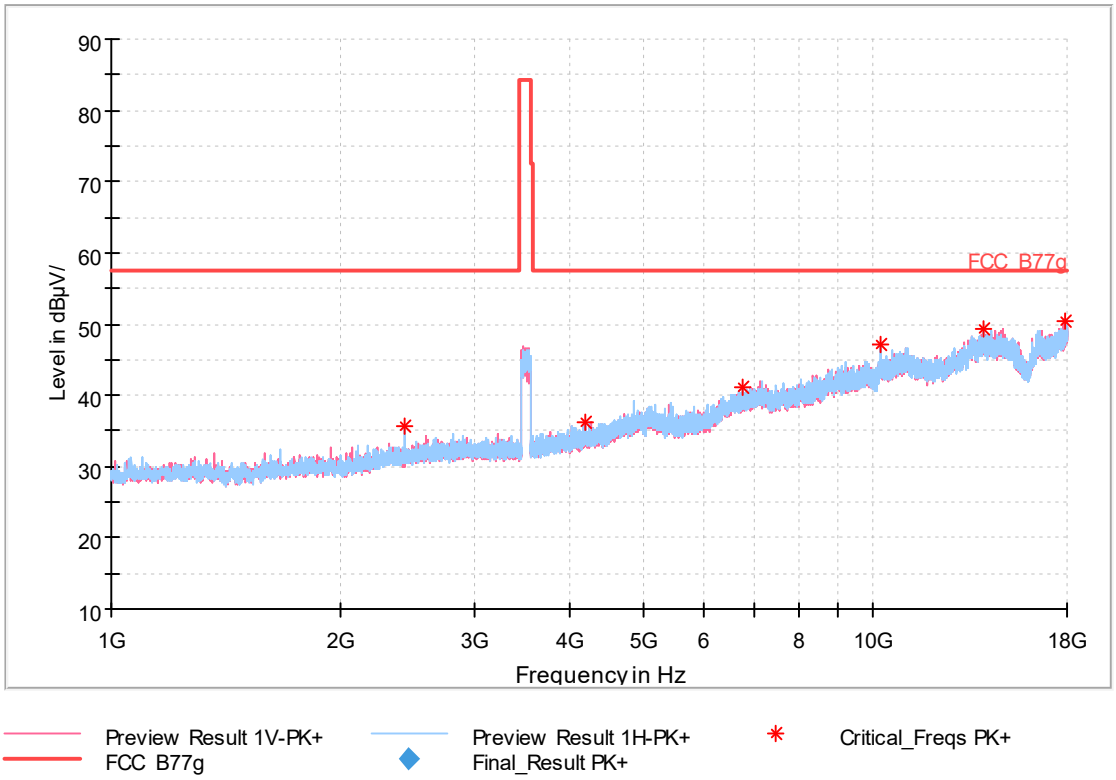
18GHz-26.5GHz-B77G-NR-MIMO-1C-UE-B-60M-64QAM



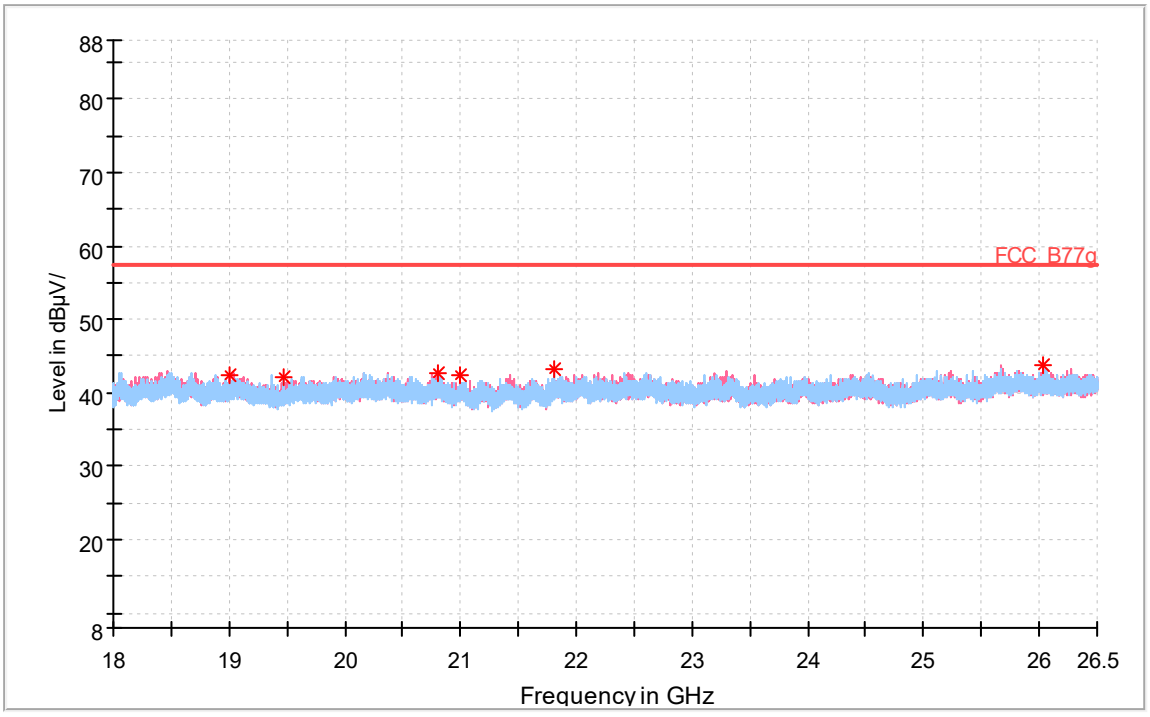
26.5GHz-40GHz-B77G-NR-MIMO-1C-UE-B-60M-64QAM



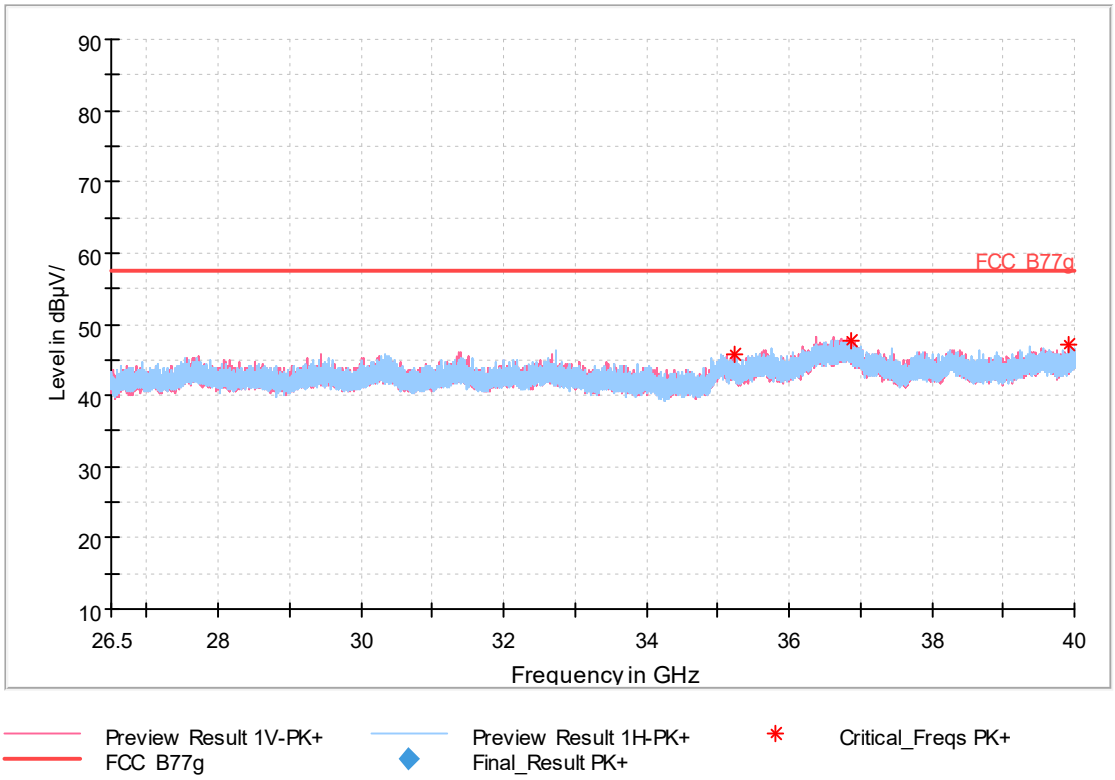
30MHz-1GHz-B77G-NR-MIMO-1C-UE-T-100M-64QAM



1GHz-18GHz-B77G-NR-MIMO-1C-UE-T-100M-64QAM



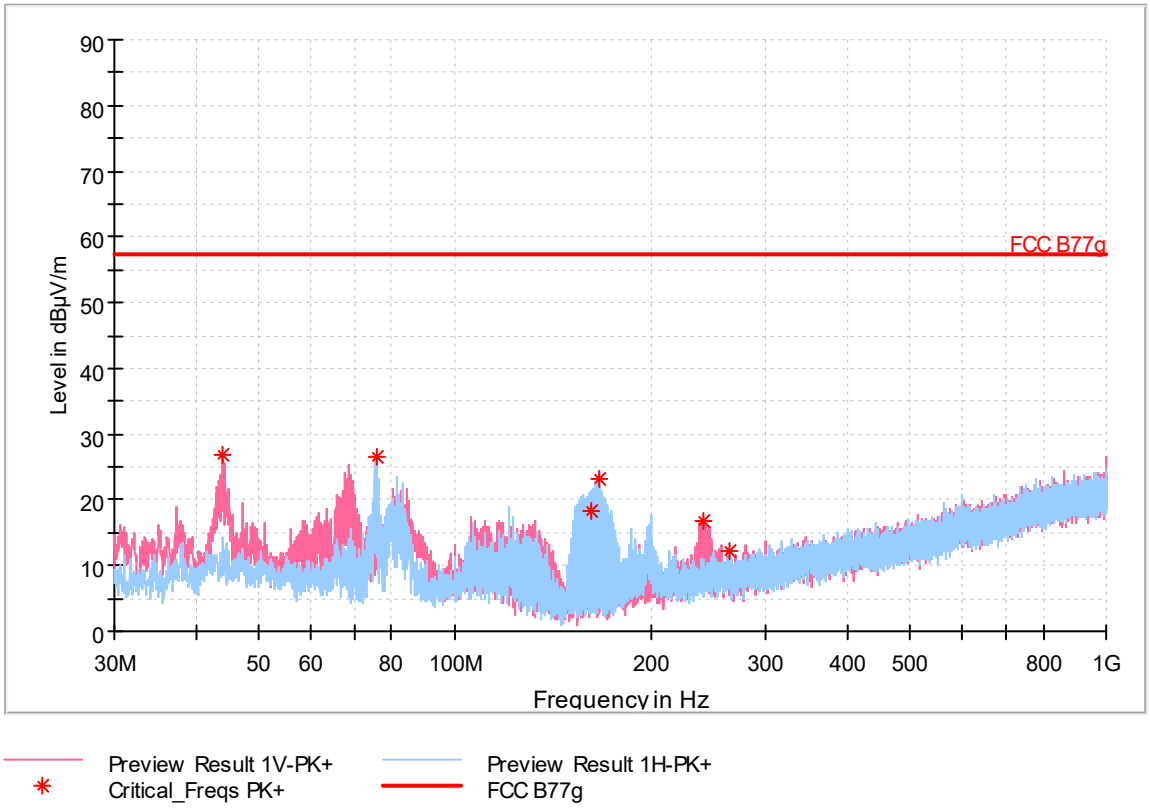
18GHz-26.5GHz-B77G-NR-MIMO-1C-UE-T-100M-64QAM



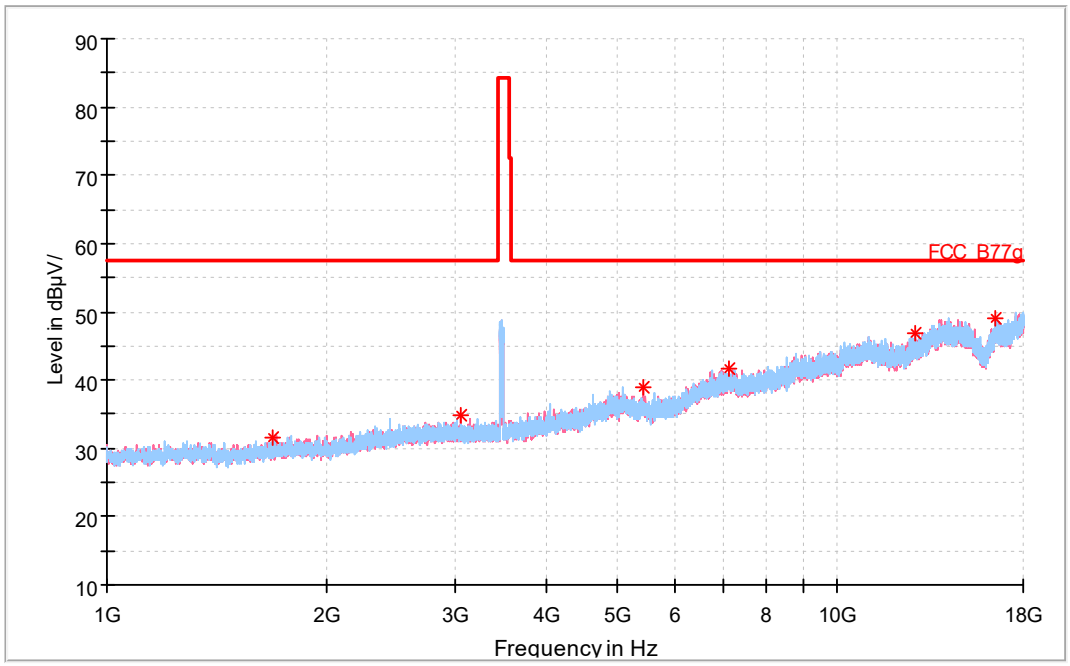
26.5GHz-40GHz-B77G-NR-MIMO-1C-UE-T-100M-64QAM

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-2C-UE	B	2	20	64QAM
NR-MIMO-2C-UE	T	2	50	64QAM

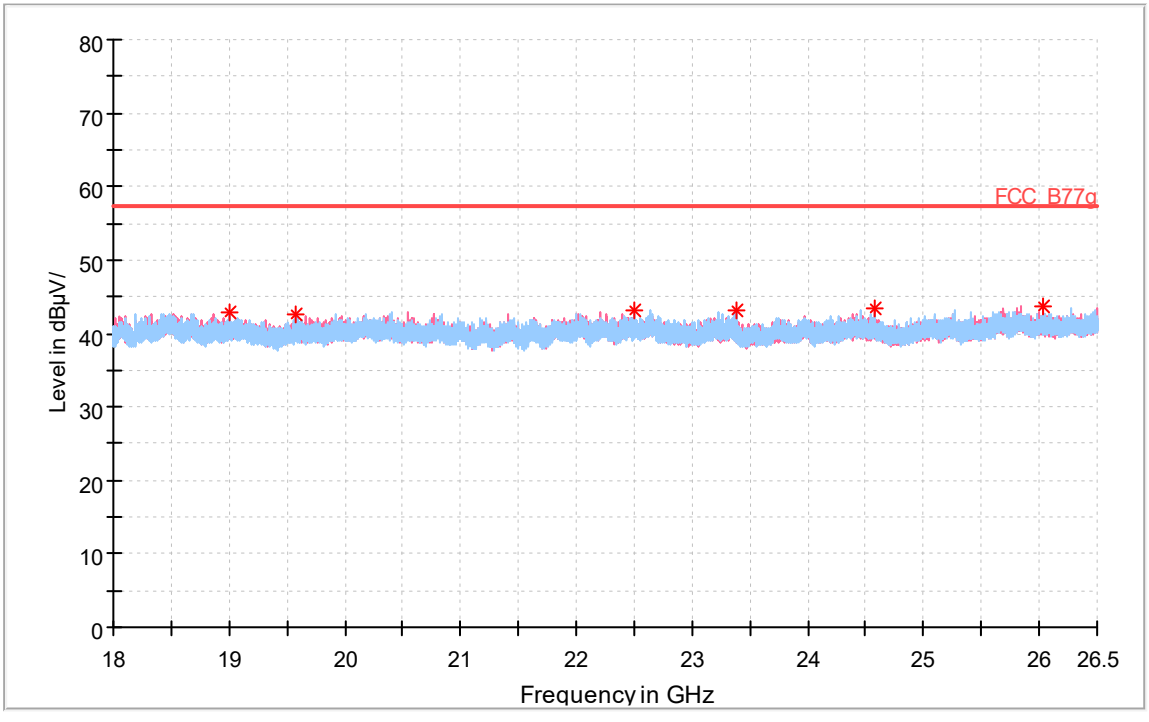
Test figure as below:



