

TEST REPORT



7 Radiated Unwanted Emission

Test result: Pass

7.1 Limit

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.

As per FCC Part 96, at all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz. In addition, the power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

Therefore, the limit at 3m measurement distance is:

$E(V/m) = 72.4 \text{ dB}\mu\text{V/m}$ for the emissions of frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge.

$E(V/m) = 57.4 \text{ dB}\mu\text{V/m}$ for the emissions below 3530 MHz or above 3720 MHz.

7.2 Measurement Procedure

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.

Emissions identified within the range 30MHz to 40GHz were then formally measured using a peak detector as the worst case.

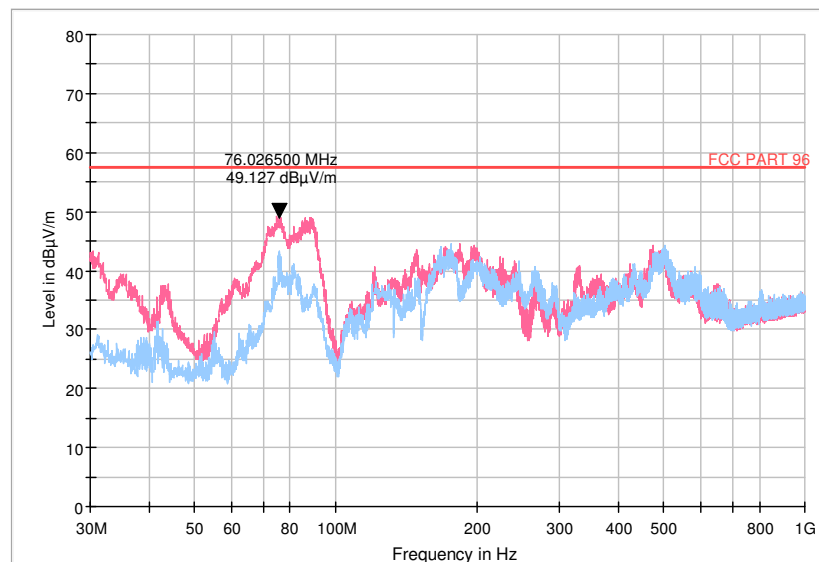
The EUT was measured with the antenna height varied between 1 and 4 m with the turntable rotated between 0 and 360 degrees.

7.3 Measurement result

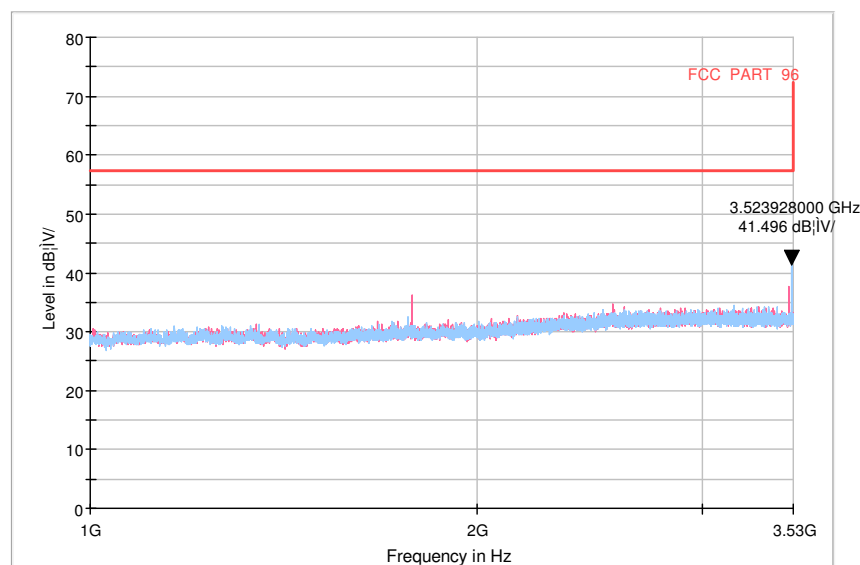
Configuration B:

Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-1C-20-UE	B	16QAM	20	1000
	T	16QAM	20	1000

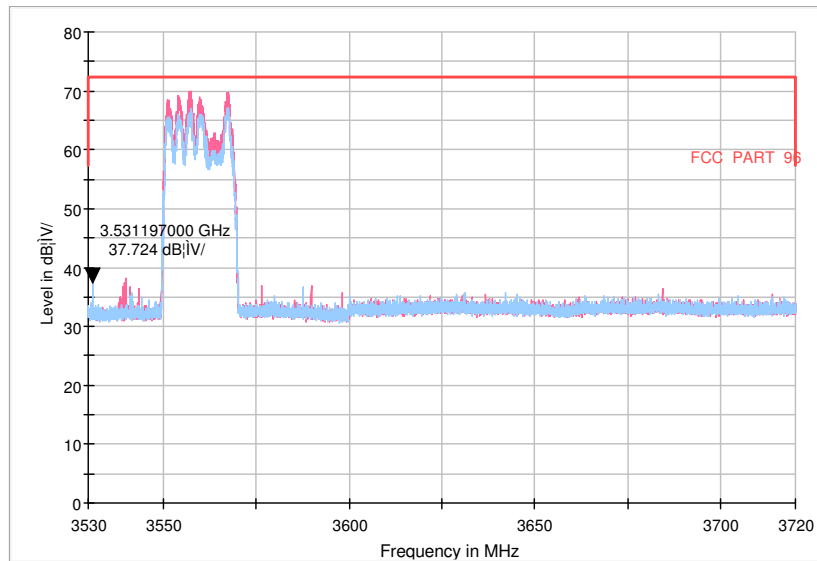
Range 30-1000MHz, Horizontal & Vertical



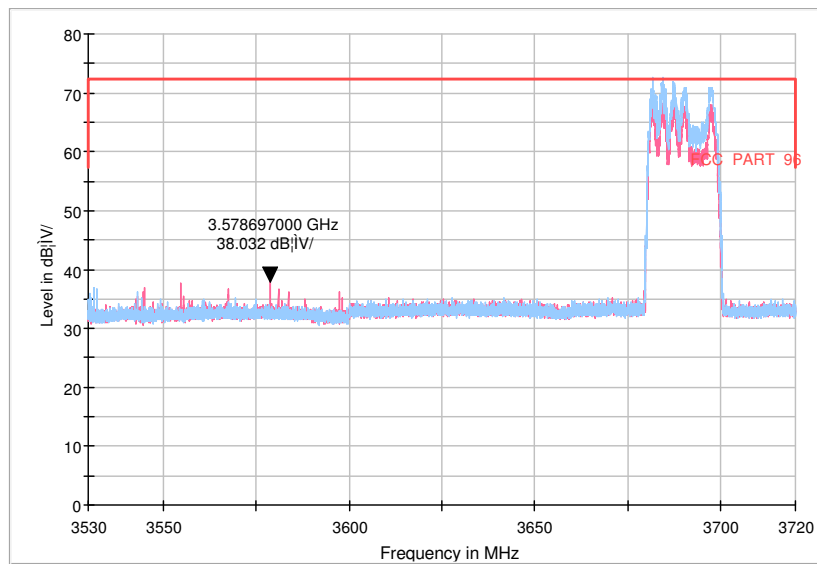
Range 1-3.53GHz, Horizontal & Vertical



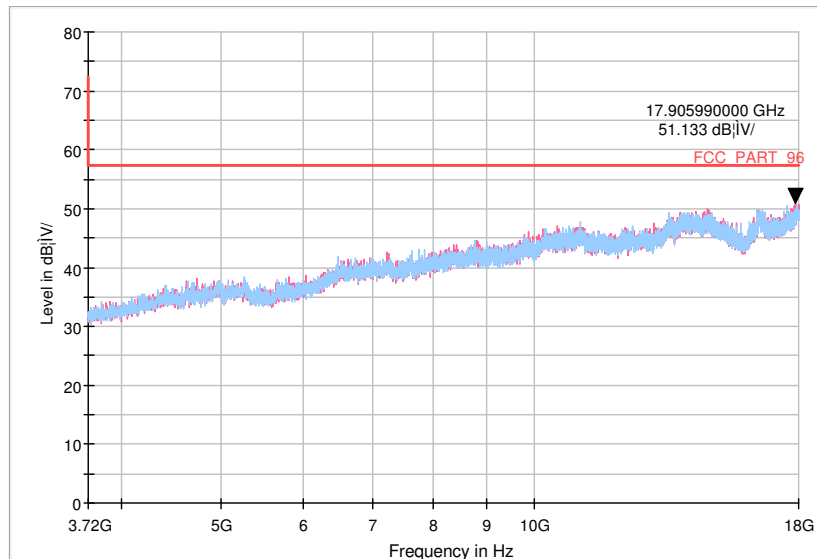
Range 3.53-3.72GHz, Horizontal & Vertical



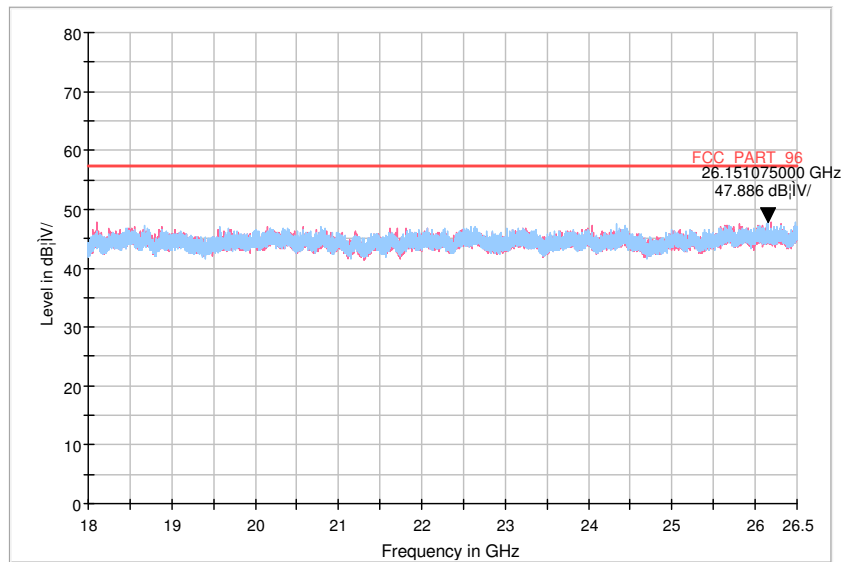
Range 3.53-3.72GHz, Horizontal & Vertical



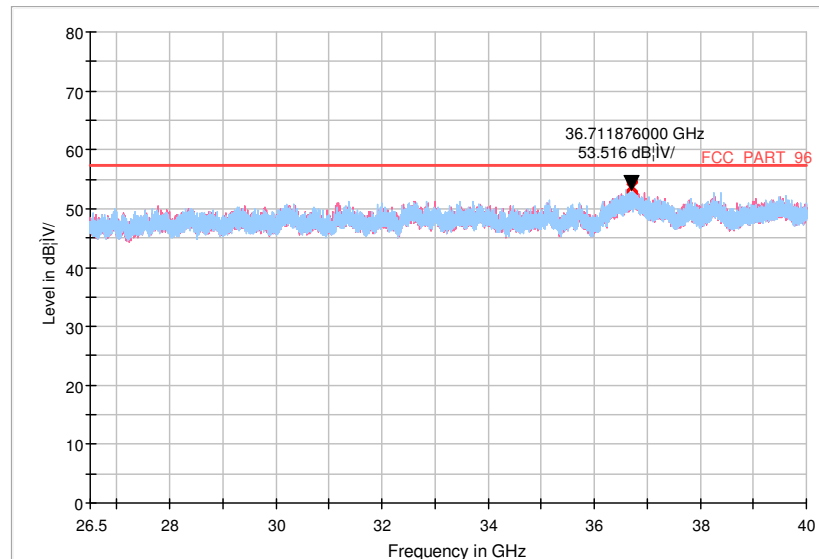
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

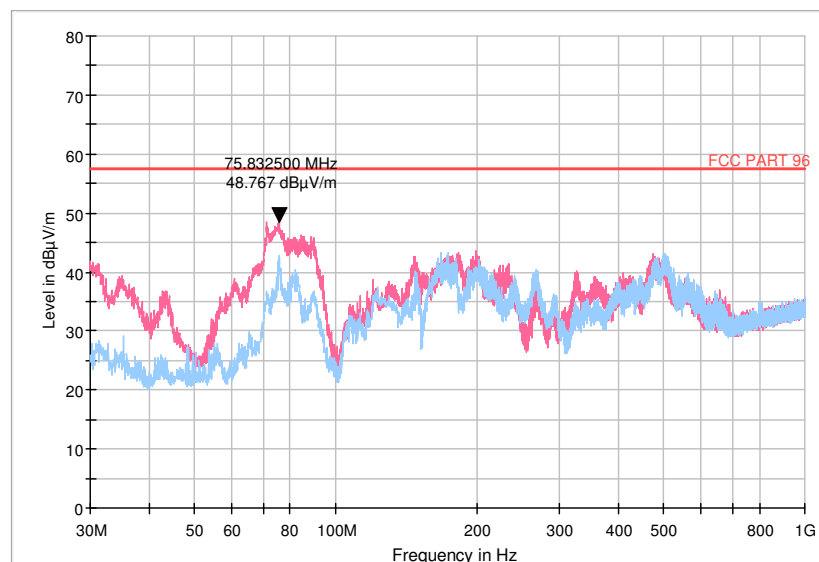


Range 26.5-40GHz, Horizontal & Vertical

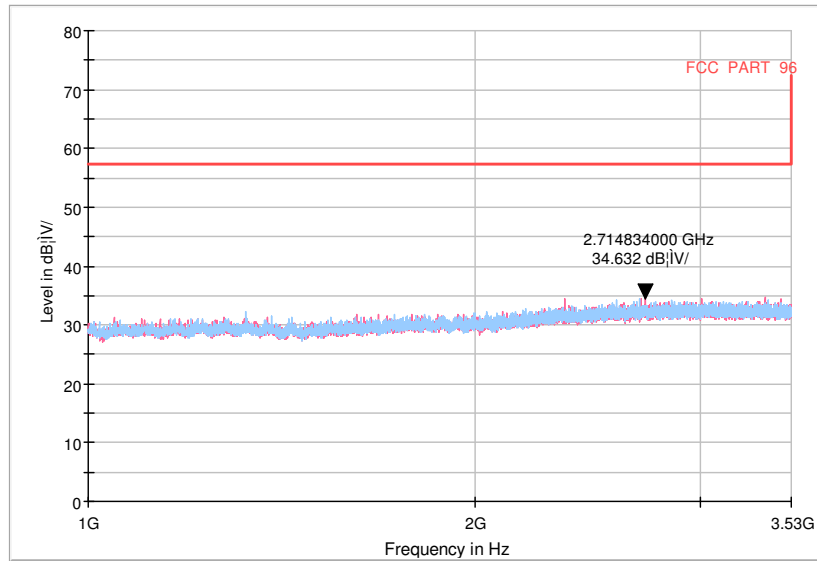


Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-1C-100-UE	B	16QAM	100	1000
	T	16QAM	100	1000

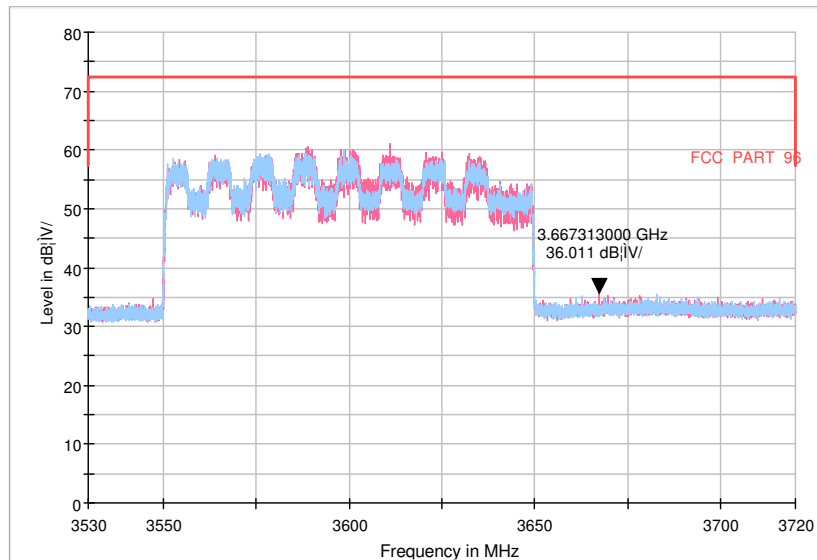
Range 30-1000MHz, Horizontal & Vertical



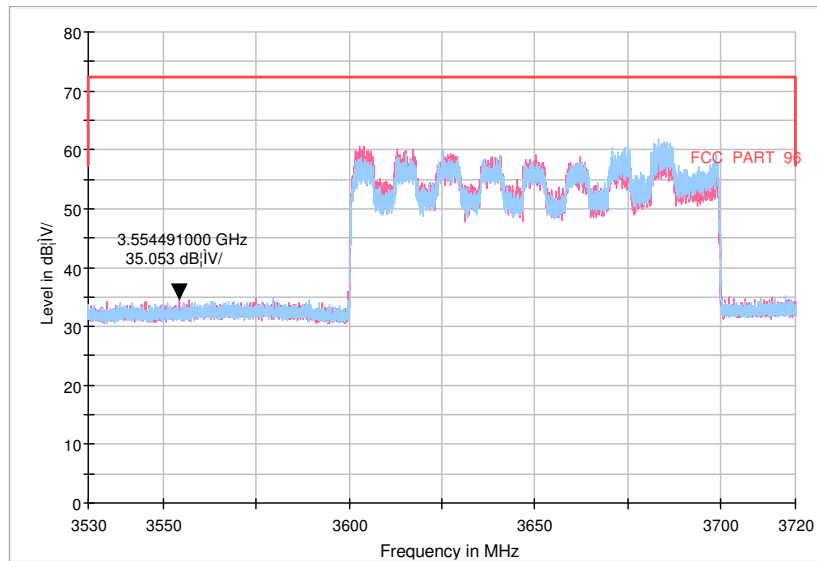
Range 1-3.53GHz, Horizontal & Vertical



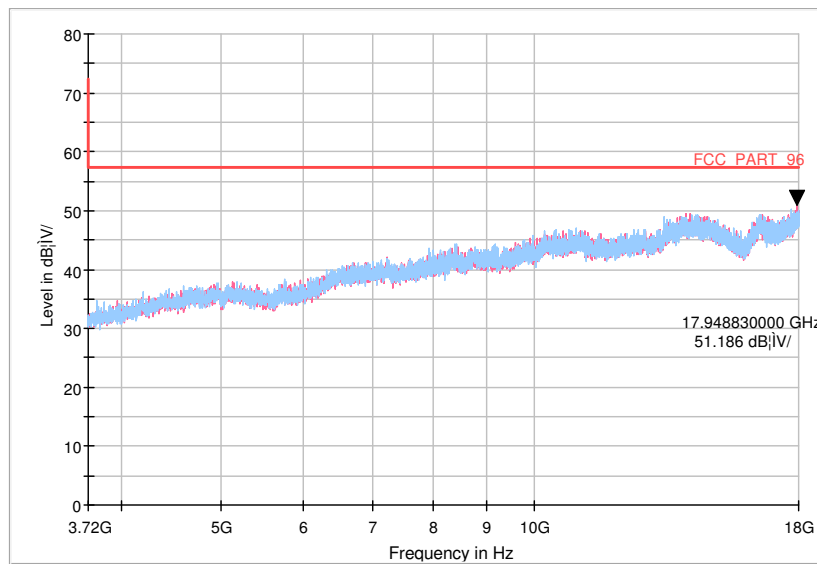
Range 3.53-3.72GHz, Horizontal & Vertical



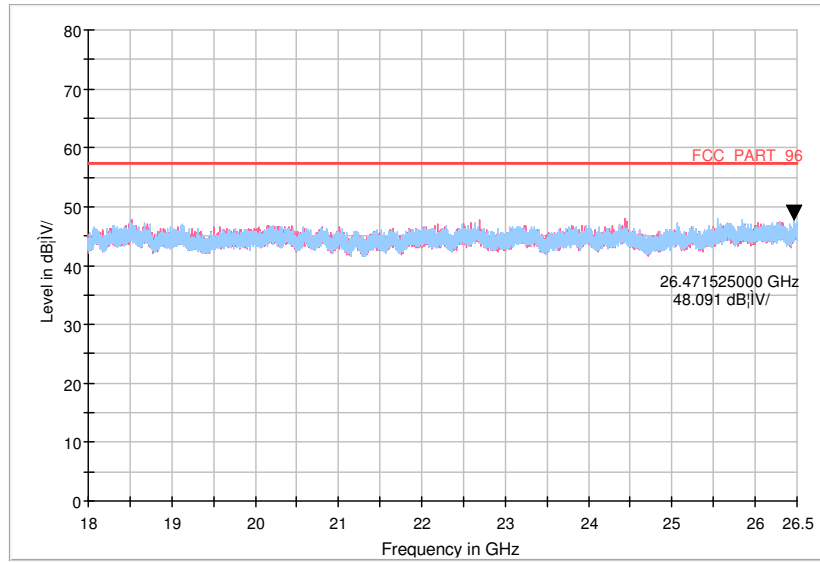
Range 3.53-3.72GHz, Horizontal & Vertical



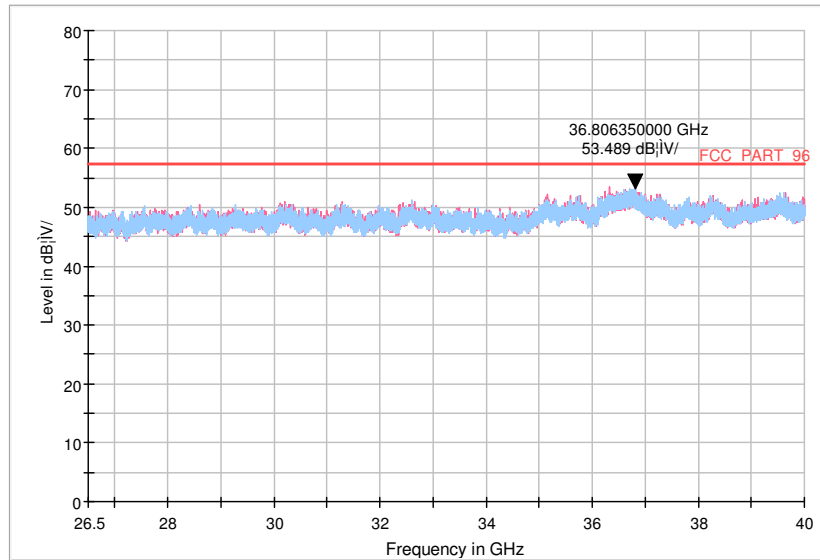
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

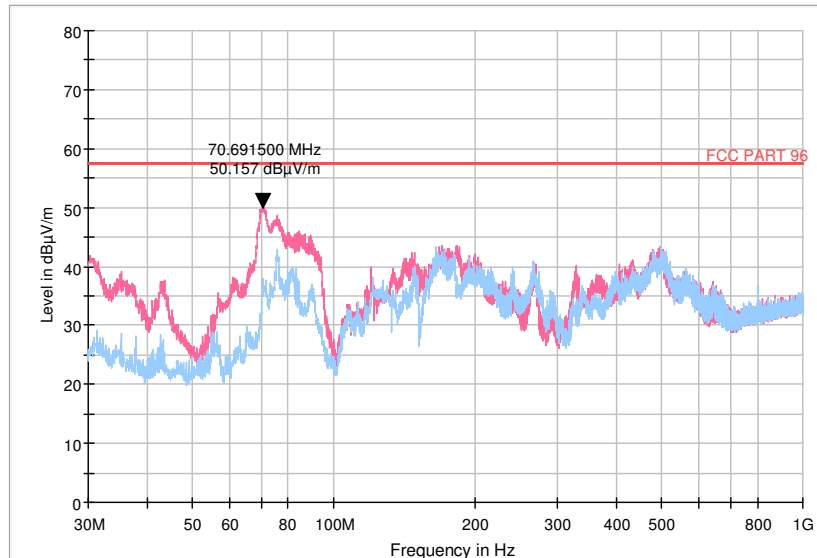


Range 26.5-40GHz, Horizontal & Vertical

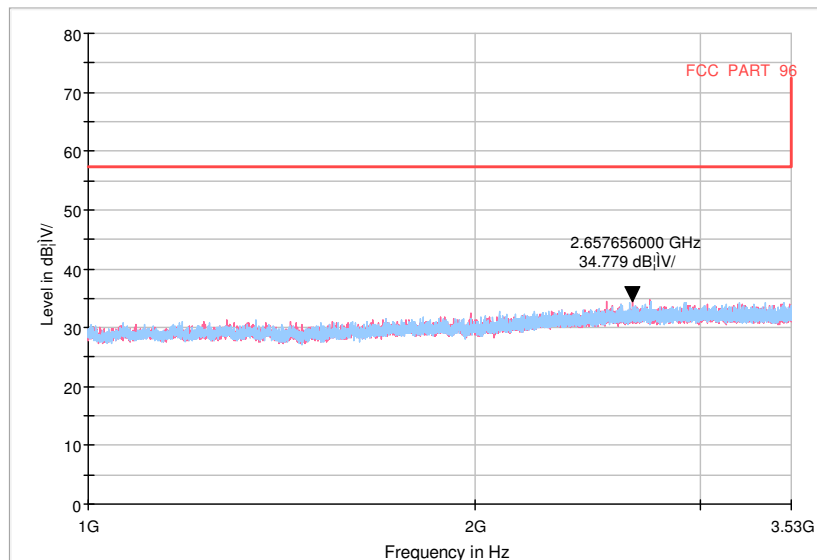


Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-2C-20-UE	B	16QAM	20	1000
	T	16QAM	20	1000