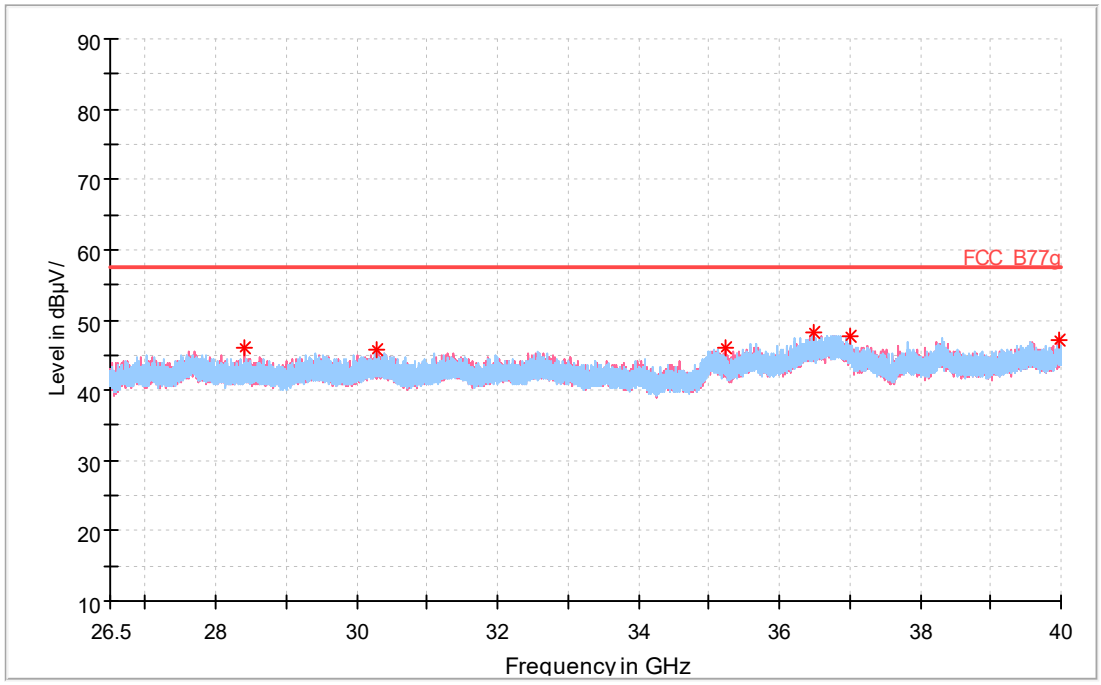
30MHz-1GHz-B77G-NR-MIMO-2C-UE-B-20M-64QAM



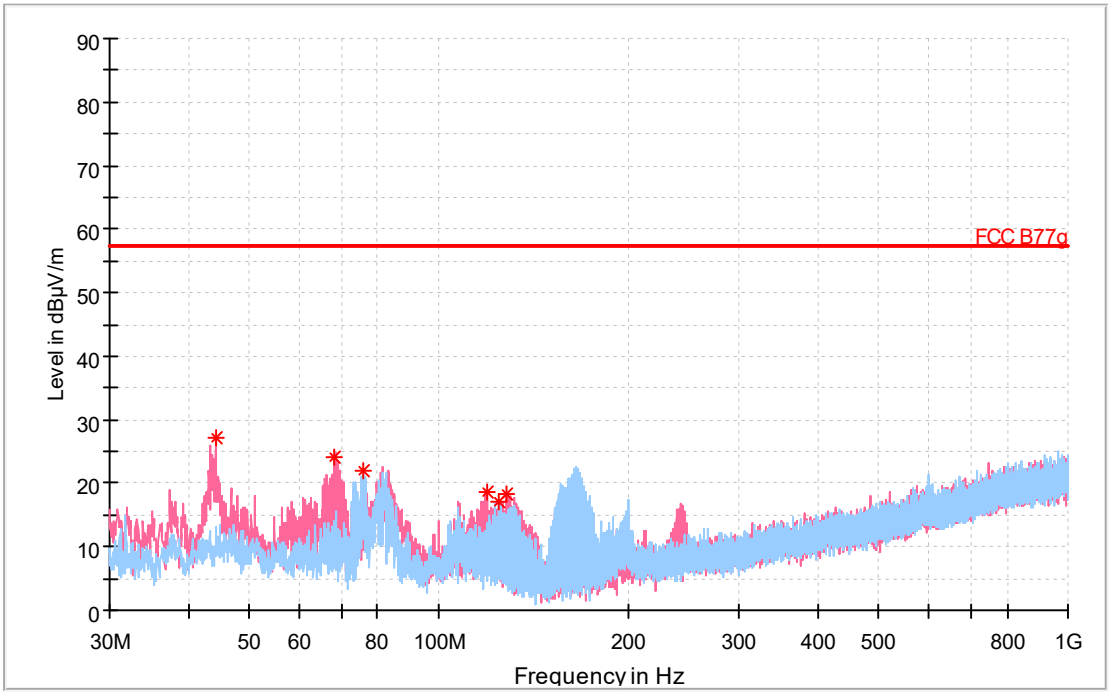
1GHz-18GHz-B77G-NR-MIMO-2C-UE-B-20M-64QAM



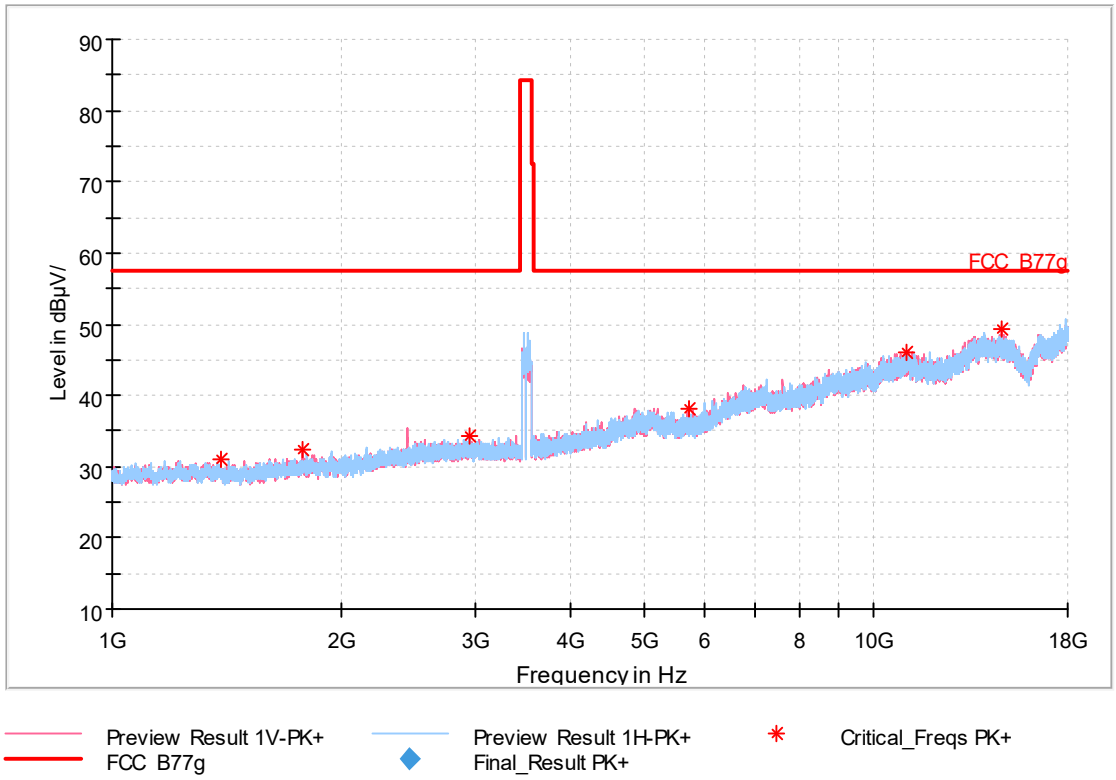
18GHz-26.5GHz-B77G-NR-MIMO-2C-UE-B-20M-64QAM



26.5GHz-40GHz-B77G-NR-MIMO-2C-UE-B-20M-64QAM

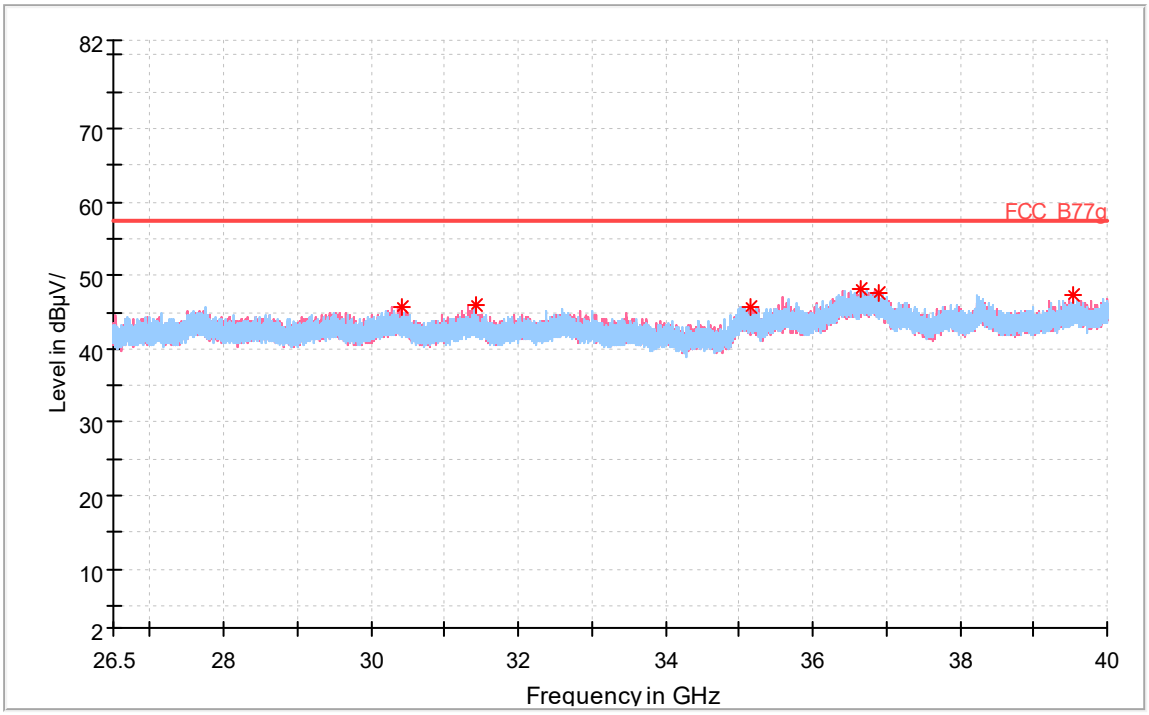


30MHz-1GHz-B77G-NR-MIMO-2C-UE-B-50M-64QAM



1GHz-18GHz-B77G-NR-MIMO-2C-UE-B-50M-64QAM

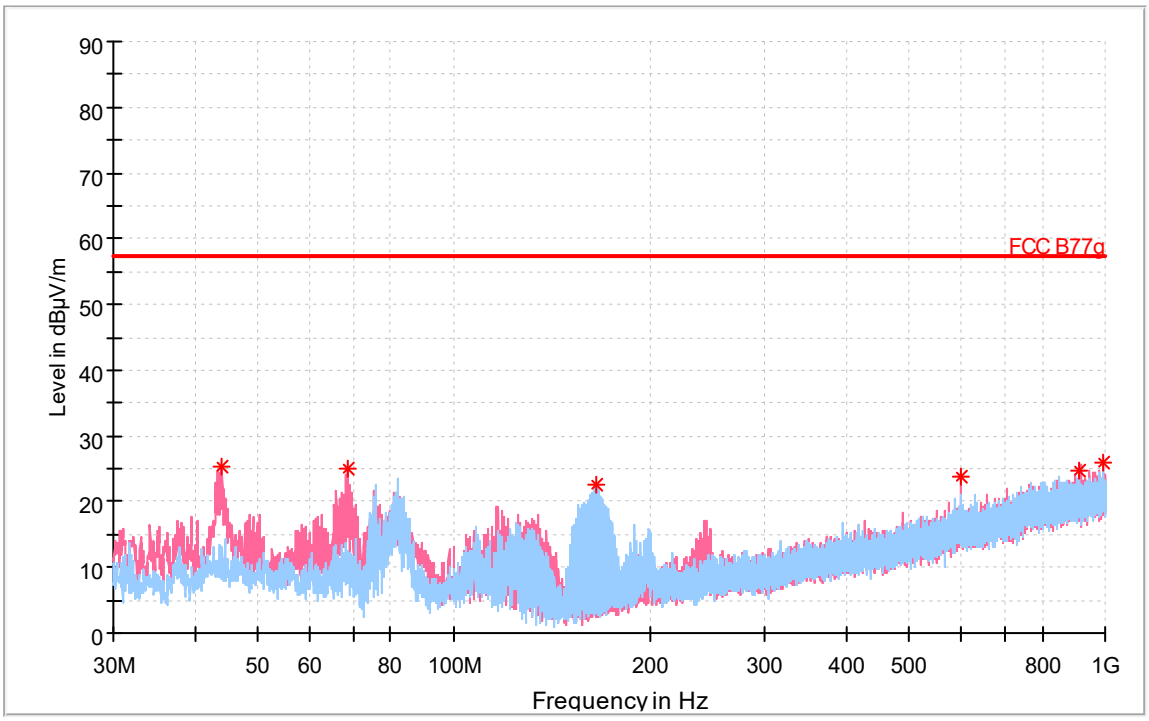
18GHz-26.5GHz-B77G-NR-MIMO-2C-UE-B-50M-64QAM