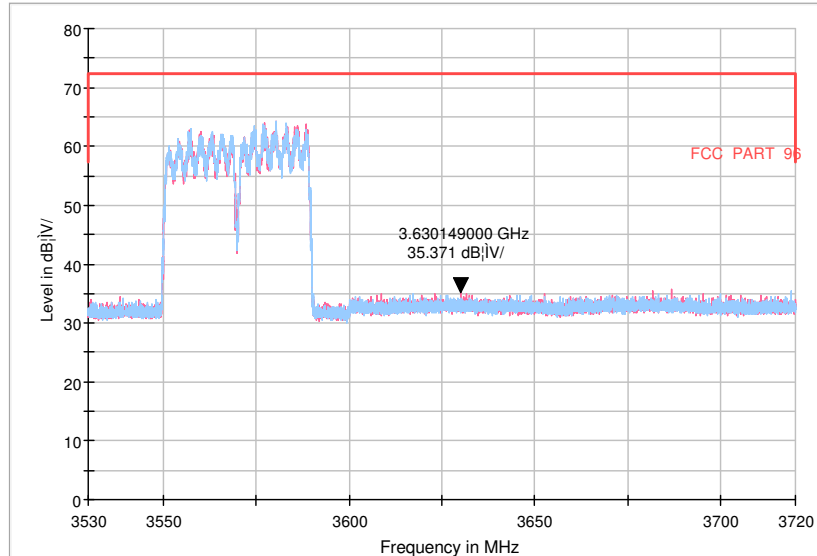
Range 30-1000MHz, Horizontal & Vertical



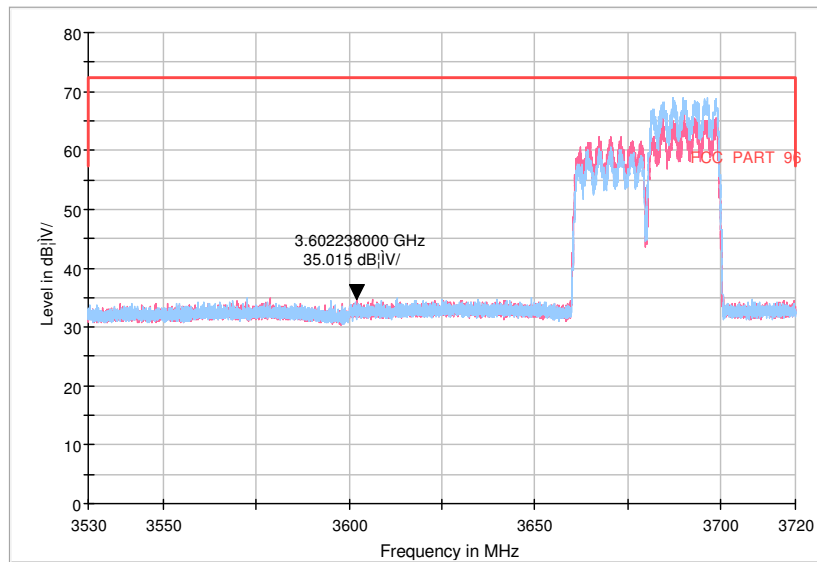
Range 1-3.53GHz, Horizontal & Vertical



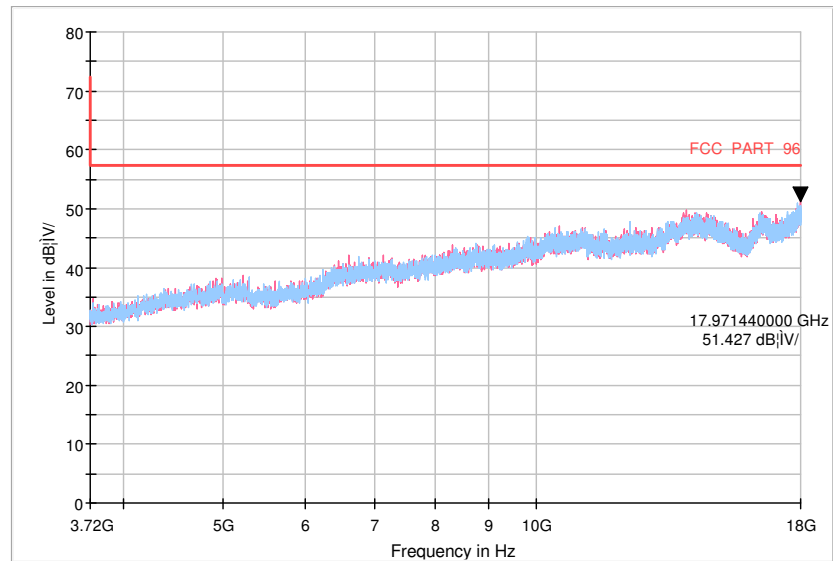
Range 3.53-3.72GHz, Horizontal & Vertical



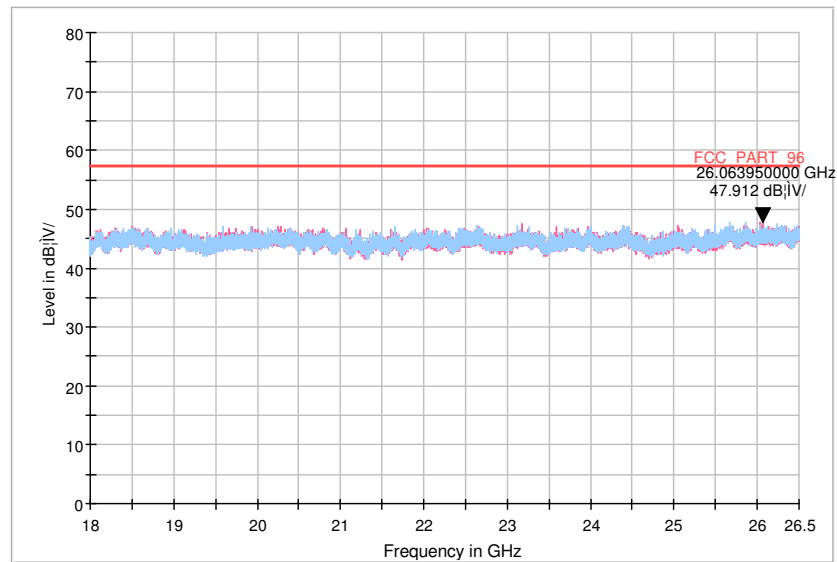
Range 3.53-3.72GHz, Horizontal & Vertical



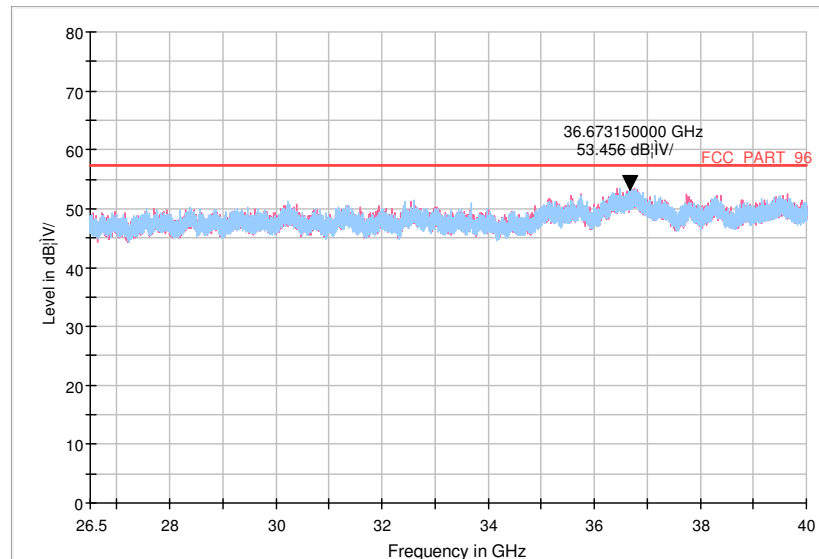
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

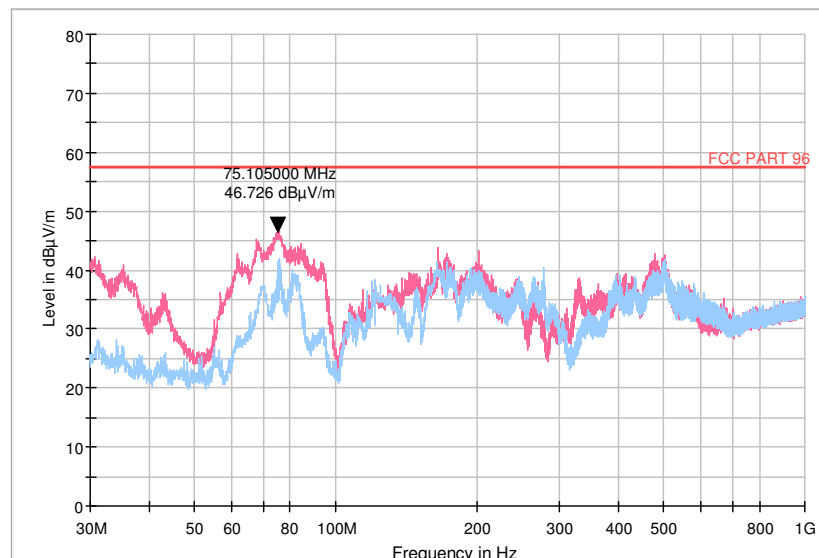


Range 26.5-40GHz, Horizontal & Vertical

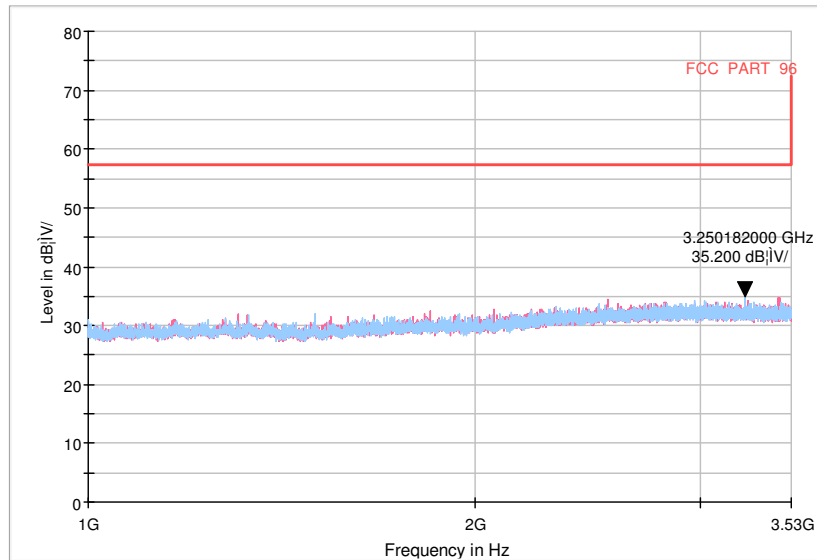


Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-2C-50-UE	B	16QAM	50	1000
	T	16QAM	50	1000

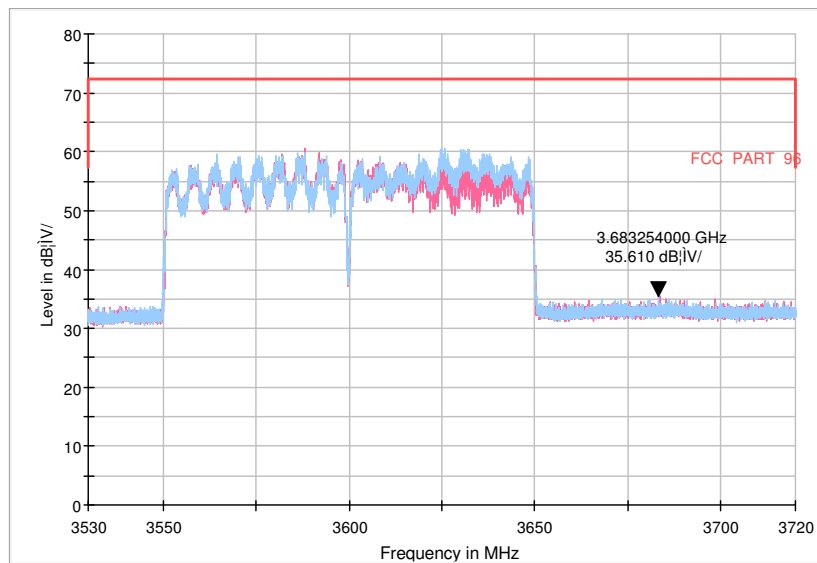
Range 30-1000MHz, Horizontal & Vertical



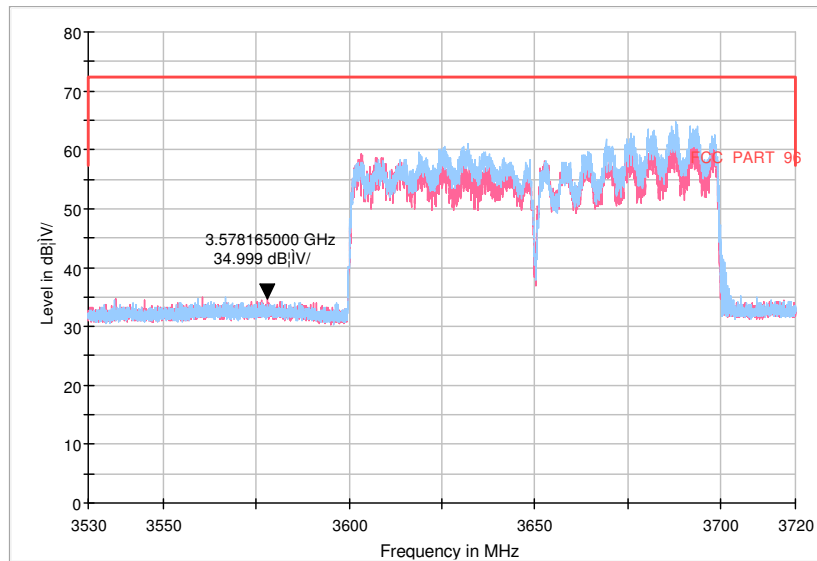
Range 1-3.53GHz, Horizontal & Vertical



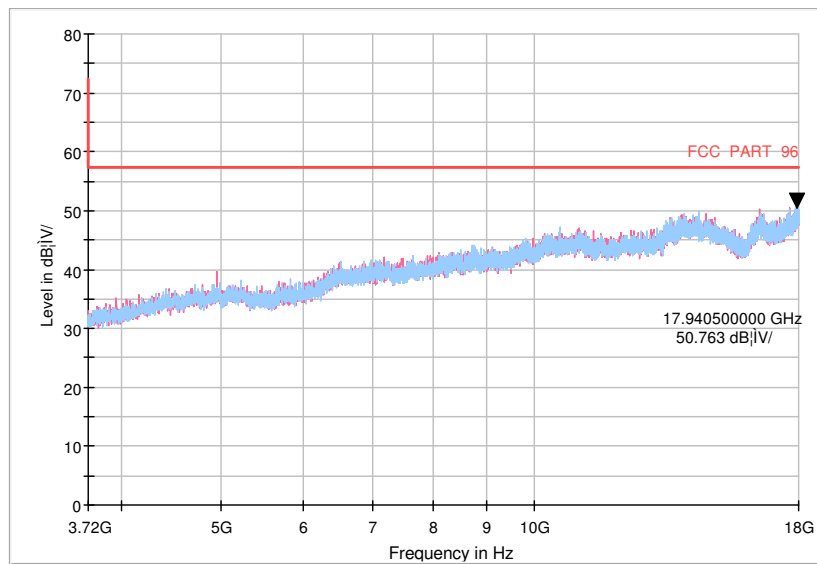
Range 3.53-3.72GHz, Horizontal & Vertical



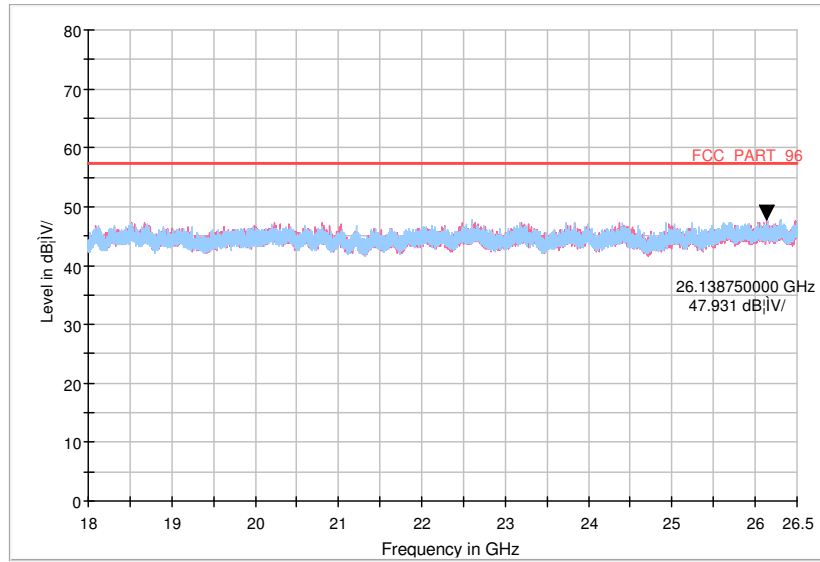
Range 3.53-3.72GHz, Horizontal & Vertical