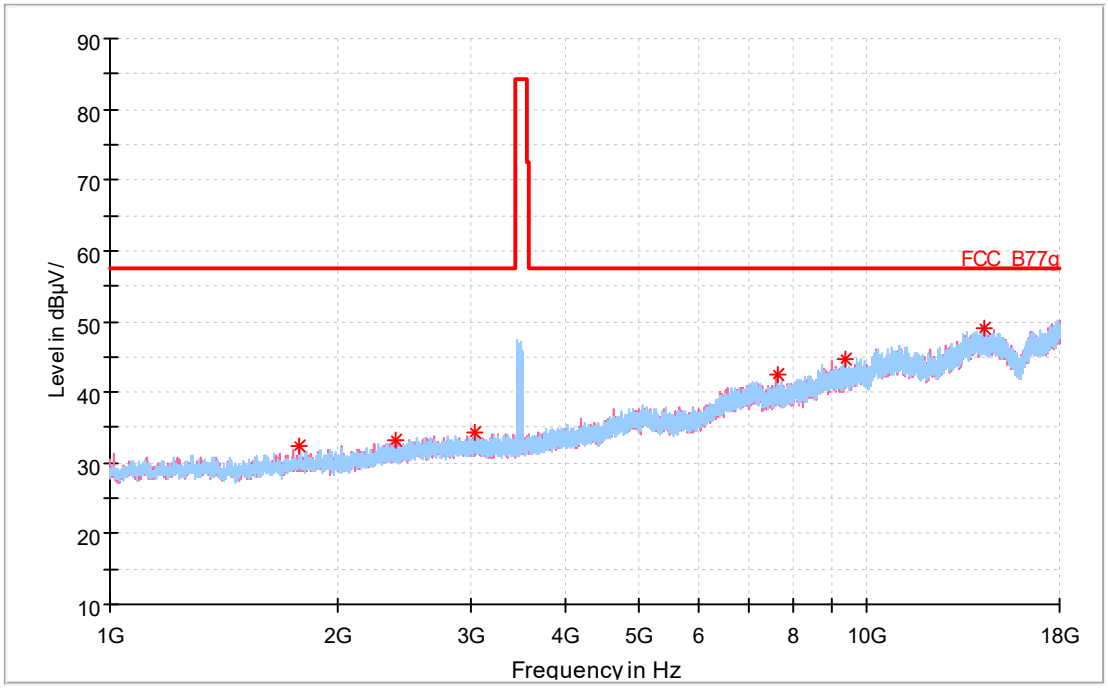
26.5GHz-40GHz-B77G-NR-MIMO-2C-UE-B-50M-64QAM

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-3C-UE	B+M+T	3	20	64QAM

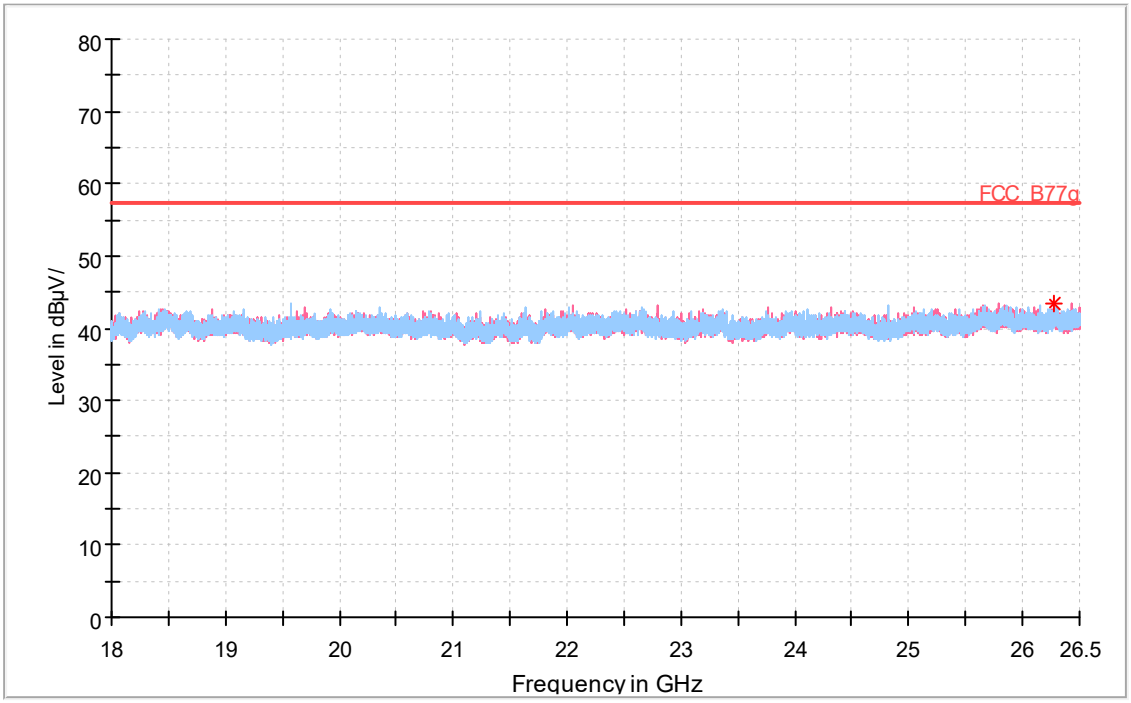
Test figure as below:



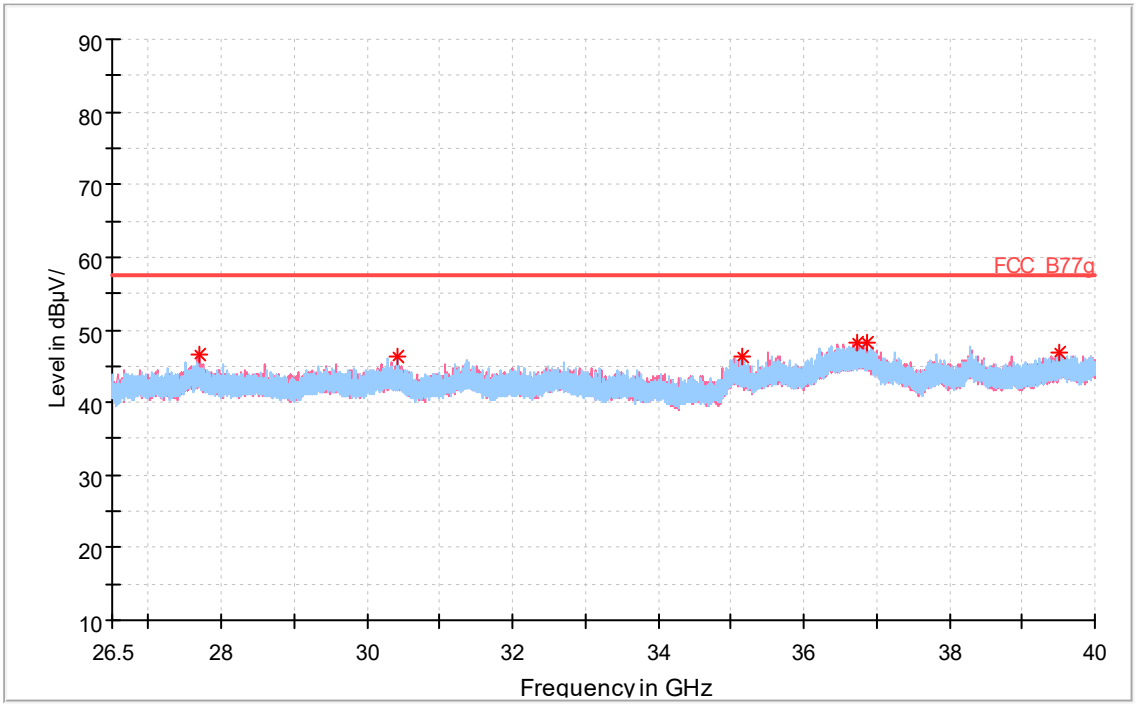
30MHz-1GHz-B77G-NR-MIMO-3C-UE-B+M+T-20M-64QAM



1GHz-18GHz-B77G-NR-MIMO-3C-UE-B+M+T-20M-64QAM



18GHz-26.5GHz-B77G-NR-MIMO-3C-UE-B+M+T-20M-64QAM

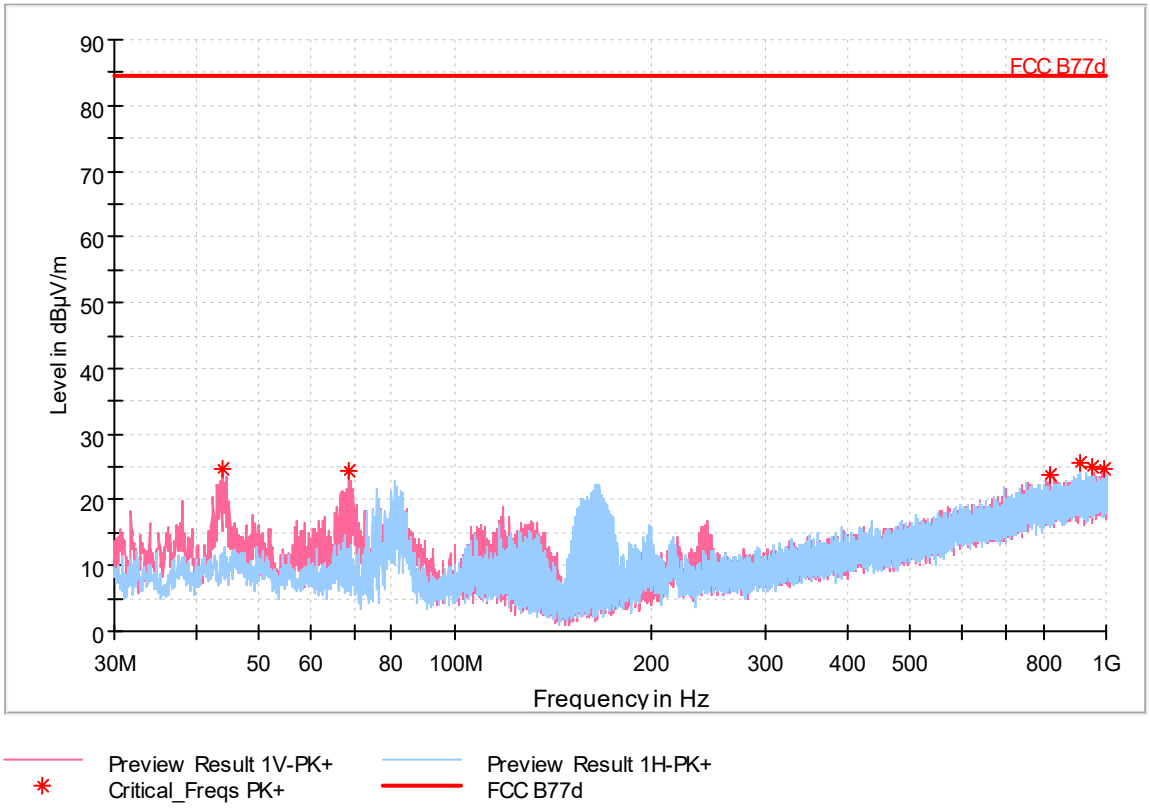


26.5GHz-40GHz-B77G-NR-MIMO-3C-UE-B+M+T-20M-64QAM

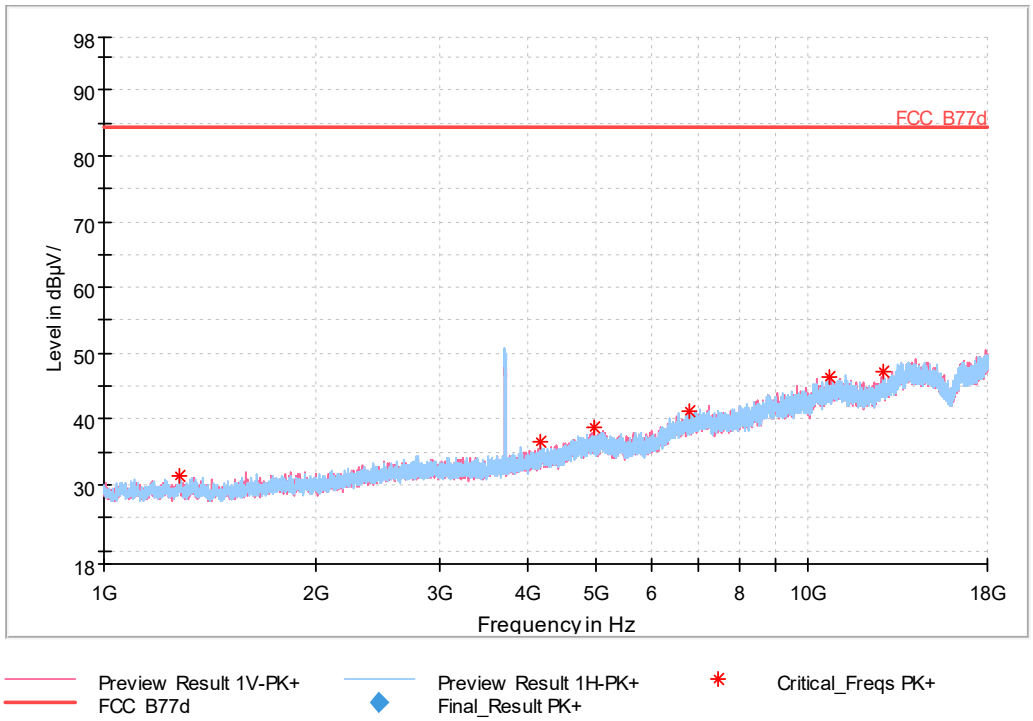
B77D NR mode:

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-1C-UE	B	1	20	64QAM
NR-MIMO-1C-UE	T	1	50	64QAM
NR-MIMO-1C-UE	T	1	100	64QAM

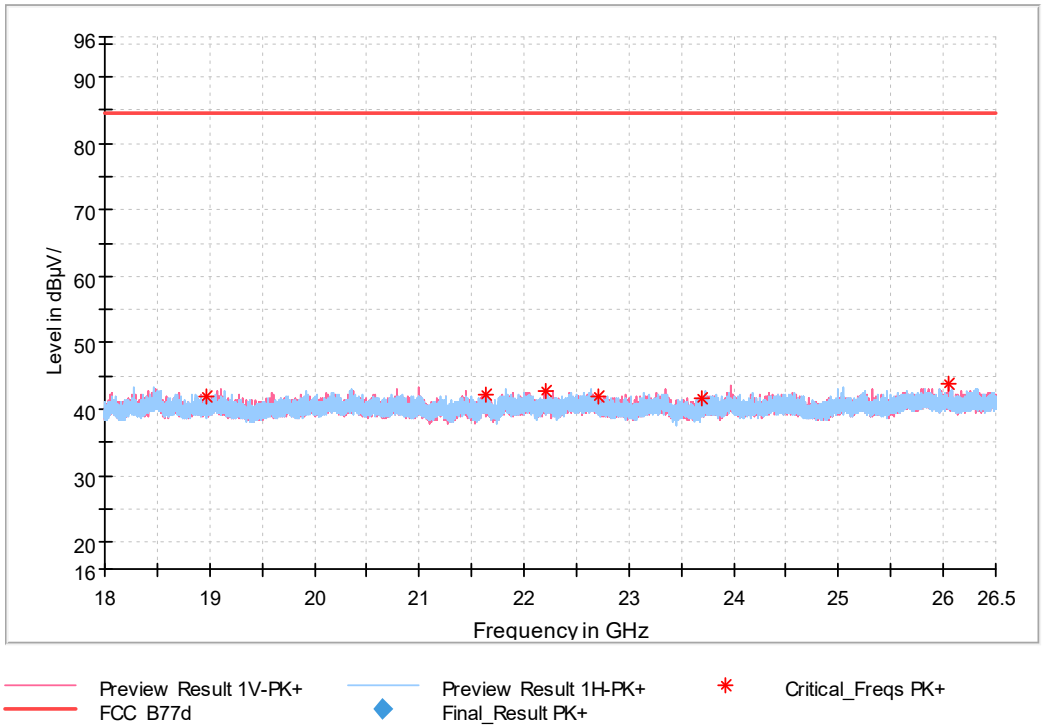
Test figure as below:



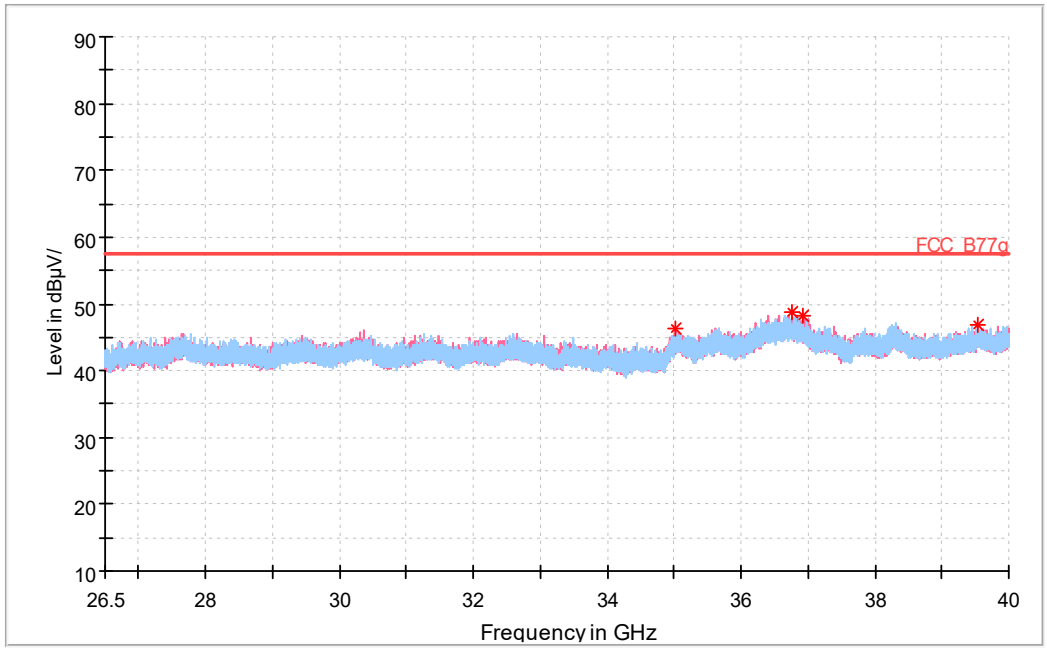
30MHz-1GHz-B77D-NR-MIMO-1C-UE-B-20MHz-64QAM



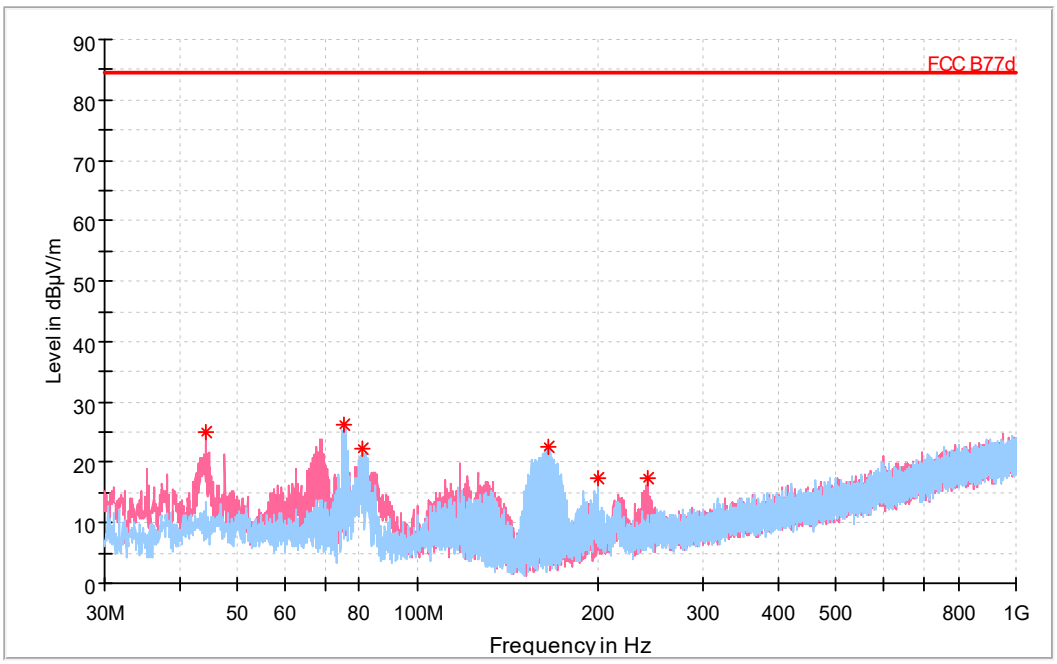
1GHz-18GHz-B77D-NR-MIMO-1C-UE-B-20MHz-64QAM



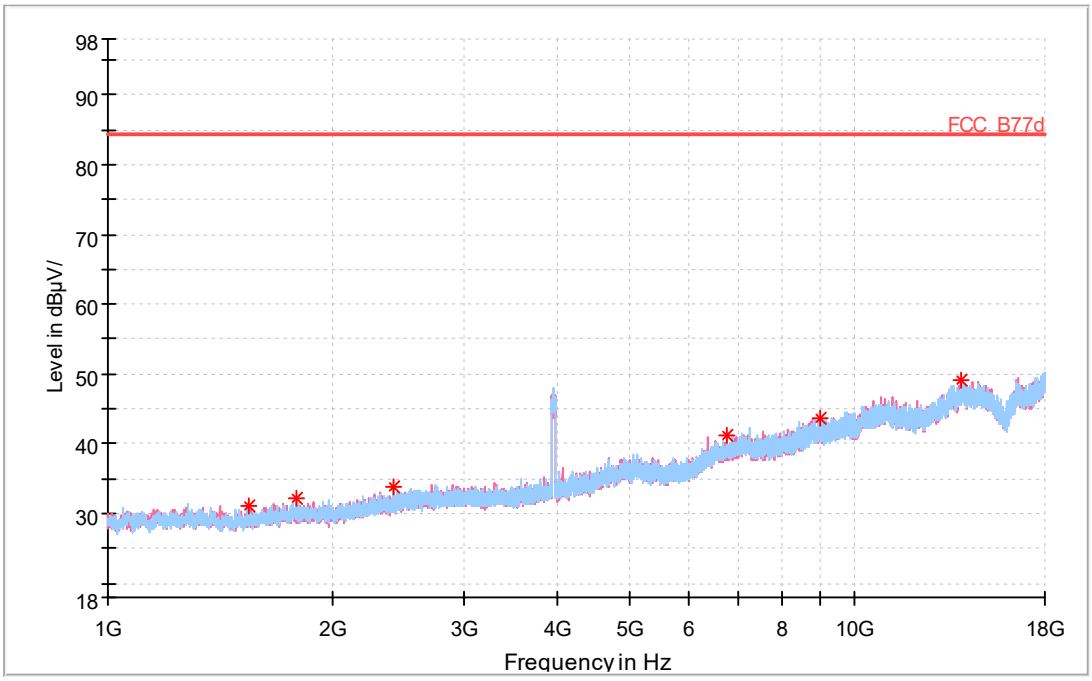
18GHz-26.5GHz-B77D-NR-MIMO-1C-UE-B-20MHz-64QAM



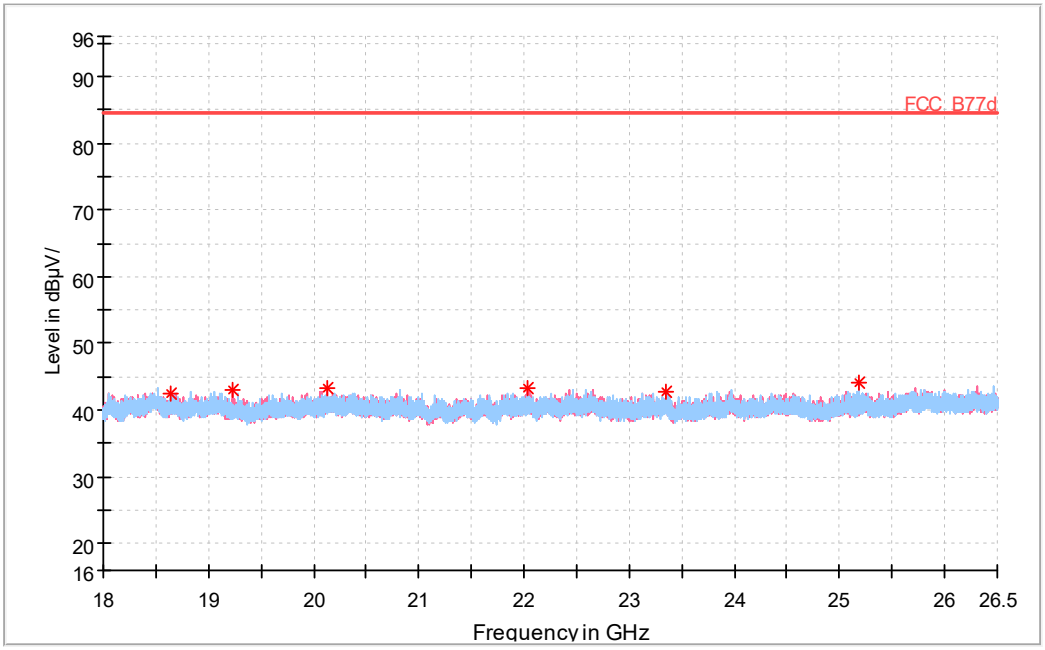
26.5GHz-40GHz-B77D-NR-MIMO-1C-UE-B-20MHz-64QAM



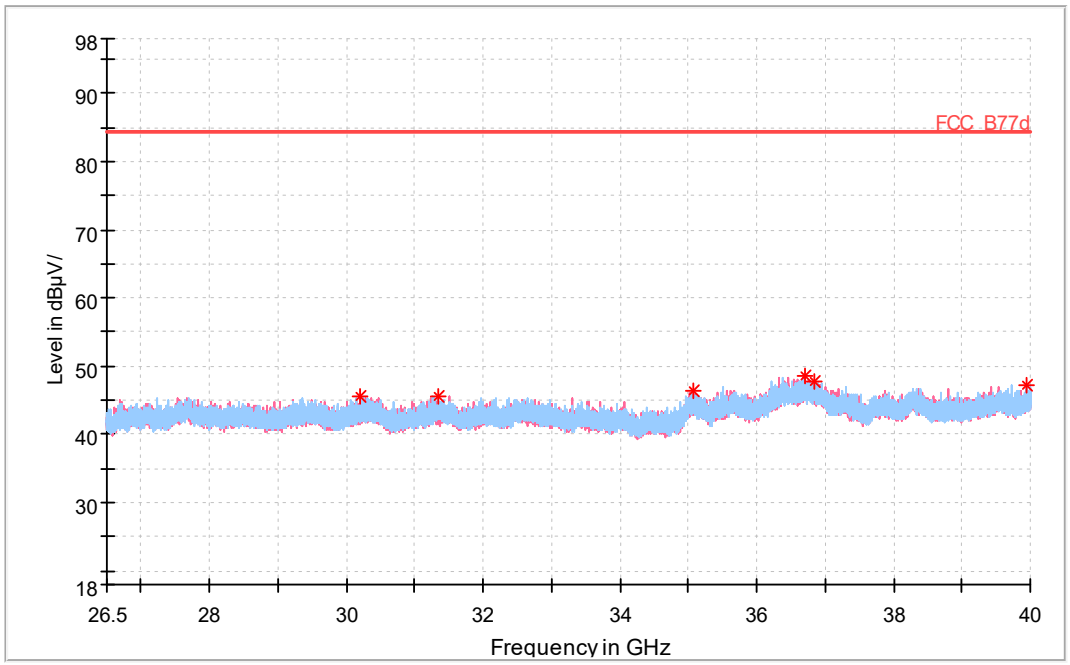
30MHz-1GHz-B77D-NR-MIMO-1C-UE-T-50MHz-64QAM



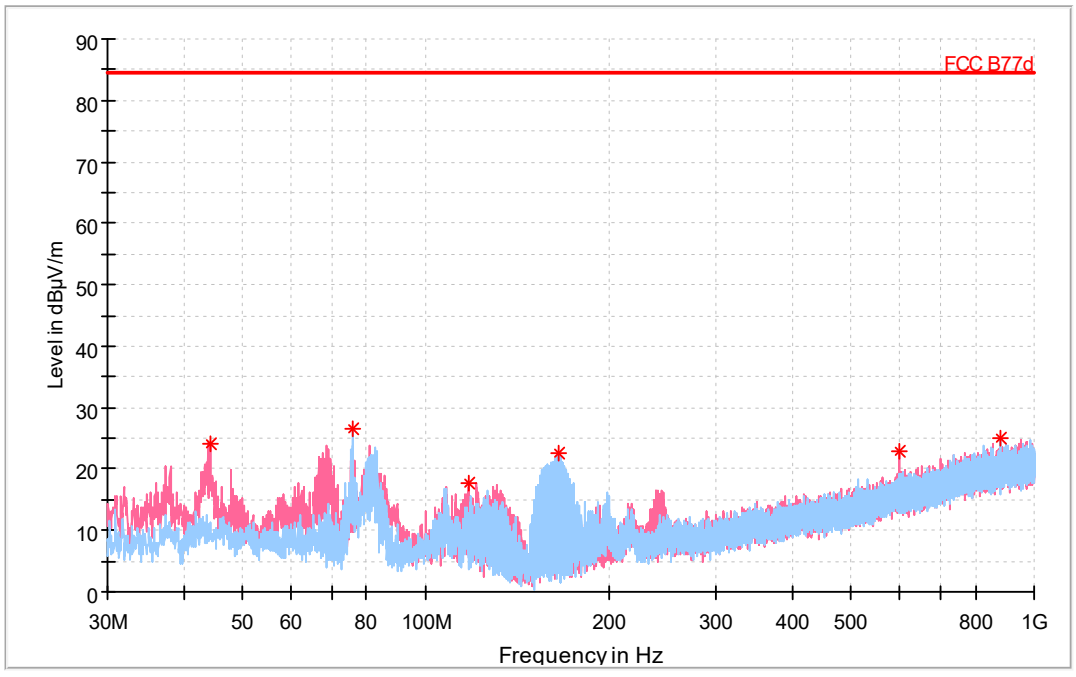
1GHz-18GHz-B77D-NR-MIMO-1C-UE-T-50MHz-64QAM



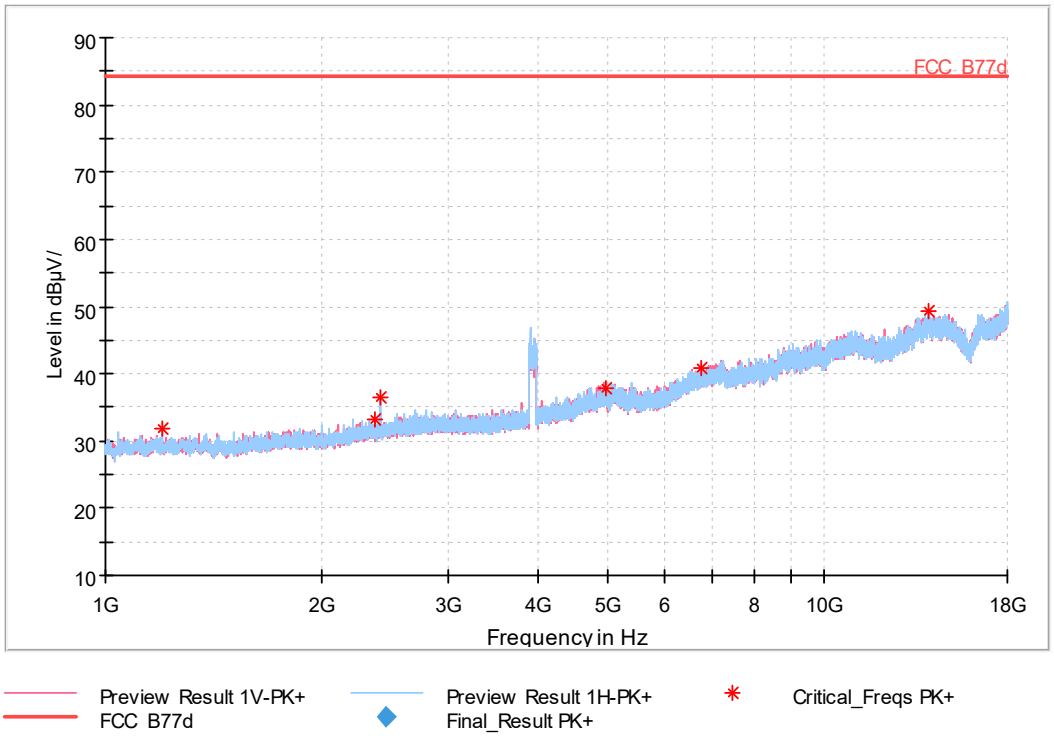
18GHz-26.5GHz-B77D-NR-MIMO-1C-UE-T-50MHz-64QAM