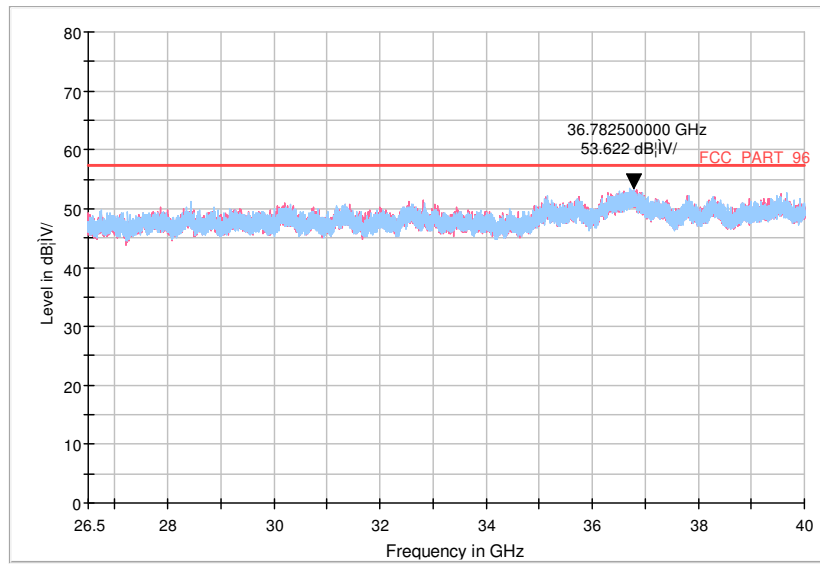
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

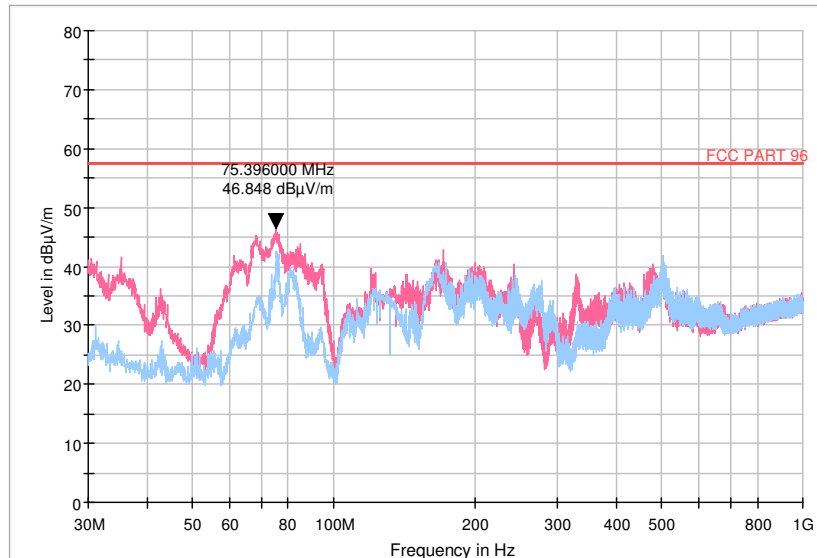


Range 26.5-40GHz, Horizontal & Vertical

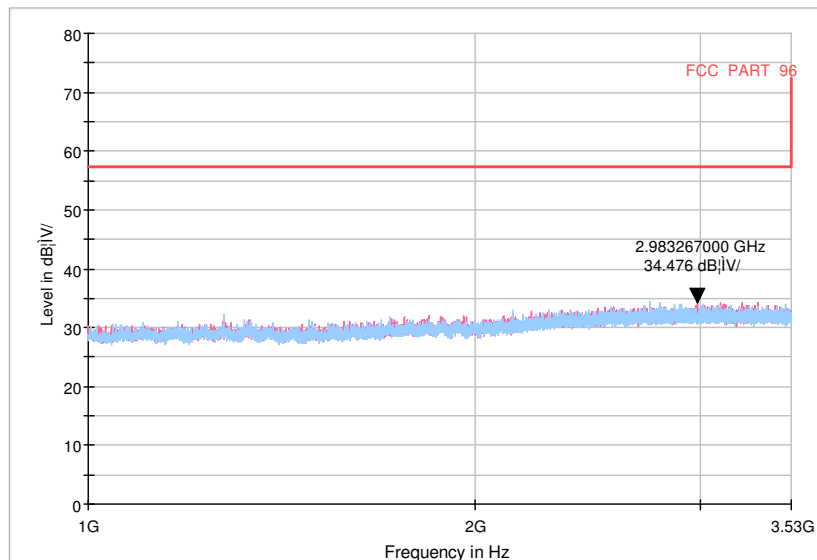


Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-2C-70-UE	B	16QAM	70	1000
	T	16QAM	70	1000

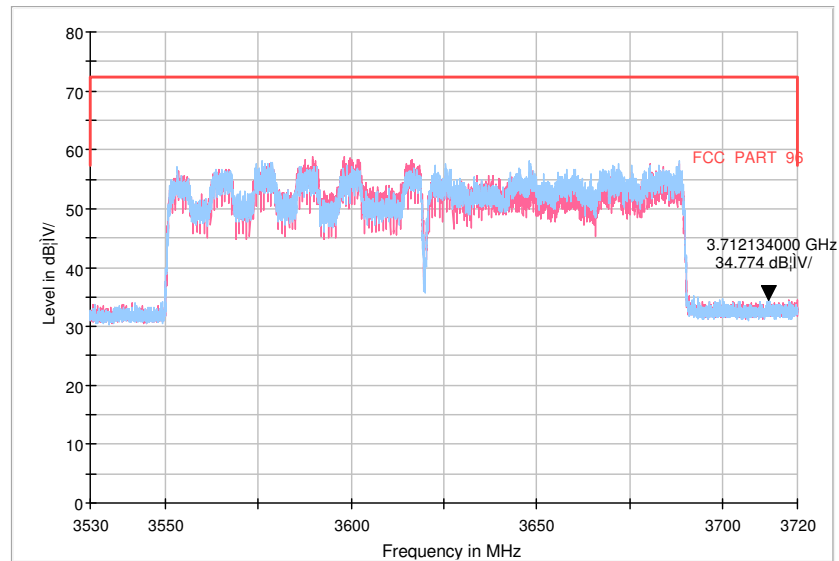
Range 30-1000MHz, Horizontal & Vertical



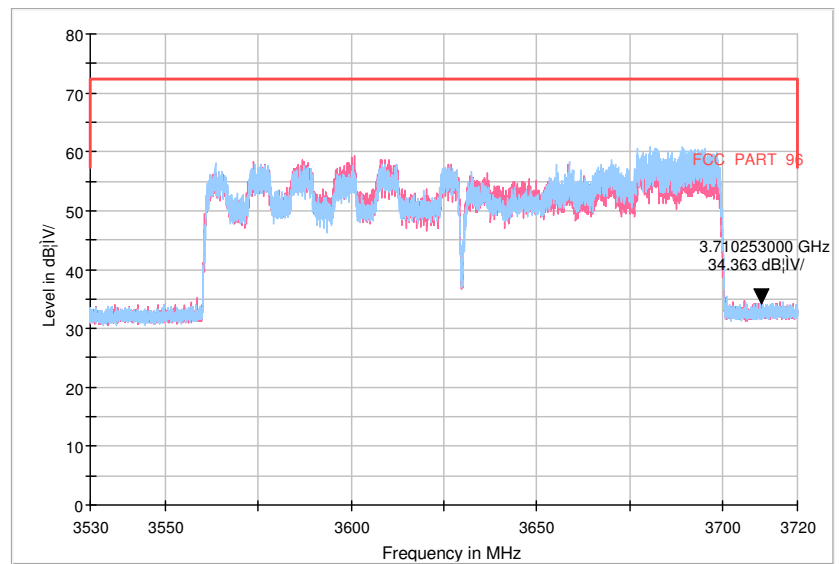
Range 1-3.53GHz, Horizontal & Vertical



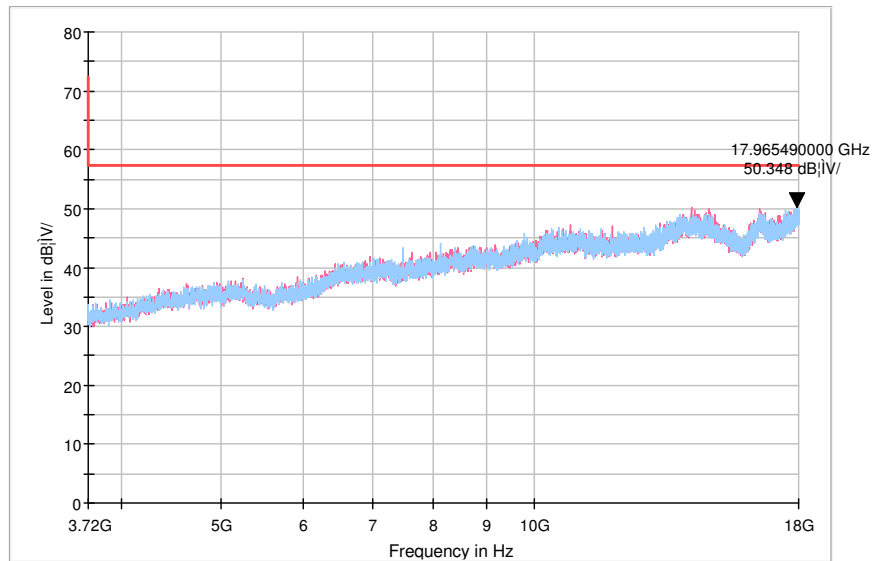
Range 3.53-3.72GHz, Horizontal & Vertical



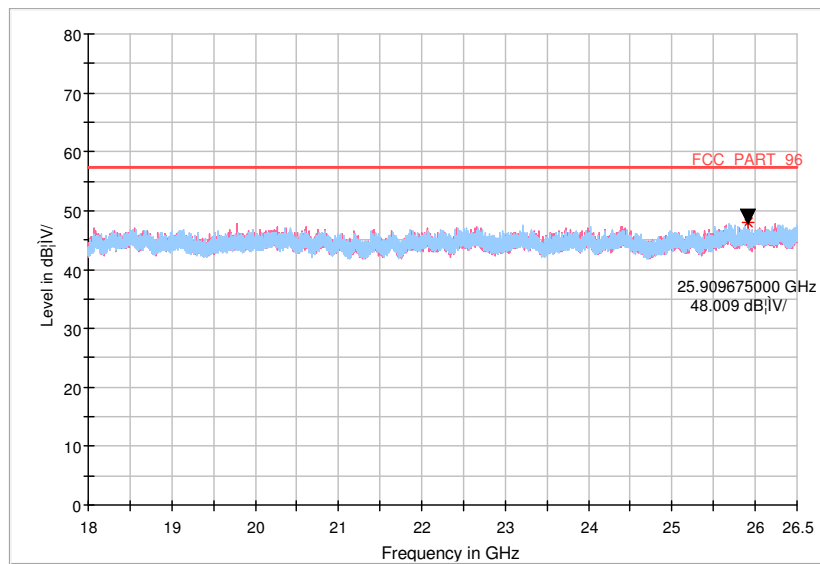
Range 3.53-3.72GHz, Horizontal & Vertical



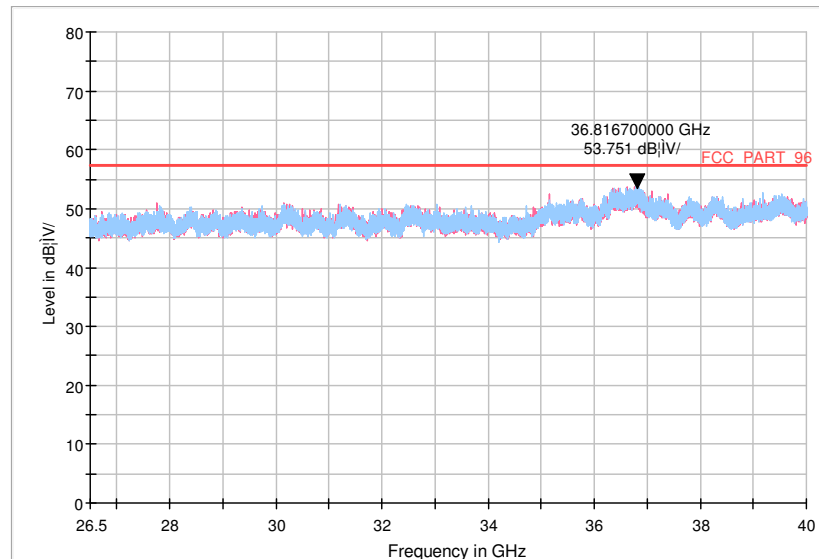
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

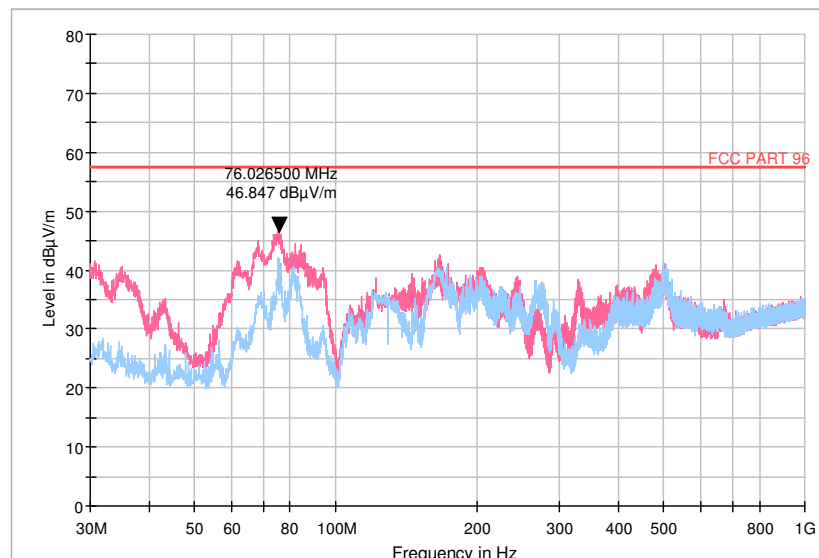


Range 26.5-40GHz, Horizontal & Vertical

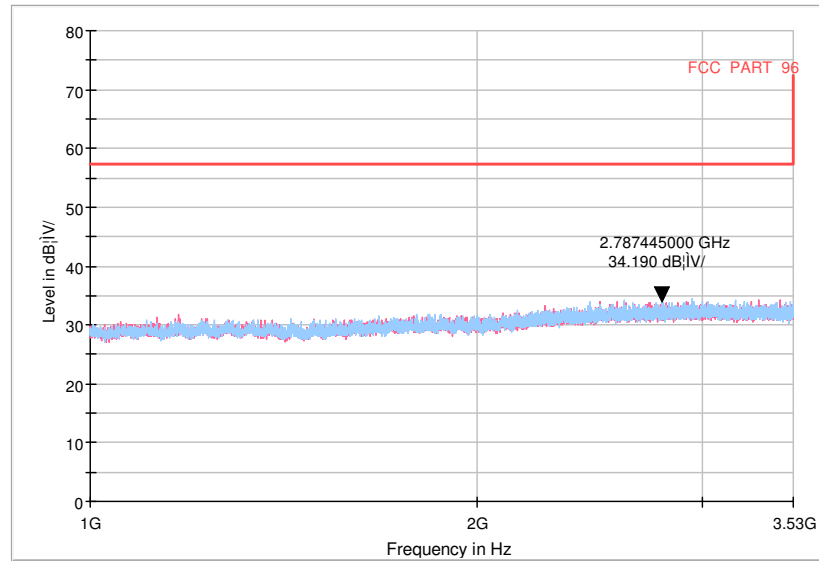


Configuration	Channel Position	Modulation	Channel Bandwidth (MHz)	RBW (kHz)
NR-MIMO-6C-20-UE	B	16QAM	20	1000
	T	16QAM	20	1000

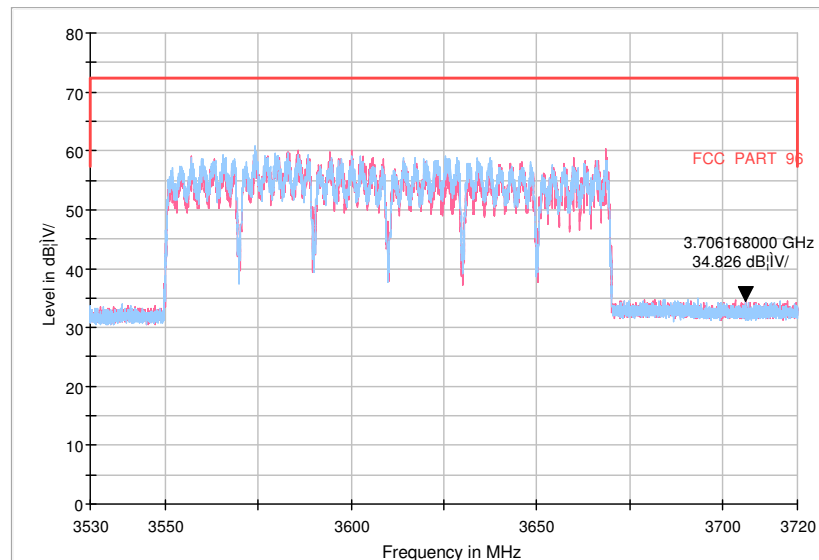
Range 30-1000MHz, Horizontal & Vertical



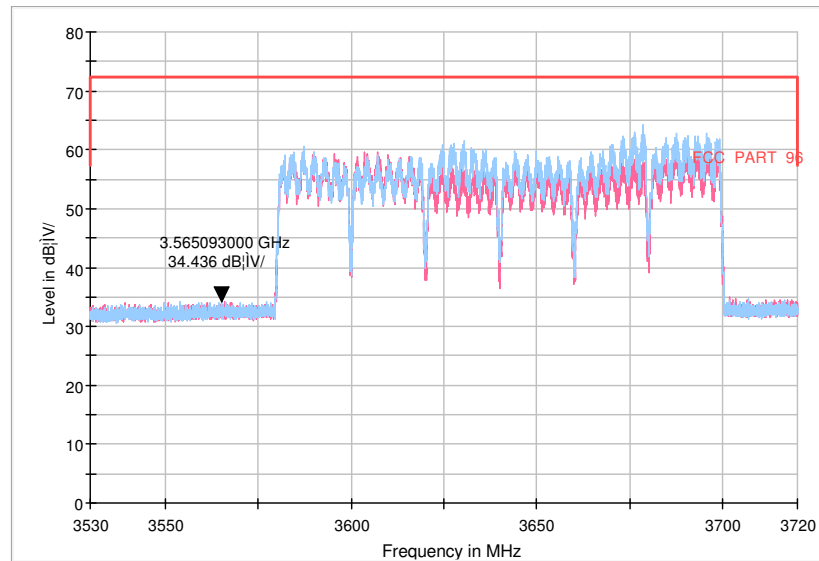
Range 1-3.53GHz, Horizontal & Vertical



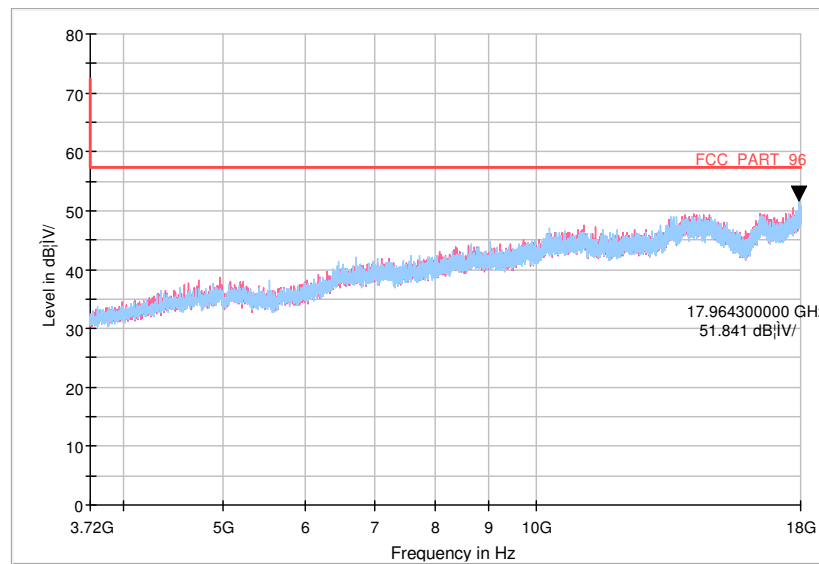
Range 3.53-3.72GHz, Horizontal & Vertical



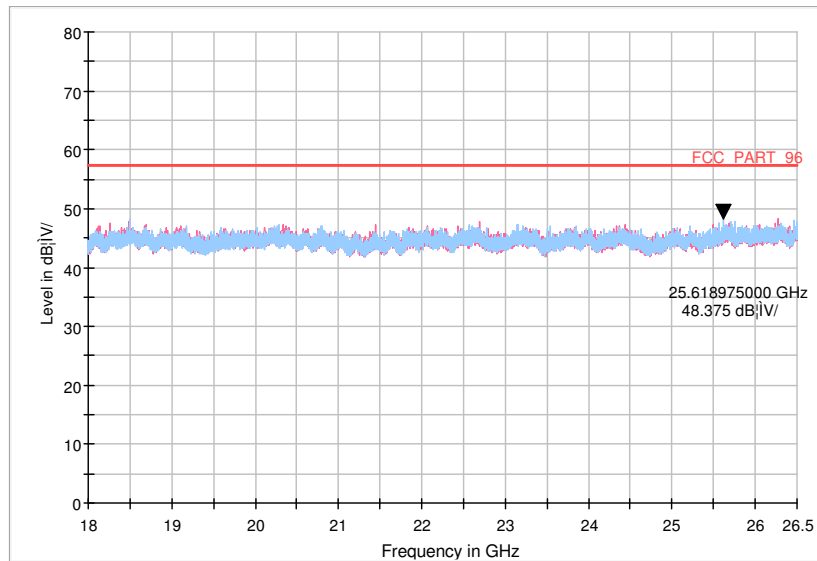
Range 3.53-3.72GHz, Horizontal & Vertical



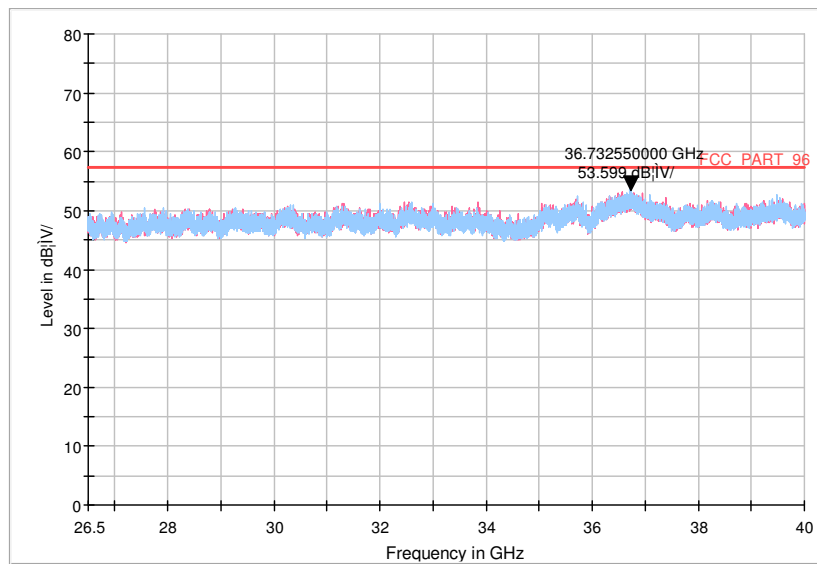
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical



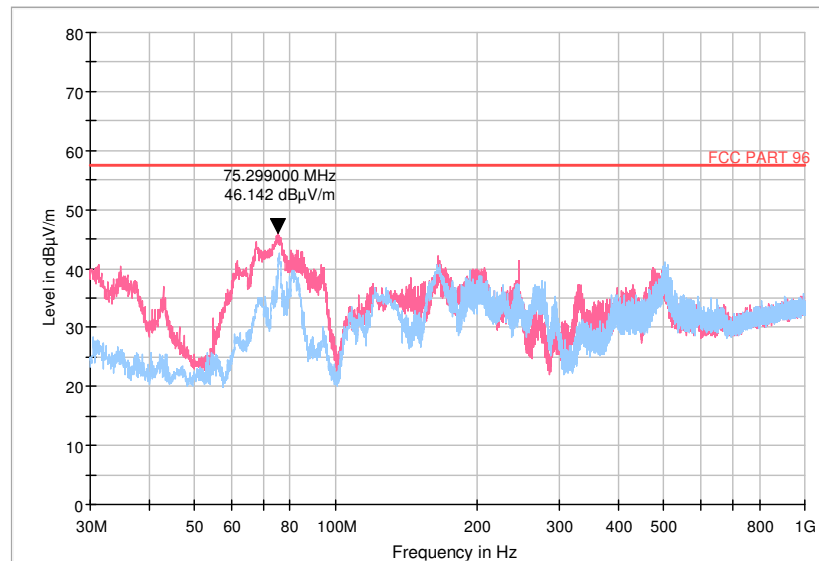
Range 26.5-40GHz, Horizontal & Vertical



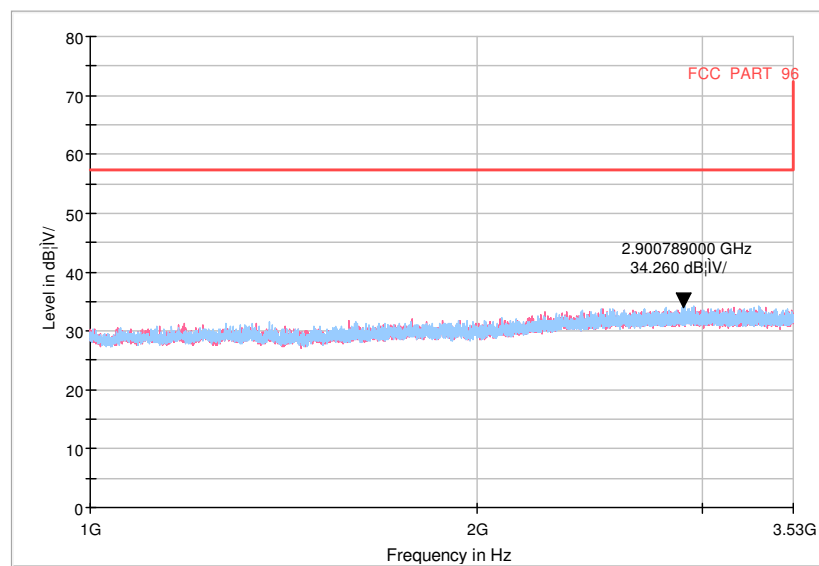
TEST REPORT

Configuration	Channel Position	Modulation	NR Channel Bandwidth (MHz)	LTE Channel Bandwidth (MHz)	RBW (kHz)
NR+LTE-MIMO-MC-1-UE	B	16QAM	100	20	1000
	T	16QAM	100	20	1000