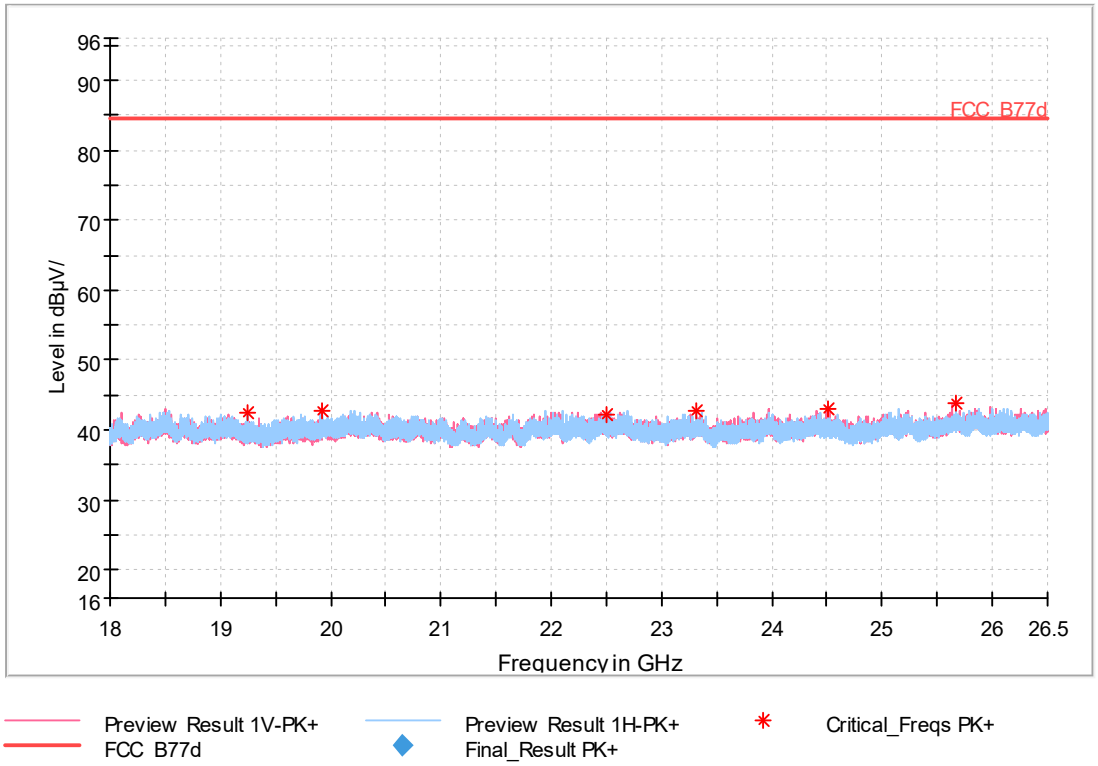
26.5GHz-40GHz-B77D-NR-MIMO-1C-UE-T-50MHz-64QAM



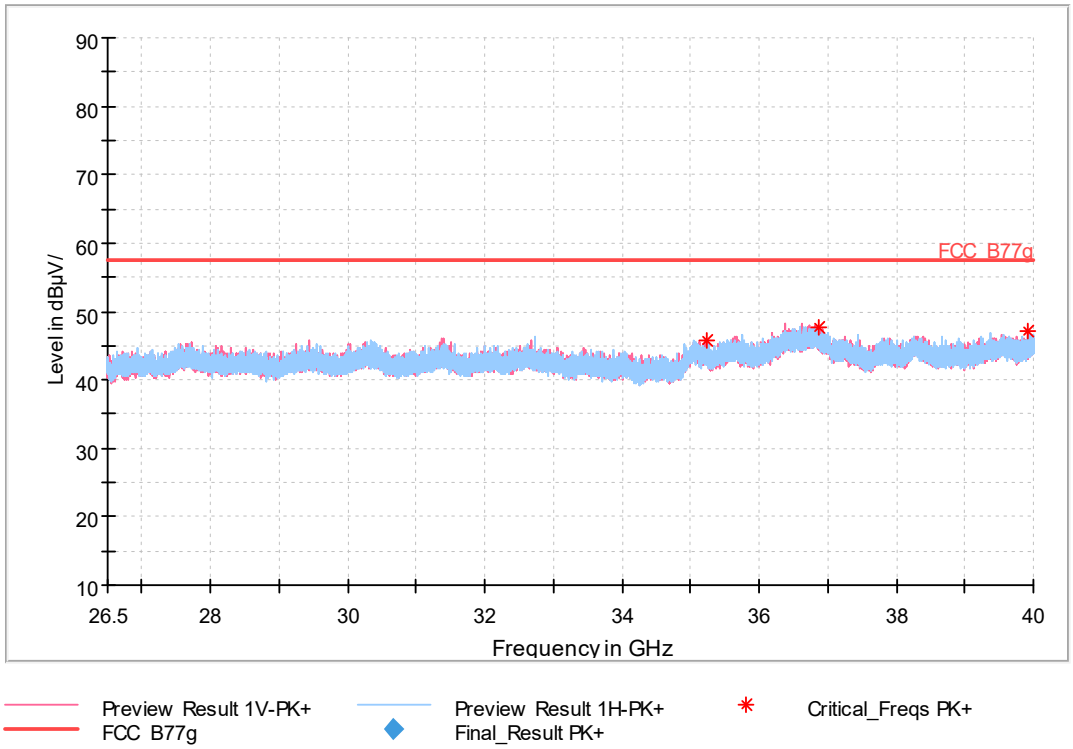
30MHz-1GHz-B77D-NR-MIMO-1C-UE-T-100MHz-64QAM



1GHz-18GHz-B77D-NR-MIMO-1C-UE-T-100MHz-64QAM



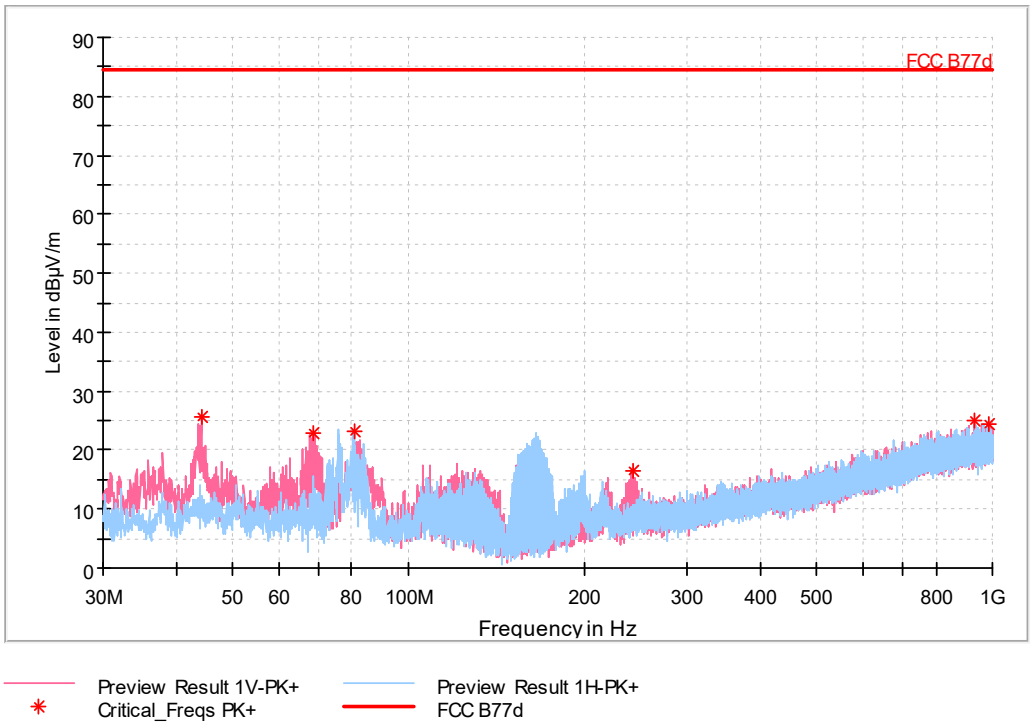
18GHz-26.5GHz-B77D-NR-MIMO-1C-UE-T-100MHz-64QAM



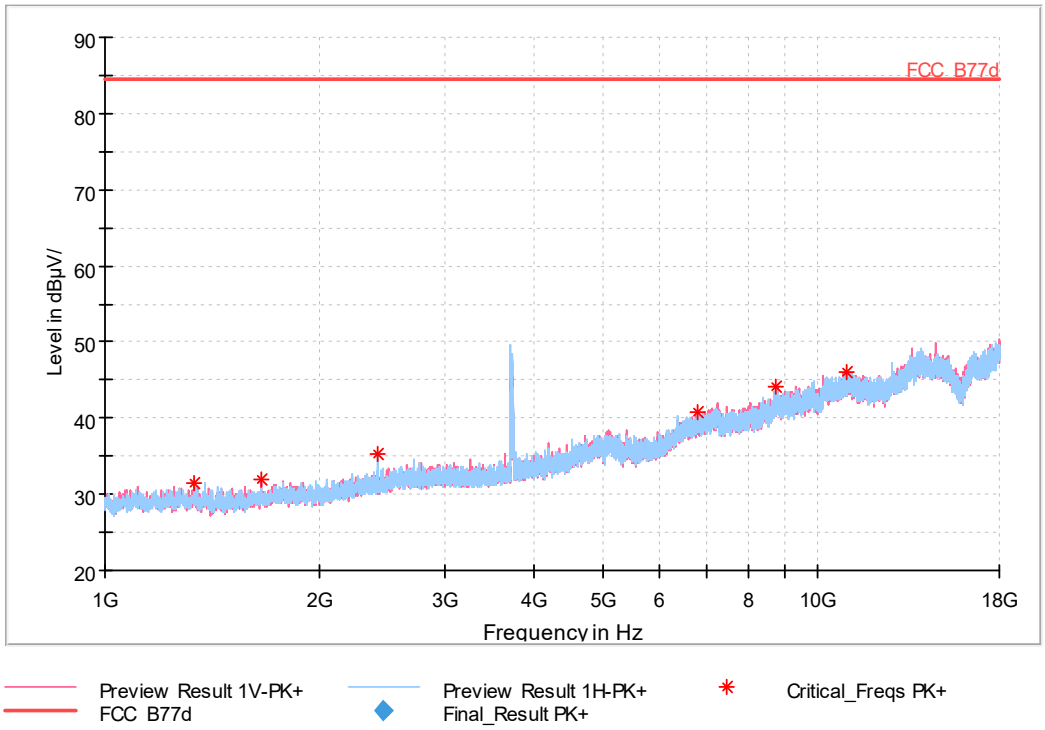
26.5GHz-40GHz-B77D-NR-MIMO-1C-UE-T-100MHz-64QAM

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-2C-UE	B	2	20	64QAM
NR-MIMO-2C-UE	T	2	100	64QAM

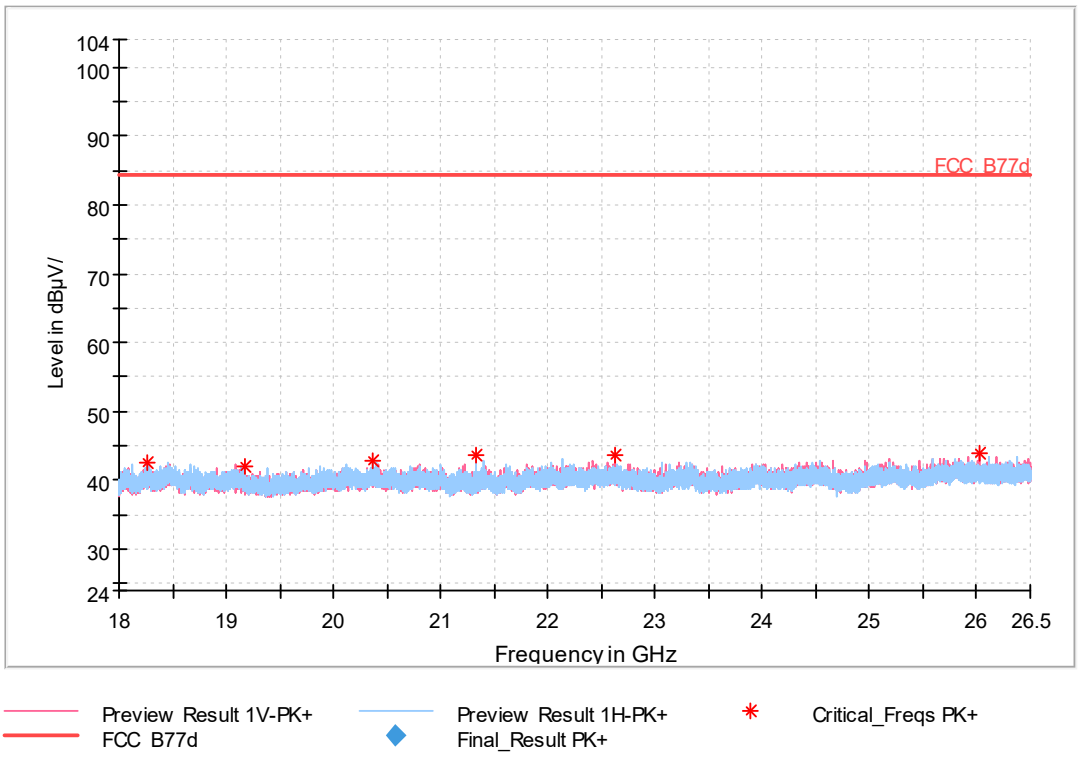
Test figure as below:



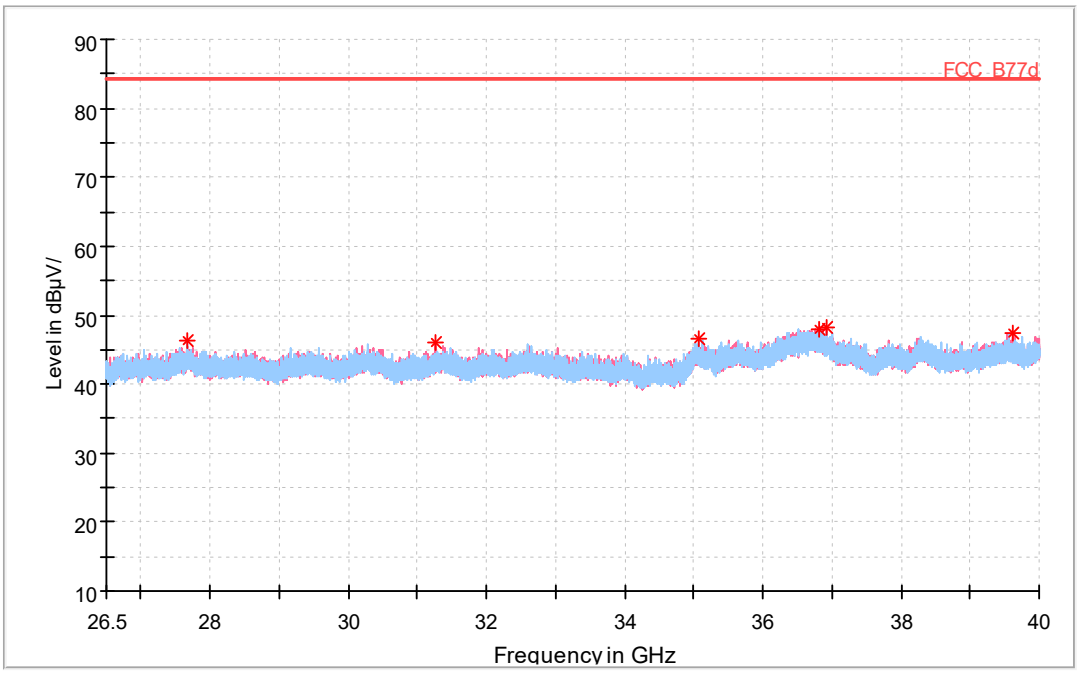
30MHz-1GHz-B77D-NR-MIMO-2C-UE-B-20MHz-64QAM