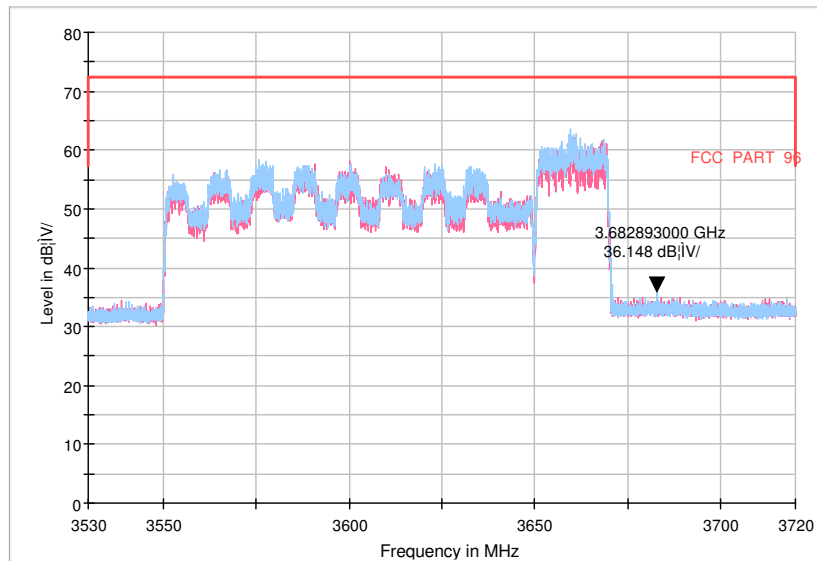
Range 30-1000MHz, Horizontal & Vertical



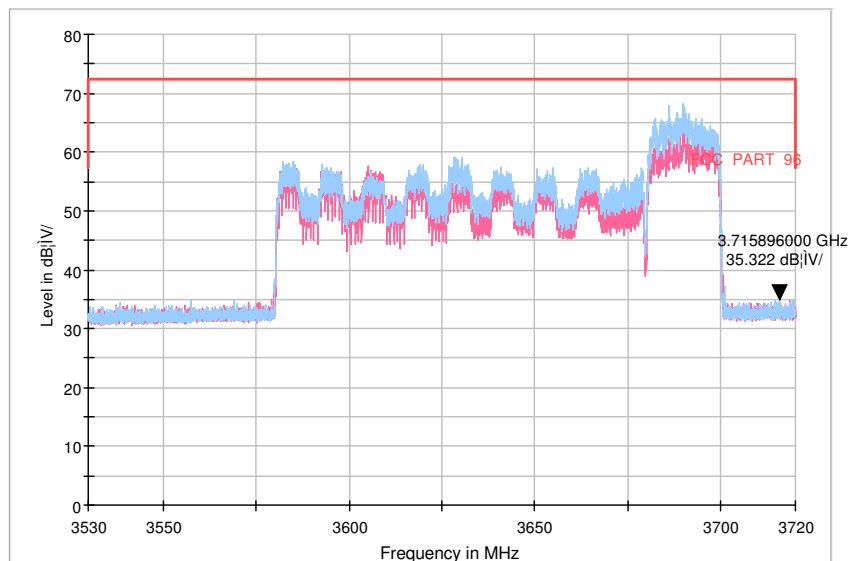
Range 1-3.53GHz, Horizontal & Vertical



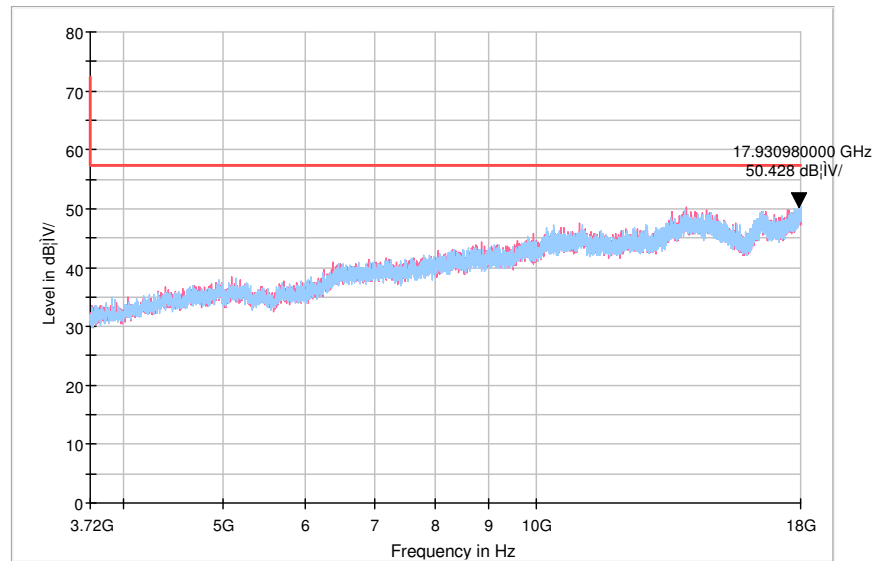
Range 3.53-3.72GHz, Horizontal & Vertical



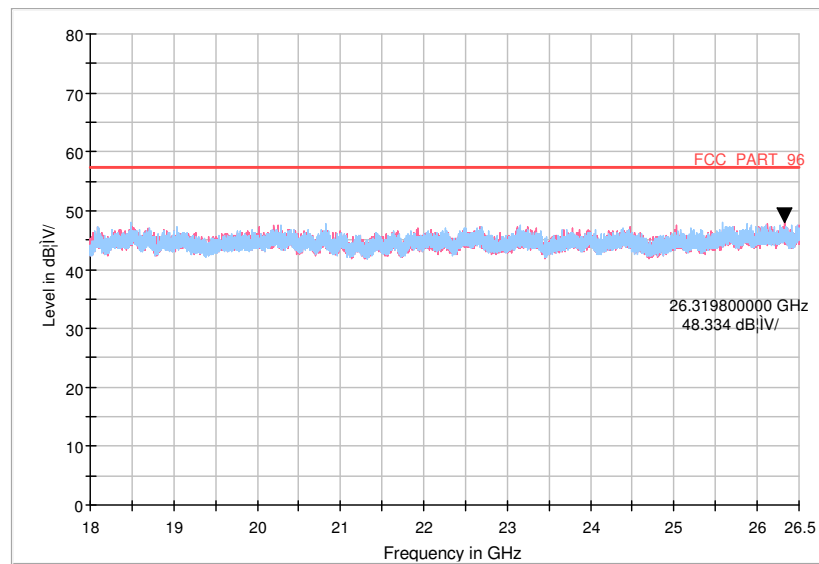
Range 3.53-3.72GHz, Horizontal & Vertical



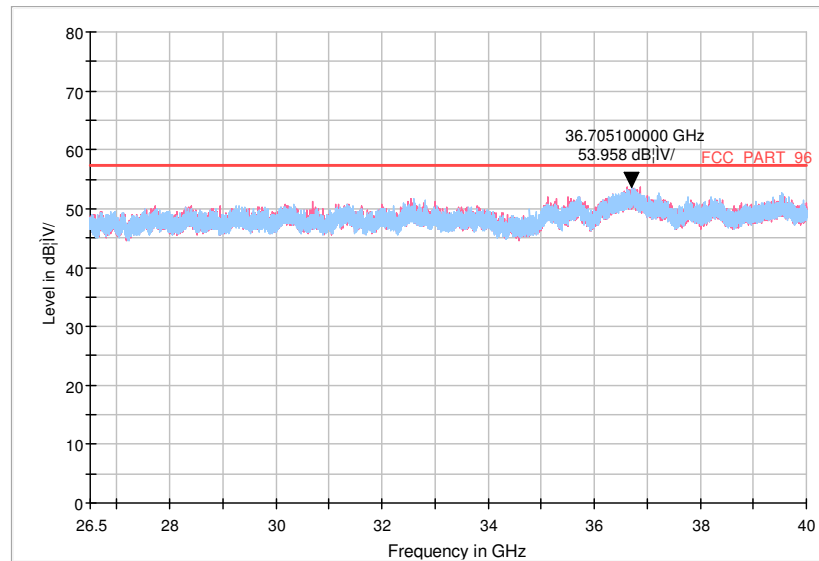
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

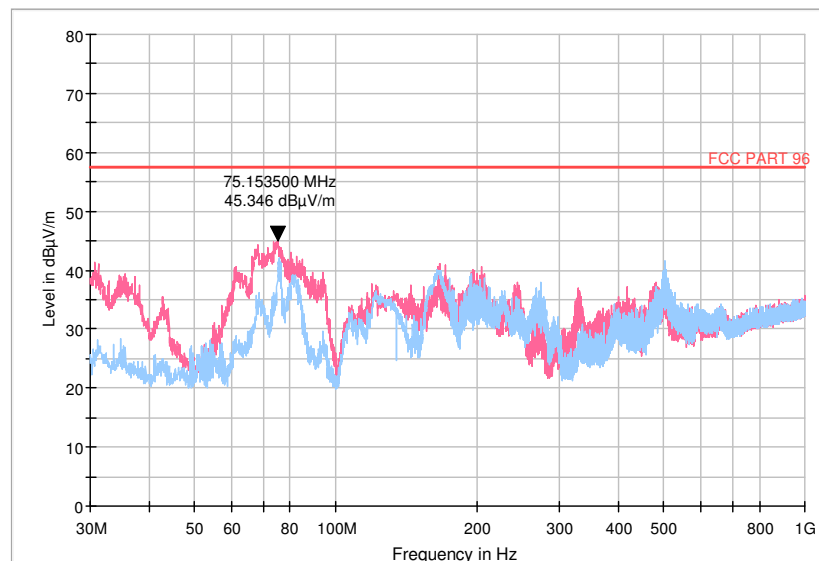


Range 26.5-40GHz, Horizontal & Vertical

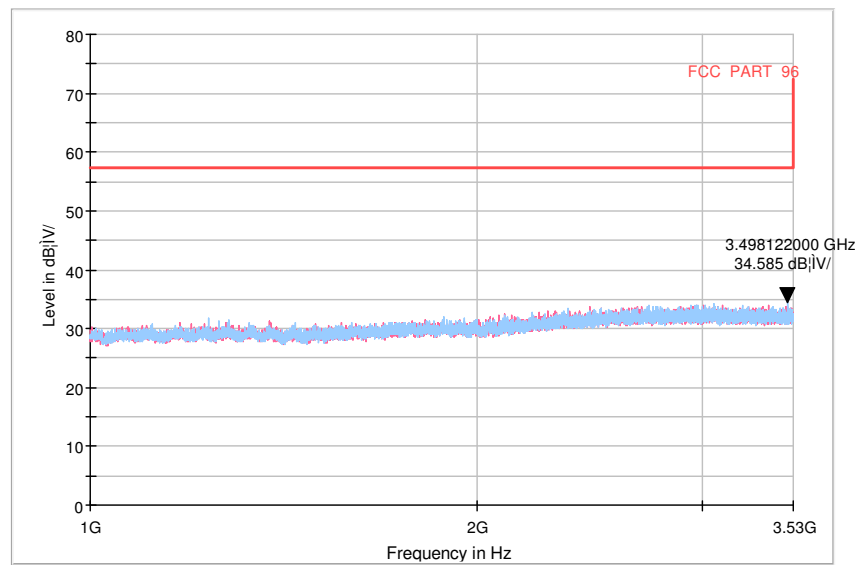


Configuration	Channel Position	Modulation	NR Channel Bandwidth (MHz)	LTE Channel Bandwidth (MHz)	RBW (kHz)
NR+LTE-MIMO-MC-2-UE	B	16QAM	100	20	1000
	T	16QAM	100	20	1000

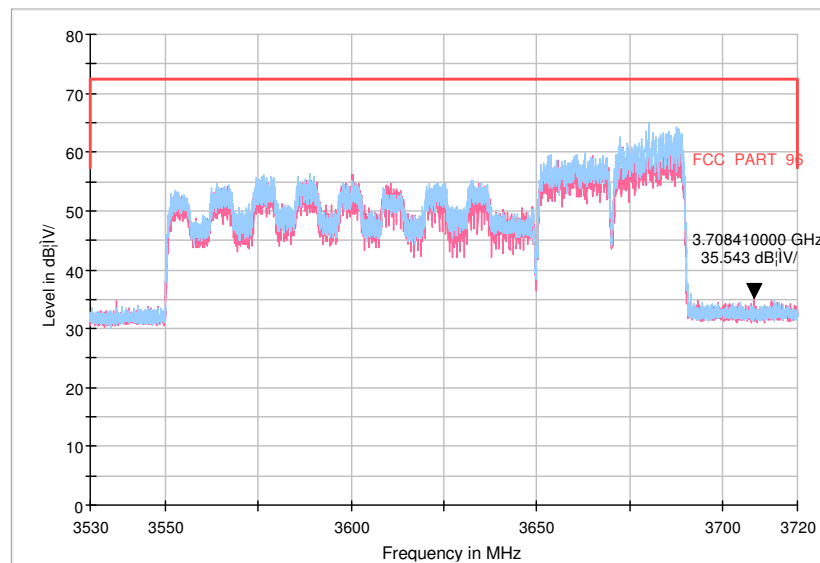
Range 30-1000MHz, Horizontal & Vertical



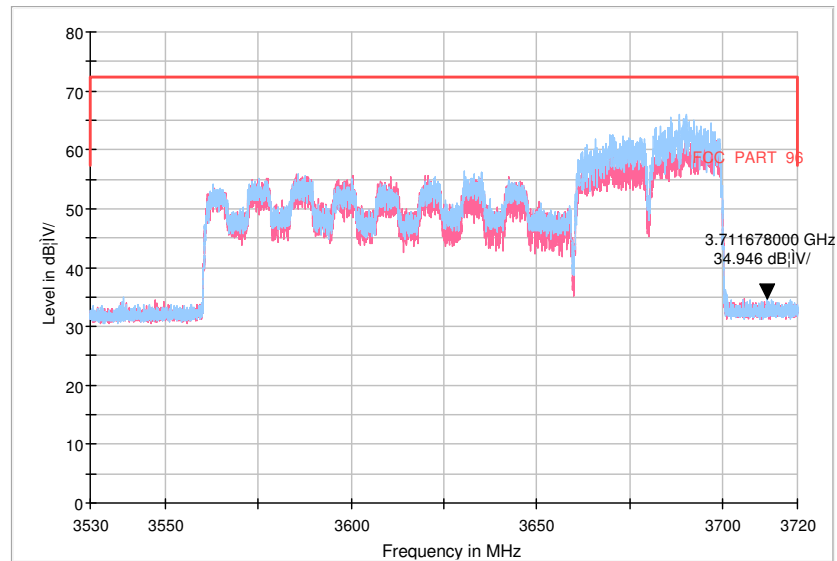
Range 1-3.53GHz, Horizontal & Vertical



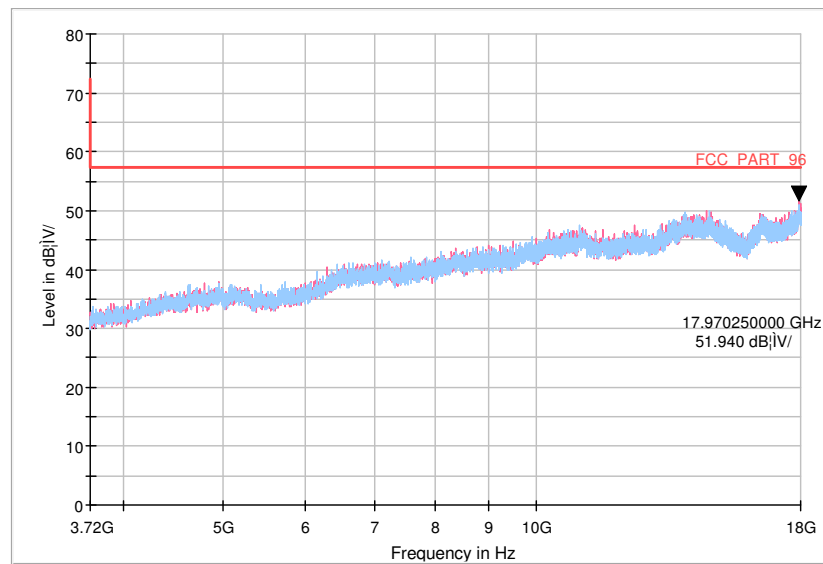
Range 3.53-3.72GHz, Horizontal & Vertical