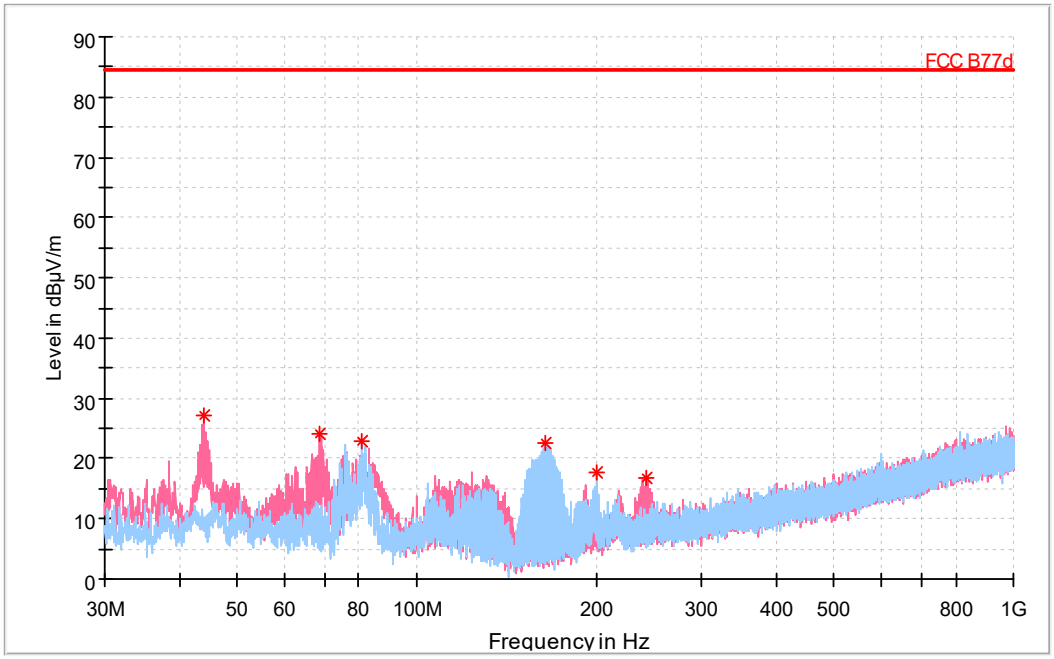
1GHz-18GHz-B77D-NR-MIMO-2C-UE-B-20MHz-64QAM



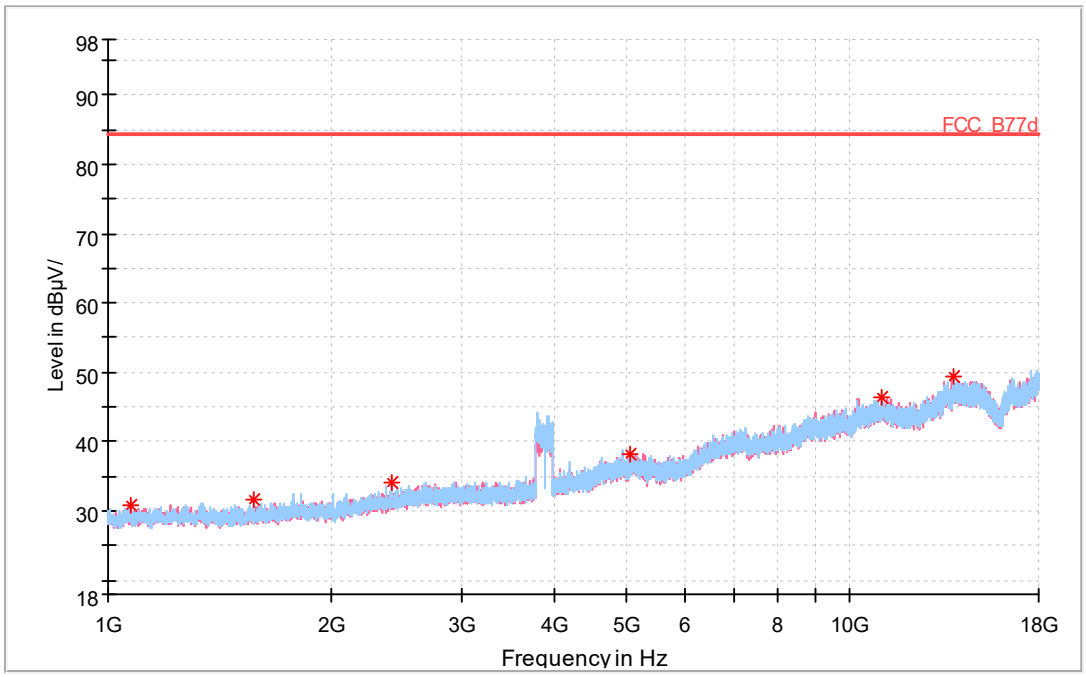
18GHz-26.5GHz-B77D-NR-MIMO-2C-UE-B-20MHz-64QAM



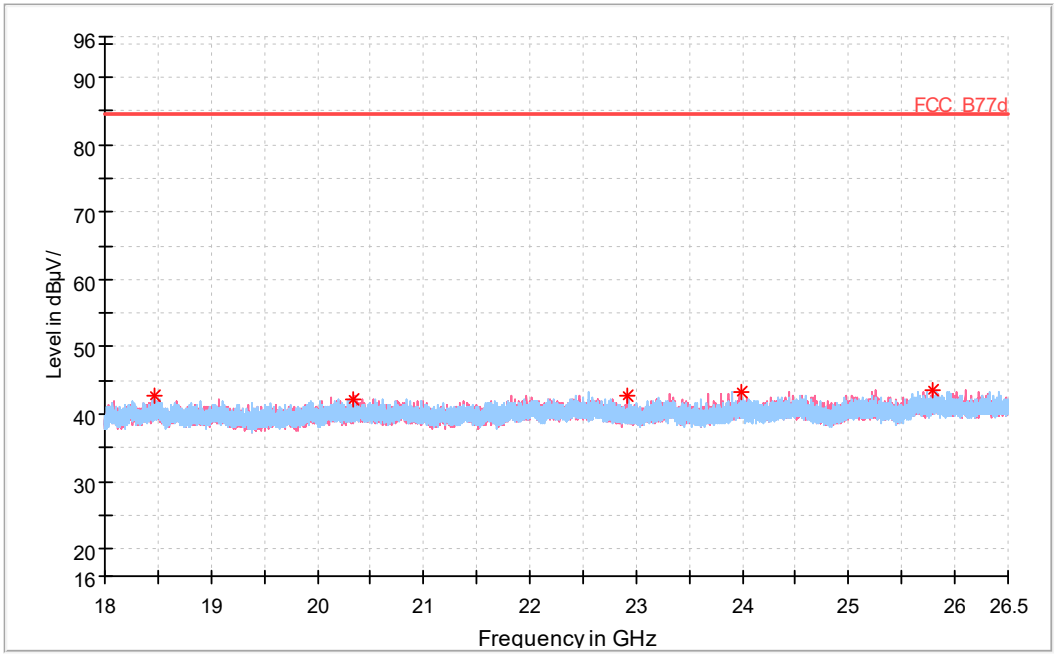
26.5GHz-40GHz-B77D-NR-MIMO-2C-UE-B-20MHz-64QAM



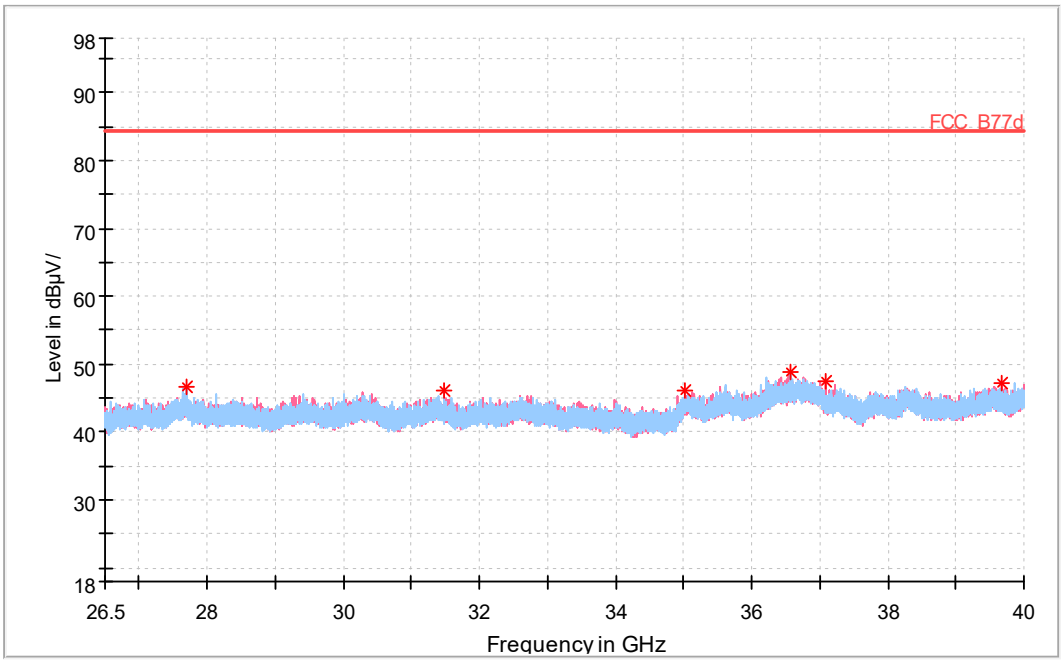
30MHz-1GHz-B77D-NR-MIMO-2C-UE-T-100MHz-64QAM



1GHz-18GHz-B77D-NR-MIMO-2C-UE-T-100MHz-64QAM



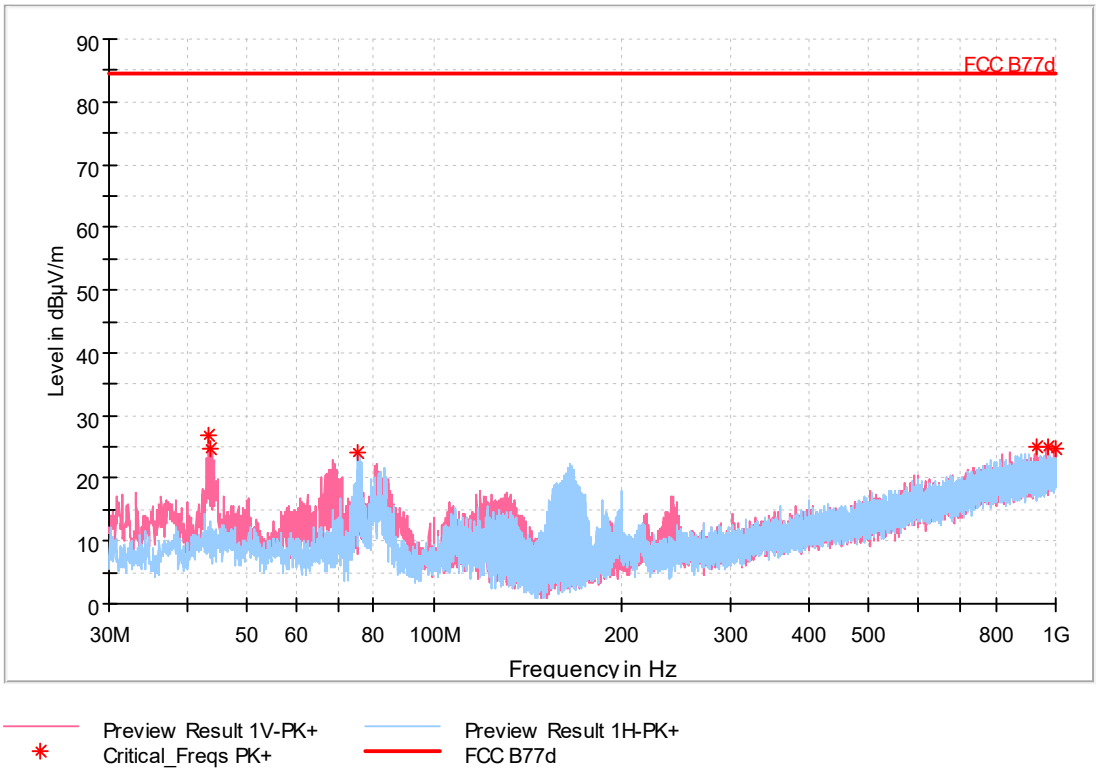
18GHz-26.5GHz-B77D-NR-MIMO-2C-UE-T-100MHz-64QAM



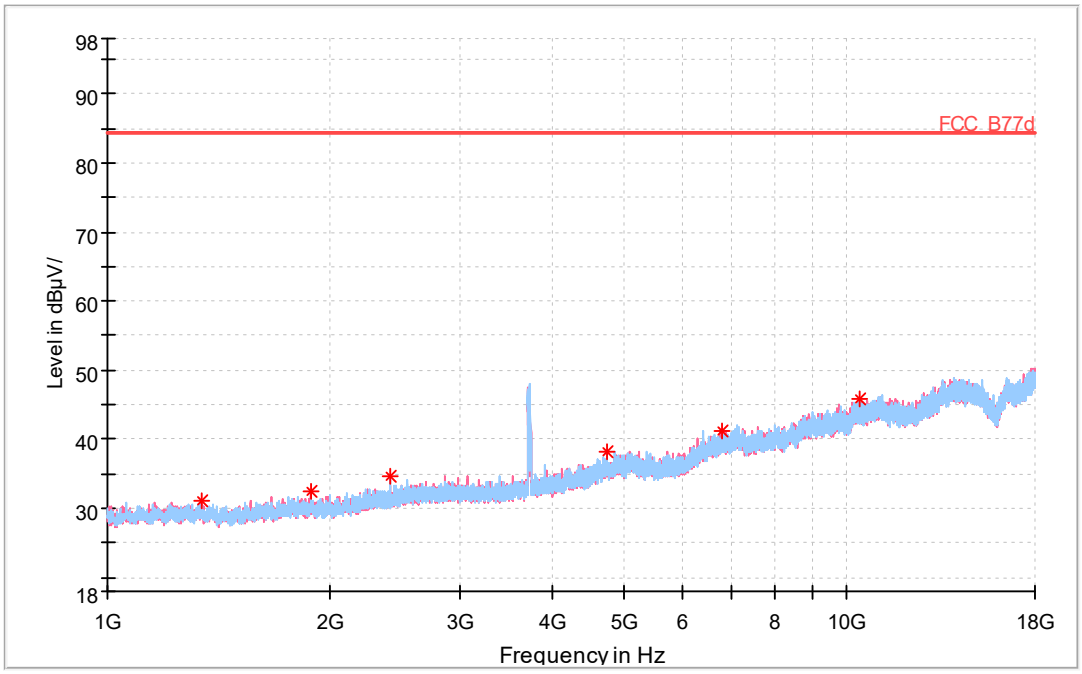
26.5GHz-40GHz-B77D-NR-MIMO-2C-UE-T-100MHz-64QAM

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-3C-UE	B	3	20	64QAM
NR-MIMO-3C-UE	T	3	50	64QAM