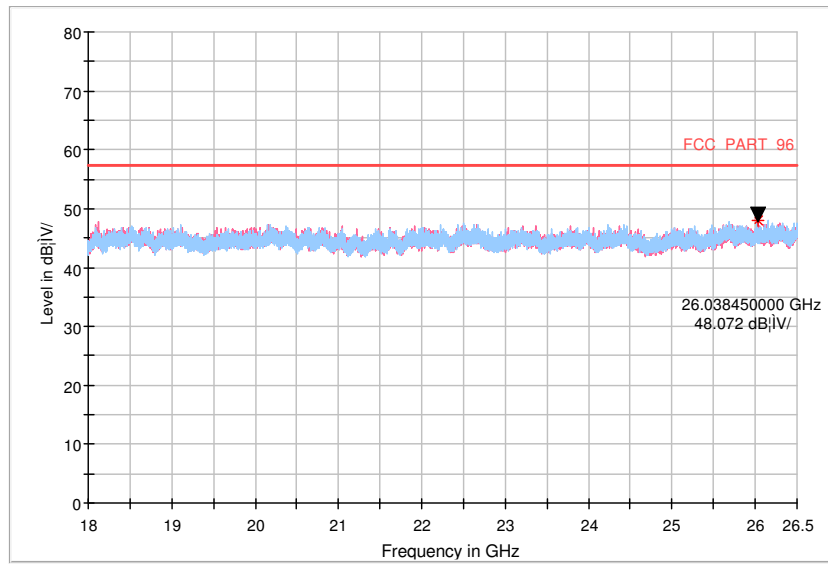
Range 3.53-3.72GHz, Horizontal & Vertical



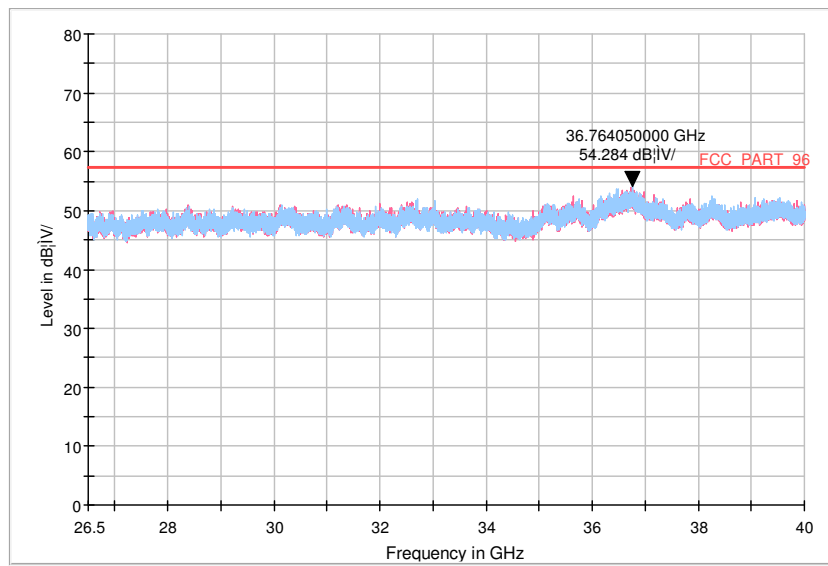
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical



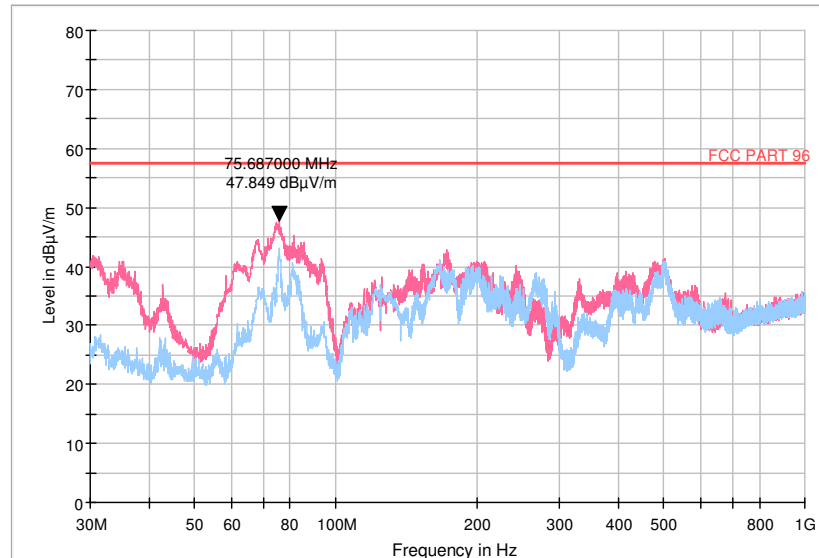
Range 26.5-40GHz, Horizontal & Vertical



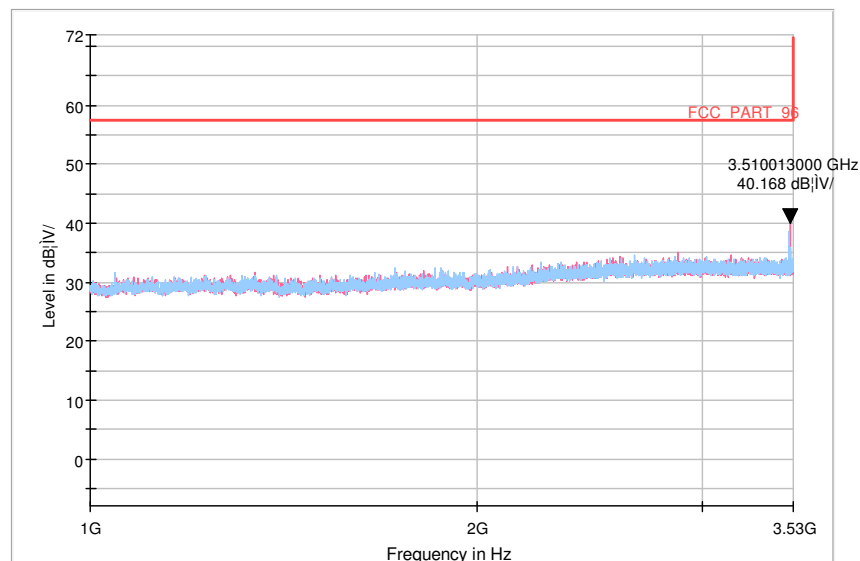
TEST REPORT

Configuration	Channel Position	Modulation	NR Channel Bandwidth (MHz)	LTE Channel Bandwidth (MHz)	RBW (kHz)
NR+LTE-MIMO-MC-3-UE	B	16QAM	20	20	1000
	T	16QAM	20	20	1000

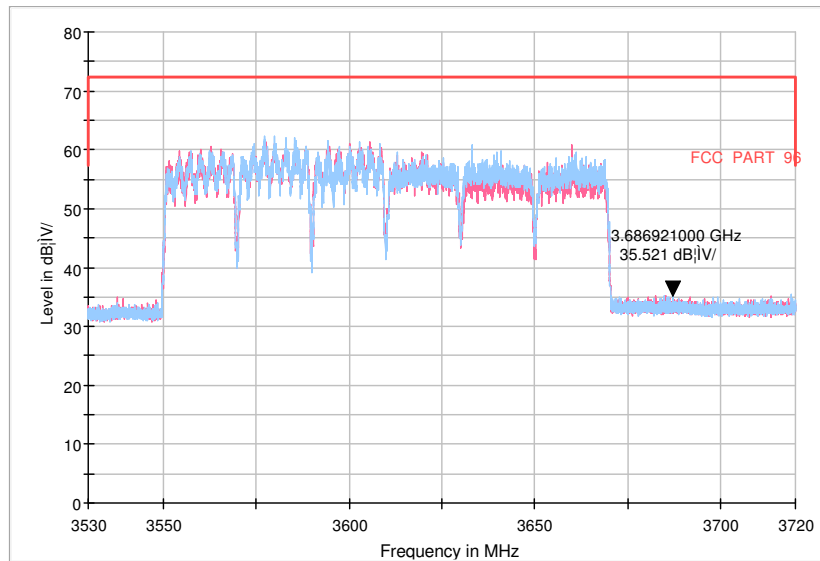
Range 30-1000MHz, Horizontal & Vertical



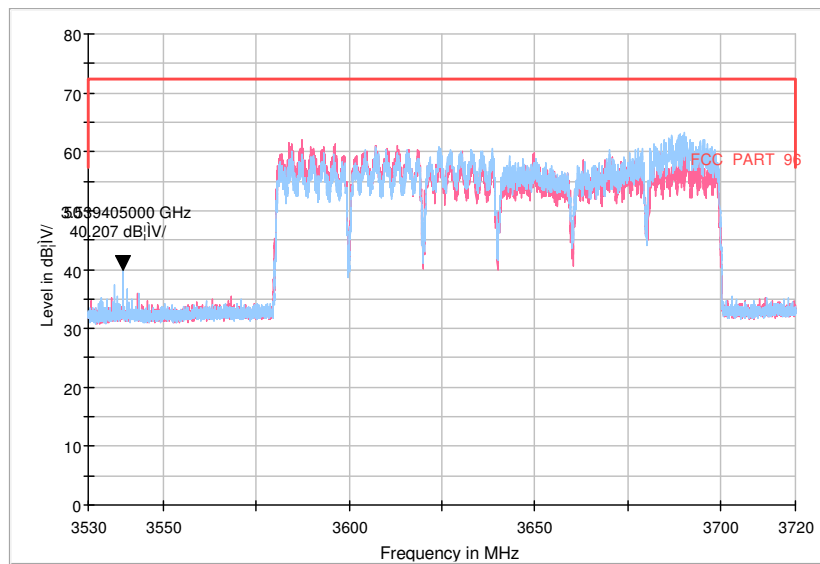
Range 1-3.53GHz, Horizontal & Vertical



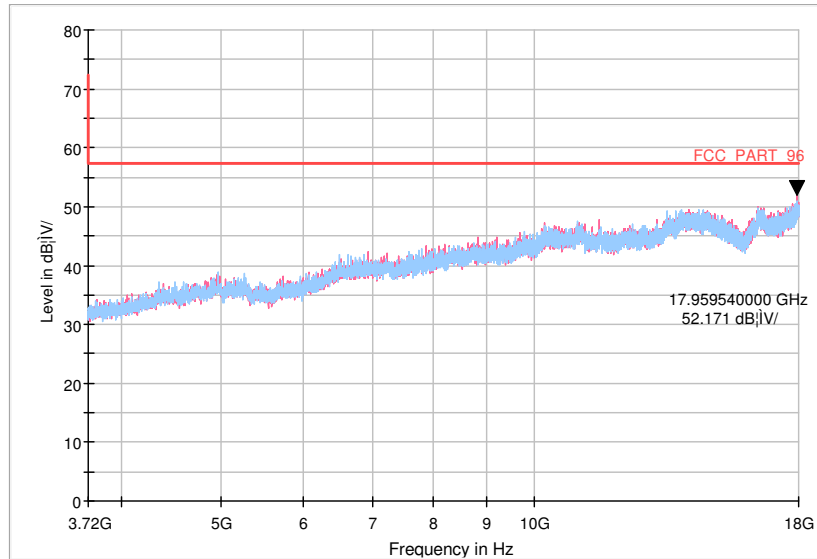
Range 3.53-3.72GHz, Horizontal & Vertical



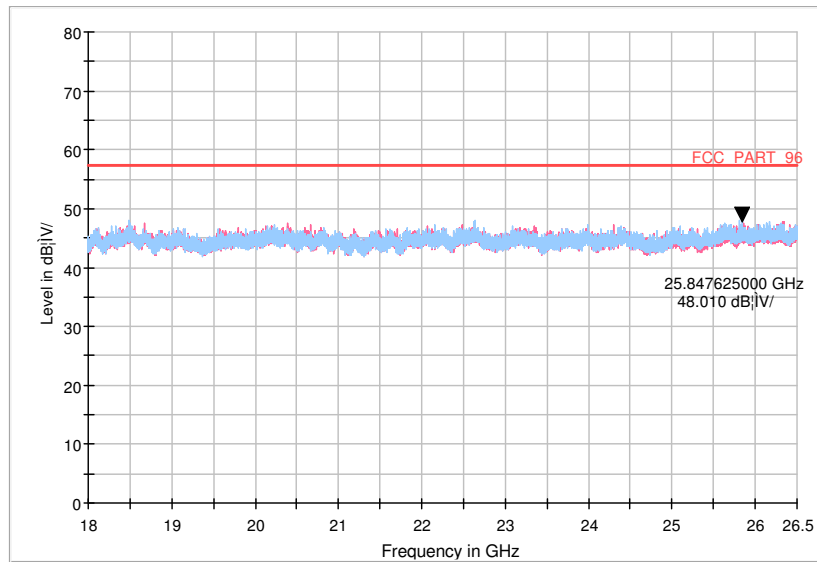
Range 3.53-3.72GHz, Horizontal & Vertical



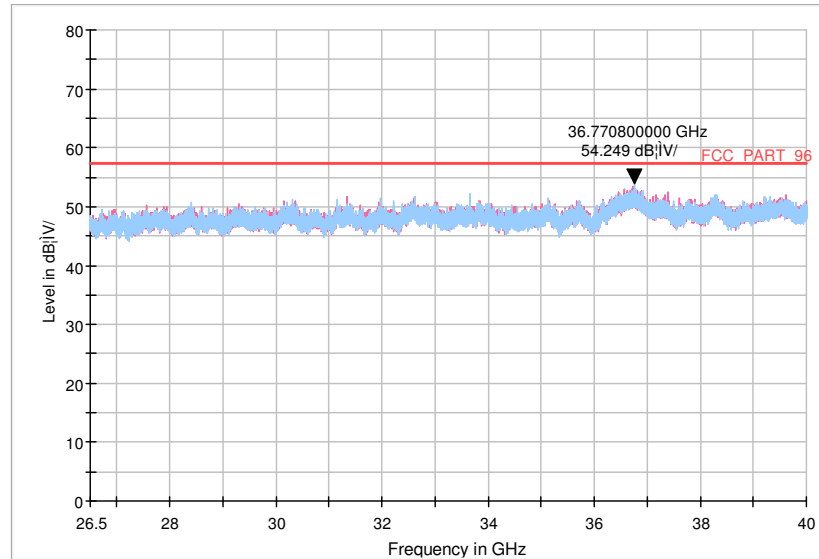
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical

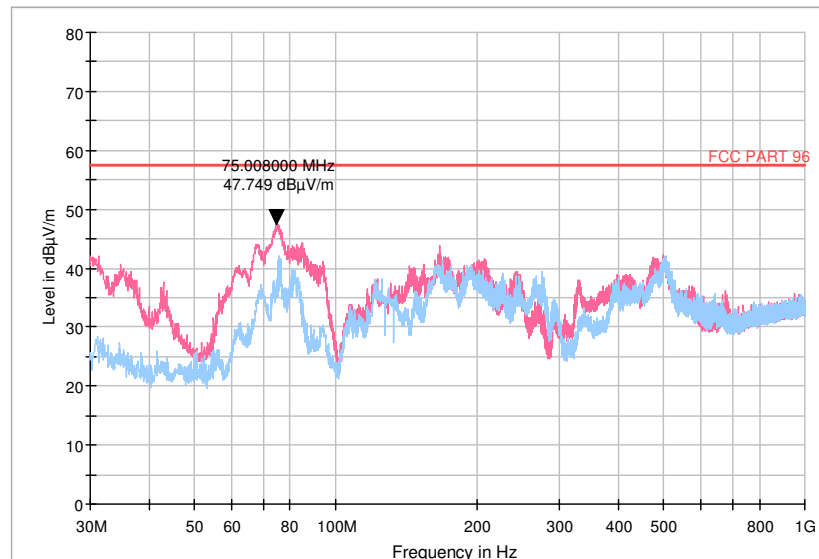


Range 26.5-40GHz, Horizontal & Vertical

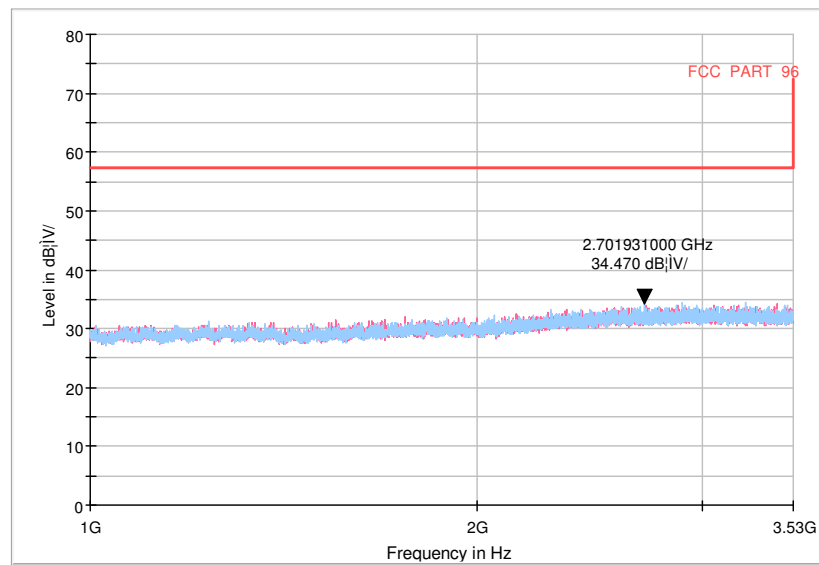


Configuration	Channel Position	Modulation	NR Channel Bandwidth (MHz)	LTE Channel Bandwidth (MHz)	RBW (kHz)
NR+LTE-MIMO-MC-4-UE	B	16QAM	20	20	1000
	T	16QAM	20	20	1000

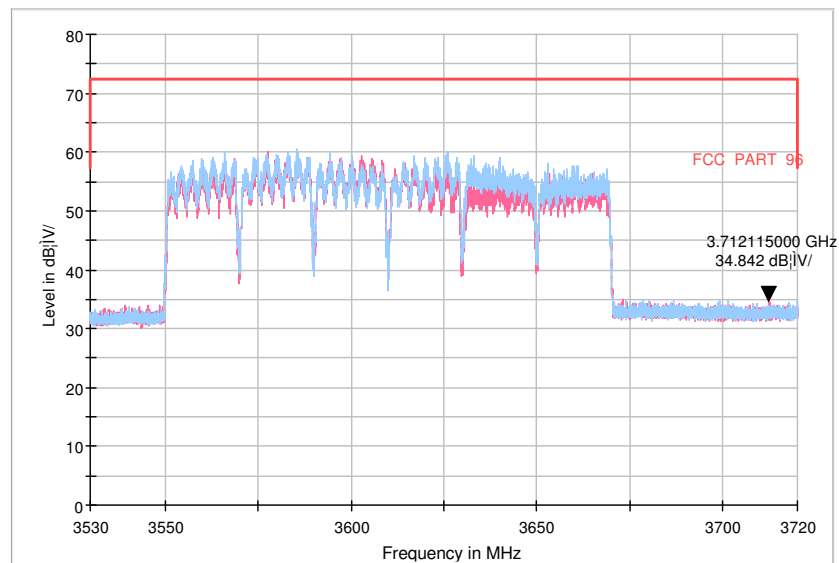
Range 30-1000MHz, Horizontal & Vertical



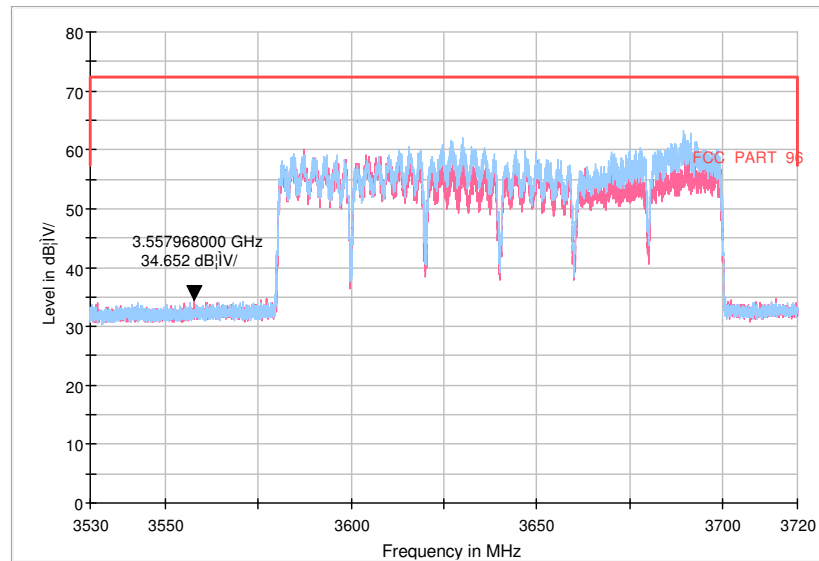
Range 1-3.53GHz, Horizontal & Vertical



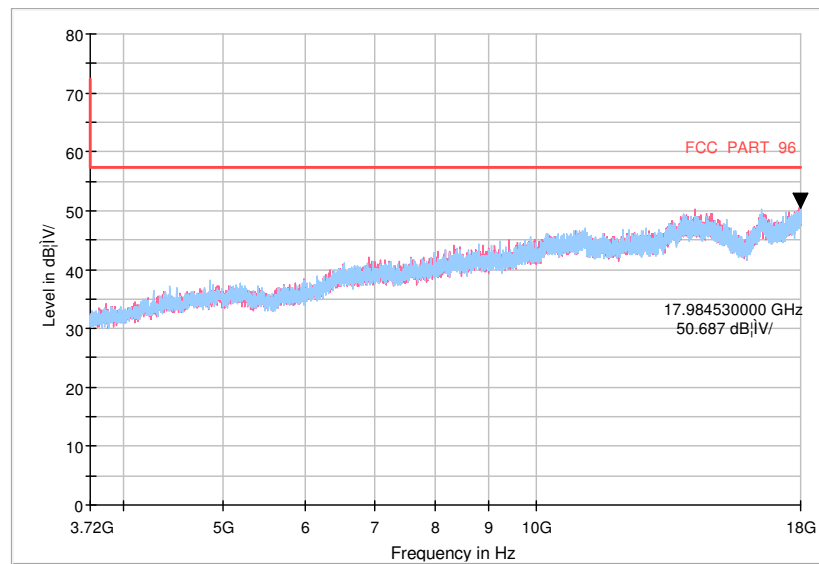
Range 3.53-3.72GHz, Horizontal & Vertical



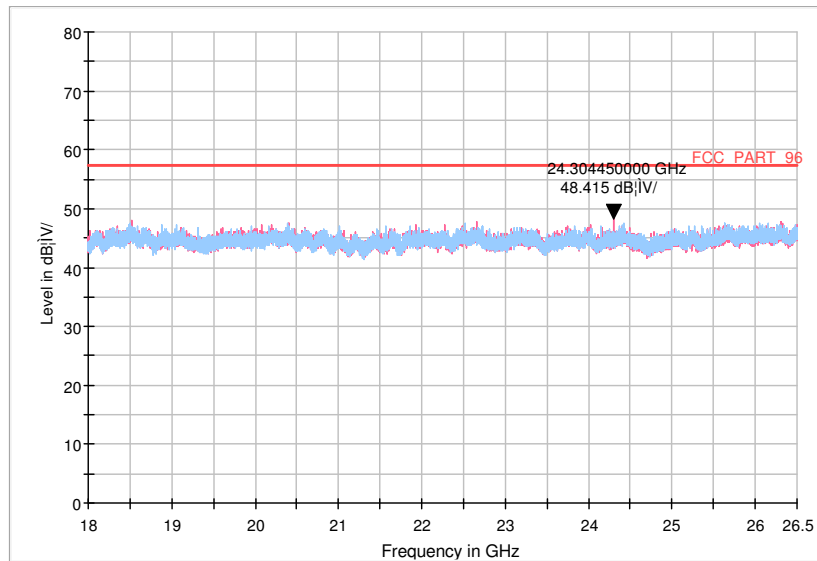
Range 3.53-3.72GHz, Horizontal & Vertical



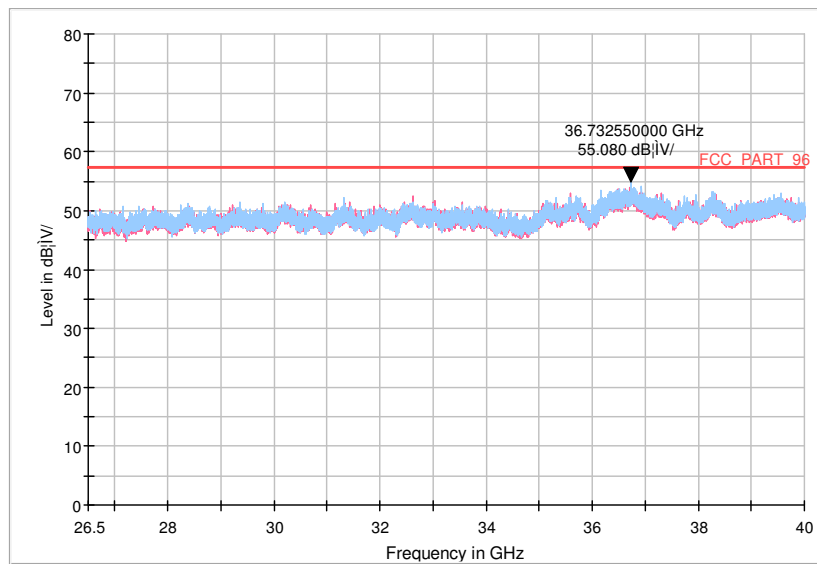
Range 3.72-18GHz, Horizontal & Vertical



Range 18-26.5GHz, Horizontal & Vertical



Range 26.5-40GHz, Horizontal & Vertical



TEST REPORT

8 Frequency Stability

Test result: Tested

8.1 Limit

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

8.2 Measurement Procedure

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.

8.3 Measurement result

Frequency Error – Temperature Variation

Configuration B:

NR-MIMO-1C-100

Antenna Port	Modulation	Temperature (°C)	Frequency Stability (Hz)		
			Channel Position B	Channel Position M	Channel Position T
B	16QAM	-30	-4.63	-4.27	-5.12
		-20	-4.35	-3.92	-5.42
		-10	-4.25	-5.02	-5.54
		0	-4.82	-3.85	-5.01
		10	-5.12	-5.70	-6.27
		20	-4.88	-6.72	-5.13
		30	-5.81	-6.52	-5.95
		40	-5.81	-5.10	-6.00
		50	-6.03	-5.80	-5.82

Frequency Error – Voltage Variation

Configuration B:

NR-MIMO-1C-100

Antenna Port	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	16QAM	20	-40.8	-4.89	-6.95	-5.16
			-48.0	-4.88	-6.72	-5.13
			-55.2	-4.63	-5.92	-5.81

***** END *****