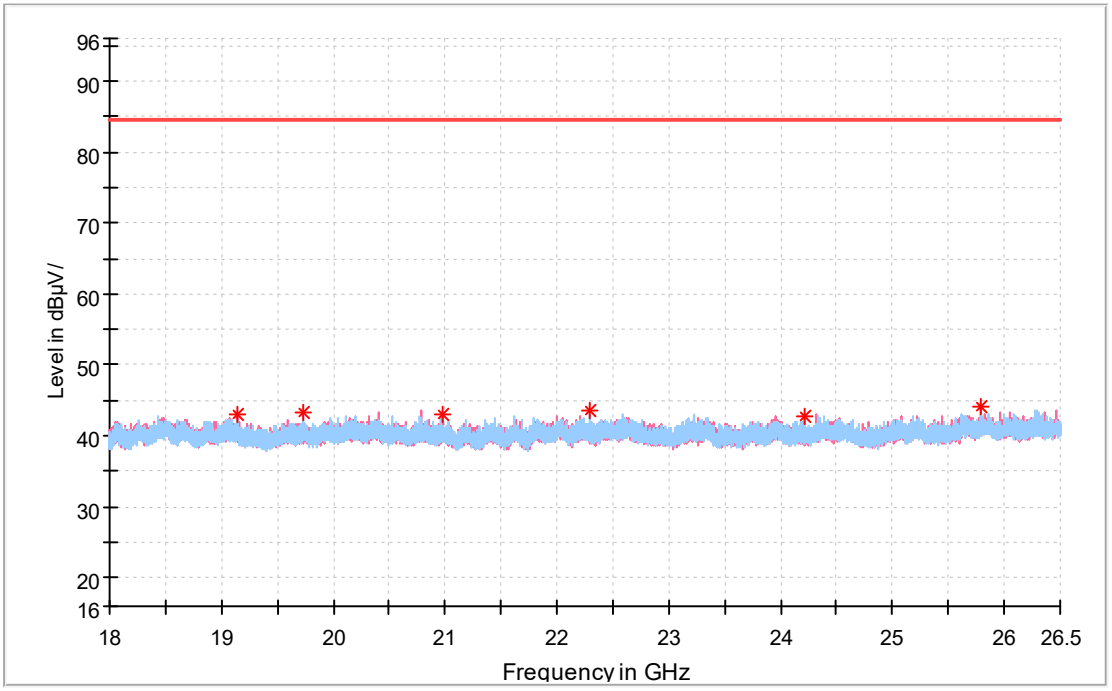
Test figure as below:



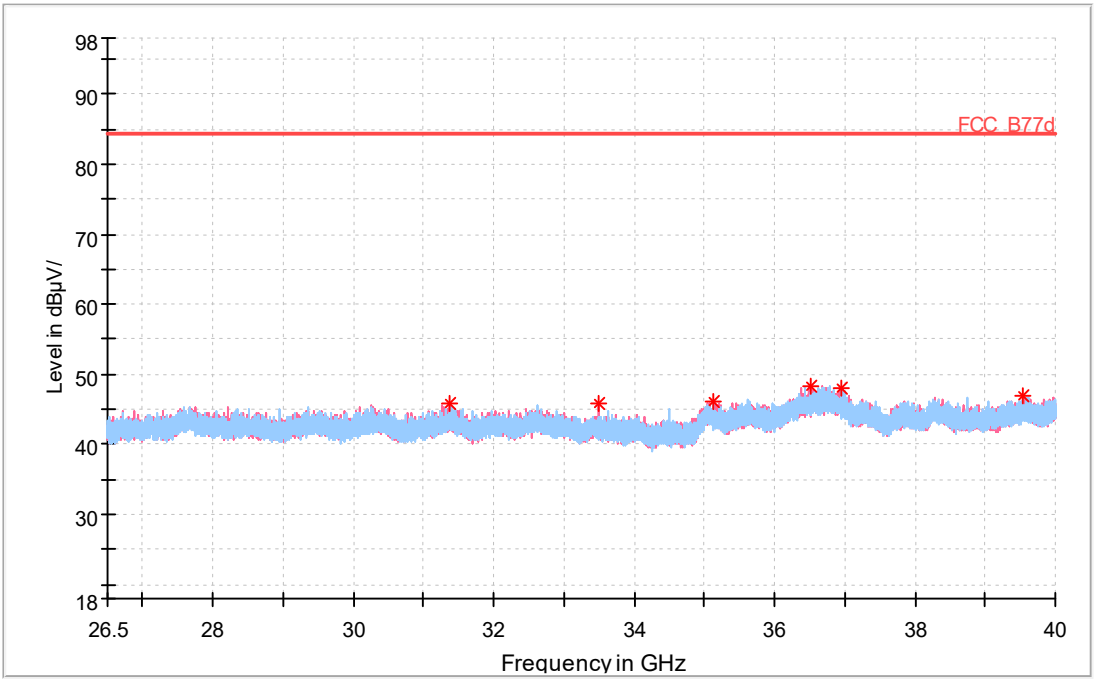
30MHz-1GHz-B77D-NR-MIMO-3C-UE-B-20MHz-64QAM



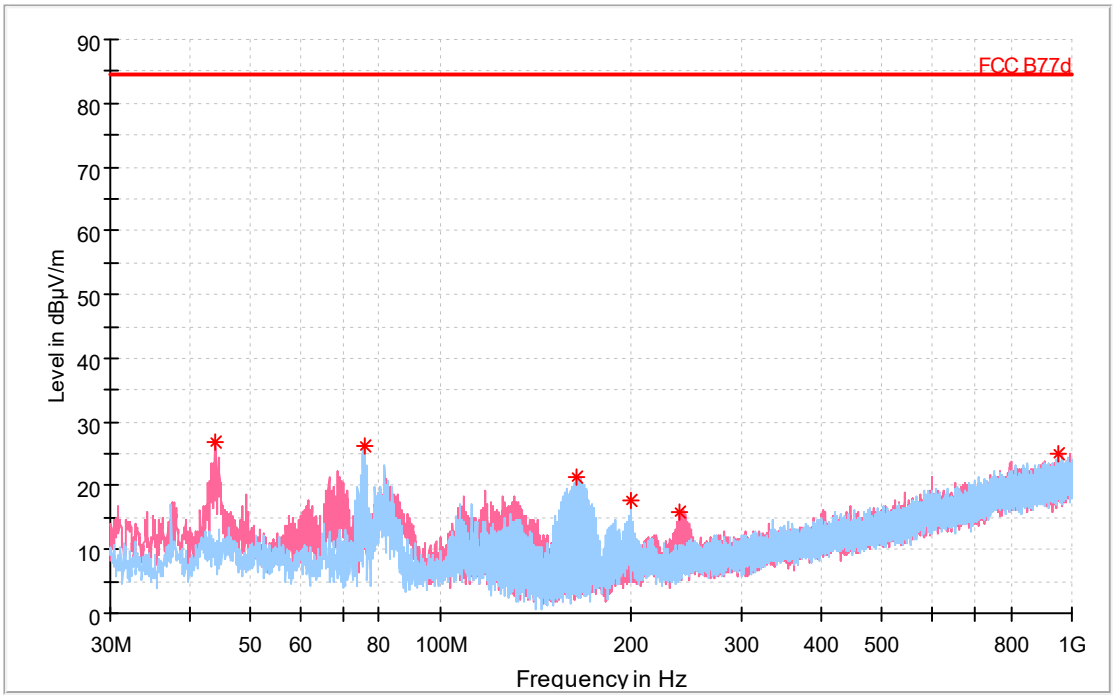
1GHz-18GHz-B77D-NR-MIMO-3C-UE-B-20MHz-64QAM



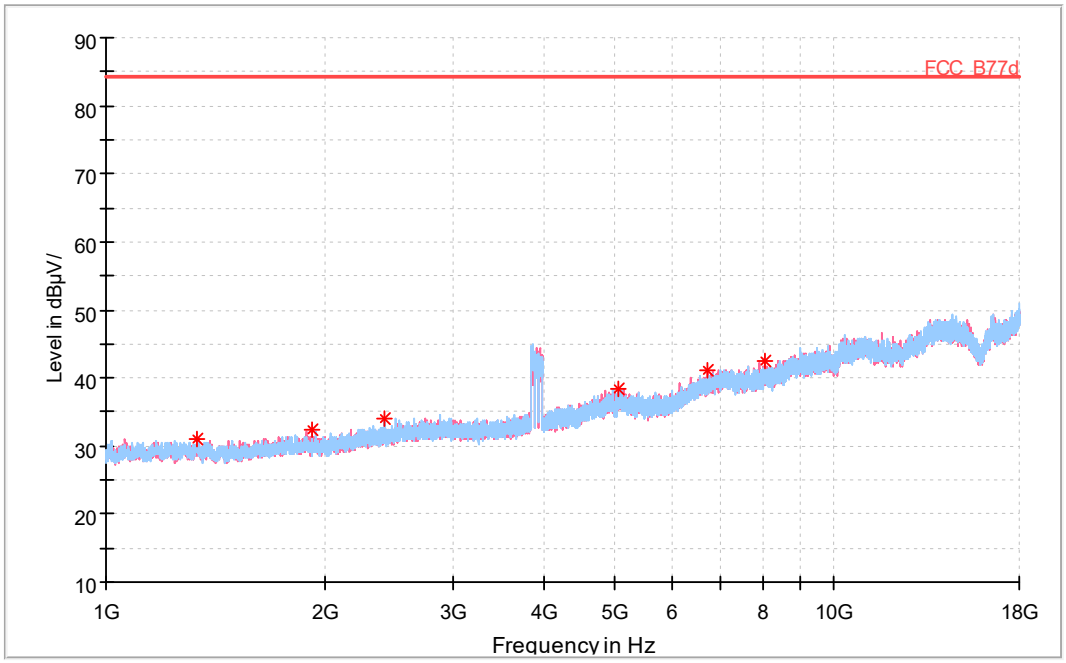
18GHz-26.5GHz-B77D-NR-MIMO-3C-UE-B-20MHz-64QAM



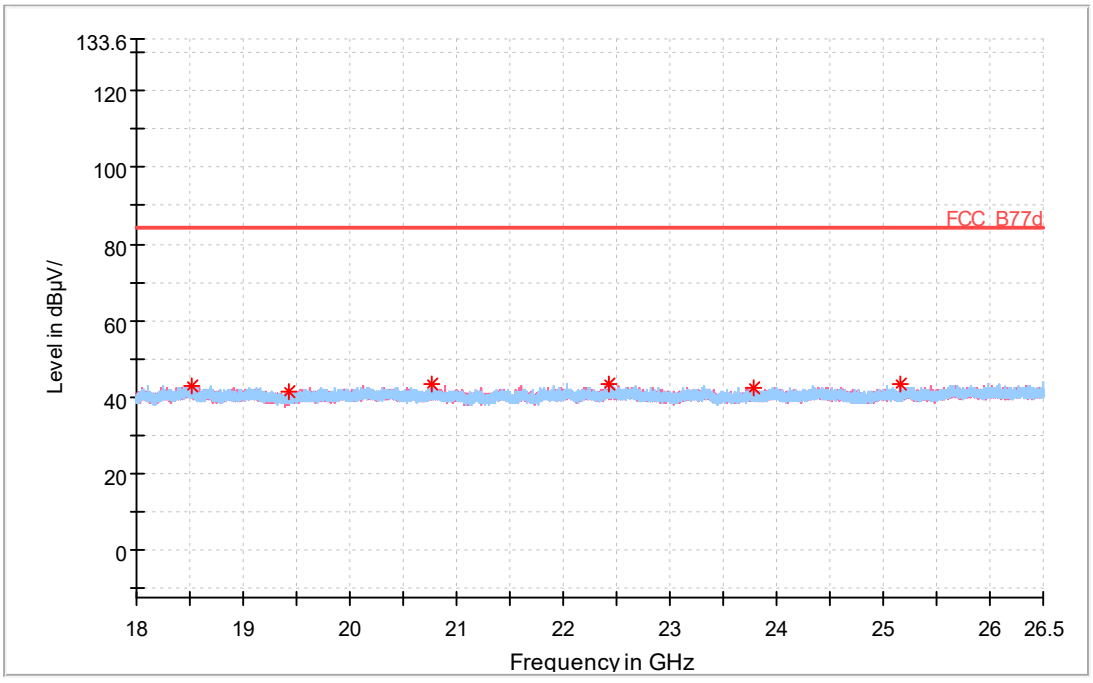
26.5GHz-40GHz-B77D-NR-MIMO-3C-UE-B-20MHz-64QAM



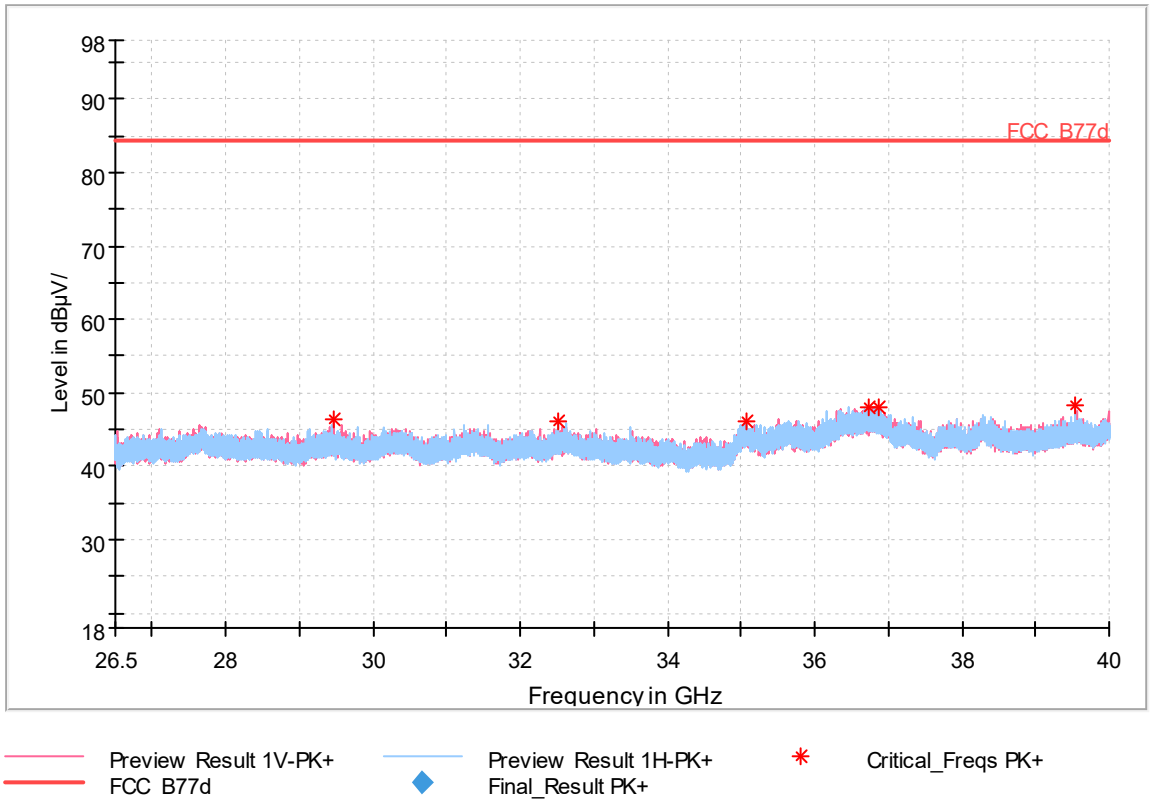
30MHz-1GHz-B77D-NR-MIMO-3C-UE-B-50MHz-64QAM



1GHz-18GHz-B77D-NR-MIMO-3C-UE-B-50MHz-64QAM



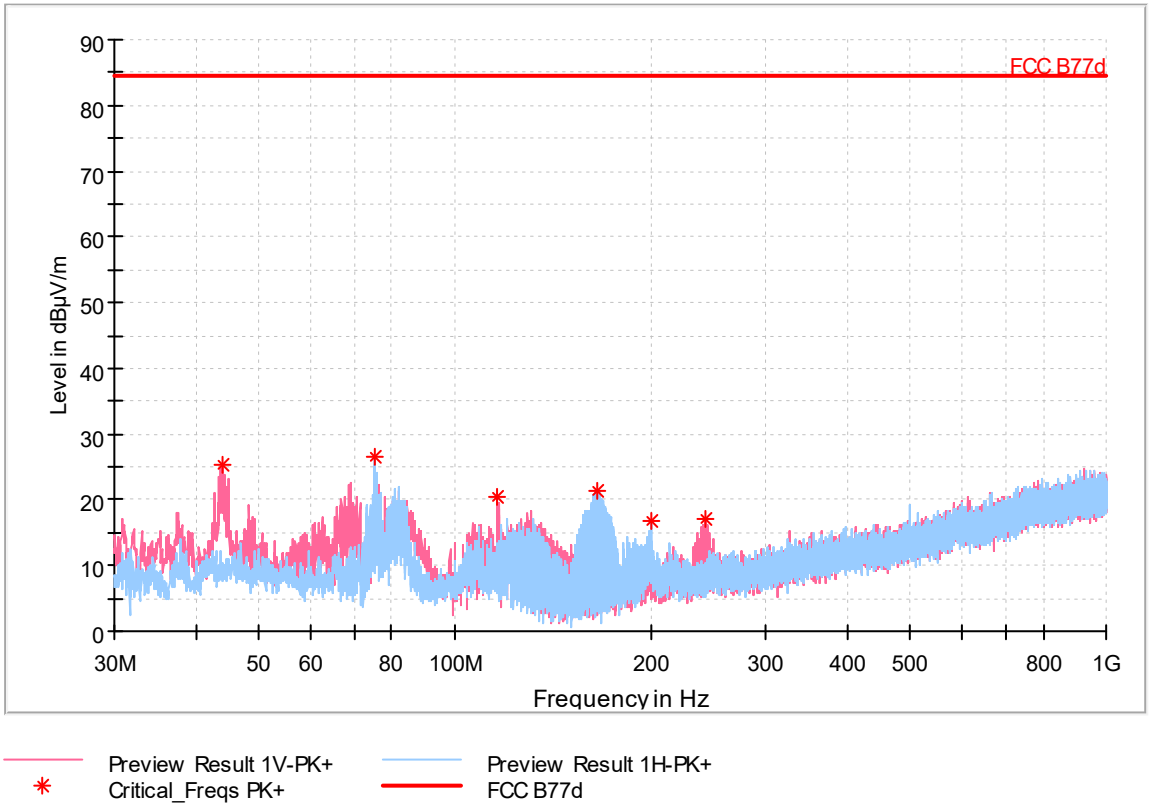
18GHz-26.5GHz-B77D-NR-MIMO-3C-UE-B-50MHz-64QAM



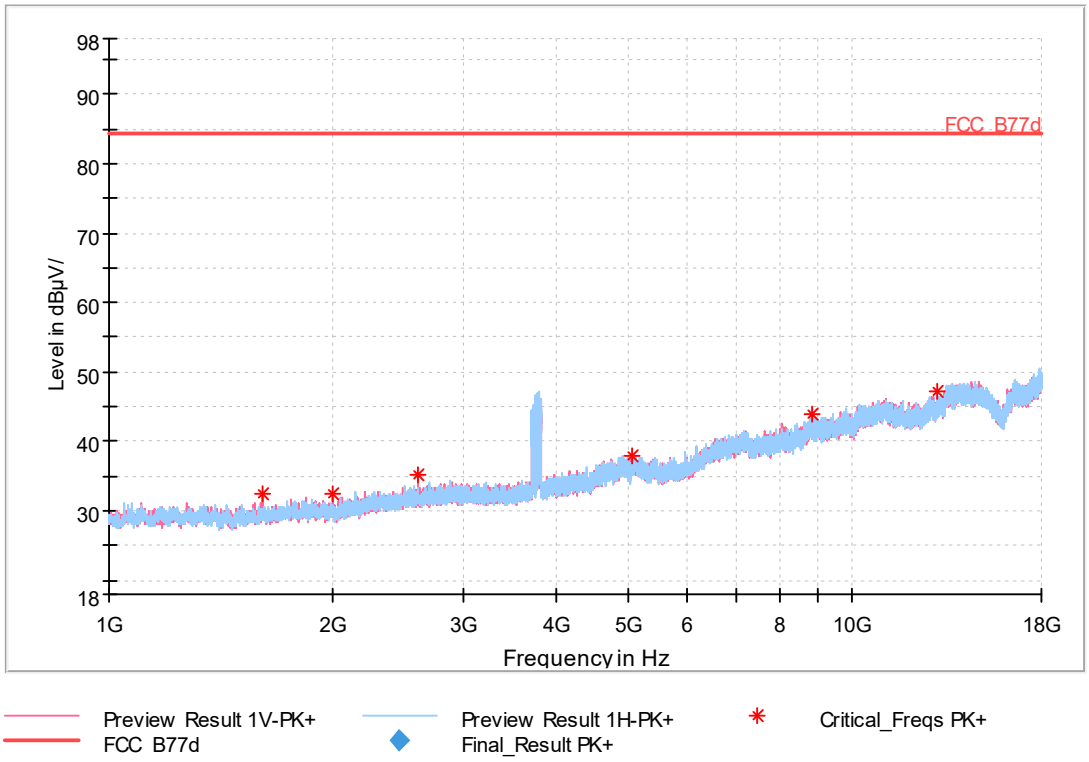
26.5GHz-40GHz-B77D-NR-MIMO-3C-UE-B-50MHz-64QAM

Configuration	Channel Position	Carrier	Carrier Bandwidth (MHz)	Modulation
NR-MIMO-6C-UE	B	6	20	64QAM

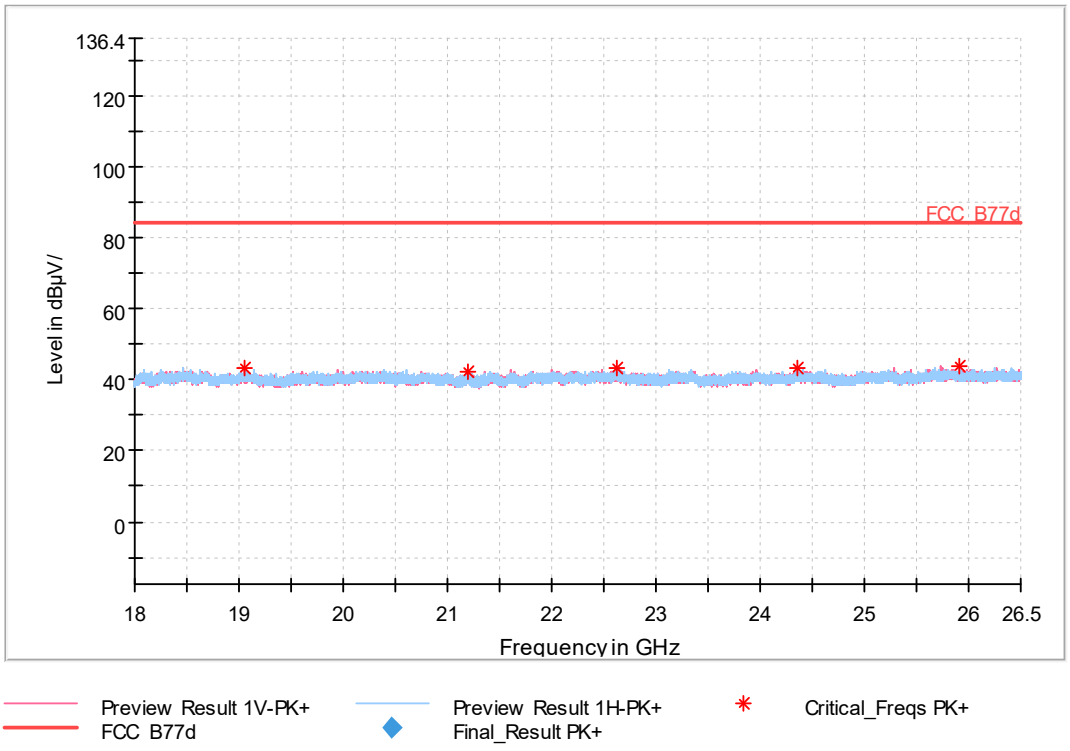
Test figure as below:



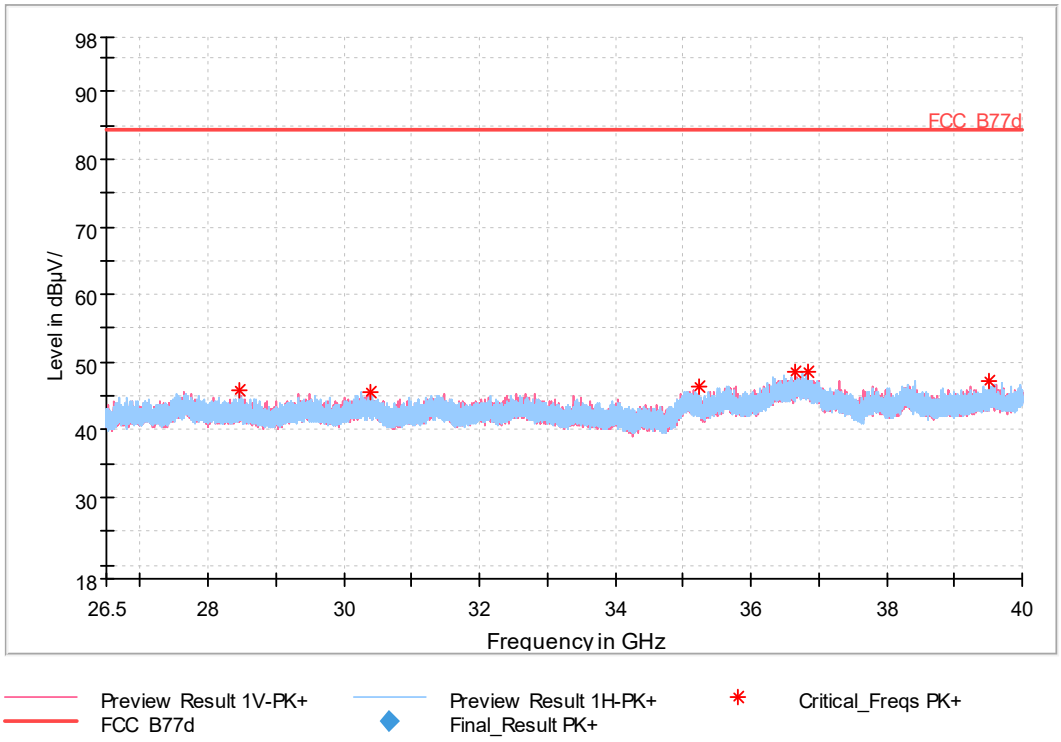
30MHz-1GHz-B77D-NR-MIMO-6C-UE-B-20MHz-64QAM



1GHz-18GHz-B77D-NR-MIMO-6C-UE-B-20MHz-64QAM



18GHz-26.5GHz-B77D-NR-MIMO-6C-UE-B-20MHz-64QAM



26.5GHz-40GHz-B77D-NR-MIMO-6C-UE-B-20MHz-64QAM

9.6 Frequency Stability

Specification:	FCC Part 27.54
Test Results:	Pass

9.6.1 Definitions and Limit

According to Part 27.54:

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

9.6.2 Method of Measurements:

Temperature Variation:

The EUT was tested over the temperature range -30°C to +50°C in 10°C steps with -48 VDC Power Supply. At each temperature step, the Base Station was configured to transmit at maximum power on the middle channel of the operating band.

Voltage Variation:

The EUT was tested at the supplied voltages varied from 85 to 115 percent of the nominal values of -48 VDC. At +20°C, the Base Station was configured to transmit at maximum power on the middle channel of the frequency block.

9.6.3 Measurement result

Frequency Error – Temperature Variation

B77G NR mode:

Configuration NR-MIMO-1C

Antenna Port	Modulation	Temperature (°C)	NR Carrier Bandwidth (MHz)	Frequency Stability (Hz)		
				Channel position B	Channel position M	Channel position T
A	64QAM	50	20	-0.284	0.252	0.147
A	64QAM	40		-0.270	-0.061	0.064
A	64QAM	30		-0.353	0.043	0.219
A	64QAM	20		0.098	-0.310	0.022
A	64QAM	10		-0.094	-0.085	-0.062
A	64QAM	0		-0.267	-0.039	-0.283
A	64QAM	-10		0.101	0.018	-0.148
A	64QAM	-20		-0.269	0.093	-0.151
A	64QAM	-30		-0.233	0.046	-0.156
A	64QAM	50	100	--	-0.274	--
A	64QAM	40		--	0.120	--
A	64QAM	30		--	-0.058	--
A	64QAM	20		--	-0.367	--
A	64QAM	10		--	0.069	--
A	64QAM	0		--	0.034	--
A	64QAM	-10		--	0.061	--
A	64QAM	-20		--	0.001	--
A	64QAM	-30		--	0.059	--

B77D NR mode:

Configuration NR-MIMO-1C

Antenna Port	Modulation	Temperature (°C)	NR Carrier Bandwidth (MHz)	Frequency Stability (Hz)		
				Channel position B	Channel position M	Channel position T
B	64QAM	50	20	0.047	-0.011	0.244
B	64QAM	40		0.059	-0.110	0.314
B	64QAM	30		-0.173	0.520	0.004
B	64QAM	20		0.039	-0.468	-0.185
B	64QAM	10		-0.139	0.367	-0.197
B	64QAM	0		0.114	-0.229	0.043
B	64QAM	-10		0.126	-0.255	-0.299
B	64QAM	-20		0.029	0.241	0.517
B	64QAM	-30		-0.382	-0.152	0.236
B	64QAM	50	100	-0.081	-0.173	-0.224
B	64QAM	40		-0.546	-0.640	-0.211
B	64QAM	30		0.025	0.049	-0.024
B	64QAM	20		-0.136	0.220	0.077
B	64QAM	10		-0.081	-0.307	-0.545
B	64QAM	0		0.052	-0.217	-0.190
B	64QAM	-10		0.022	-0.153	-0.216
B	64QAM	-20		-0.185	-0.003	-0.545
B	64QAM	-30		-0.524	-0.149	0.071

Frequency Error – Voltage Variation

B77G NR mode:

Configuration NR-MIMO-1C

Antenna Port	Modulation	Temperature (°C)	Supply Voltage (V)	NR Carrier Bandwidth (MHz)	Frequency Stability (Hz)		
					Channel position B	Channel position M	Channel position T
A	64QAM	20	-40.8	20	0.289	0.022	-0.020
A	64QAM	20	-48.0		0.234	-0.047	0.048
A	64QAM	20	-55.2		0.213	-0.038	-0.073
A	64QAM	20	-40.8	100	--	-0.013	--
A	64QAM	20	-48.0		--	-0.088	--
A	64QAM	20	-55.2		--	-0.182	--

B77D NR mode:

Configuration NR-MIMO-1C

Antenna Port	Modulation	Temperature (°C)	Supply Voltage (V)	NR Carrier Bandwidth (MHz)	Frequency Stability (Hz)		
					Channel position B	Channel position M	Channel position T
B	64QAM	20	-40.8	20	0.097	-0.148	-0.127
B	64QAM	20	-48.0		0.111	-0.192	-0.157
B	64QAM	20	-55.2		0.214	-0.115	-0.230
B	64QAM	20	-40.8	100	0.016	-0.163	0.272
B	64QAM	20	-48.0		0.042	-0.152	0.216
B	64QAM	20	-55.2		0.043	-0.017	0.237

Annex A EUT Photos

External photo

END OF REPORT