

Report No.: 230200506SHA-001

6 Conducted Unwanted Emission

Test result: Pass

6.1 Limit

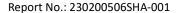
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

6.2 Measurement Procedure

In accordance with FCC rules, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P) dB$.

The spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 9kHz to 20GHz. The resolution bandwidth of 1MHz was employed for frequency band 9kHz to 20GHz. The spectrum analyzer detector was set to RMS.

For MIMO mode configurations, the limit was adjusted with a correction of -6.02dB [10Log(1/4)] by using the Measure and Add 10Log(N) dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports. Then the limit was adjusted to -19.02dBm.



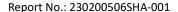


6.3 Measurement result

NR-1C

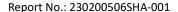
	Antenna Port Channel Position A B A M		Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
			256QAM	25	1000	-19.02
			256QAM	25	1000	-19.02
	Α	T	256QAM	25	1000	-19.02

Channel Position B Spectrum Analyzer 3 Swept SA Spectrum Analyzer 2 Swept SA Spectrum Analyzer 4 Swept SA Spectrum Analyzer 1 Marker Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive #Atten: 10 dB PNO: Fast Preamp: Off Gate: LO µW Path: Standard IF Gain: Low Sig Track: Off KEYSIGHT Input: RF Avg Type: Power (RMS) 1 2 3 4 5 6 Trig: External 1 Select Marker Align: Auto **w** *** *** Marker 1 ANNNNN ĻXI Marker Frequency Settings 1 Spectrum Mkr1 1.929 0 GHz Ref LvI Offset 42.73 dB Ref Level 20.00 dBm 1.929000000 GHz -6.80 dBm Scale/Div 10 dB Peak Peak Search Search Pk Search Config Next Peak Next Pk Right Properties Marker Function Next Pk Left Minimum Peak Marker→ Pk-Pk Search Counter Marker Delta Mkr→CF Mkr→Ref LvI Continuous Peak Search Start 9 kHz #Video BW 3.0 MHz* Stop 1.9290 GHz On Off #Res BW 1.0 MHz #Sweep ~4.01 s (4001 pts) Jan 31, 2023 12:29:42 PM ? Characterize Noise Floor required









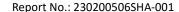












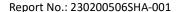




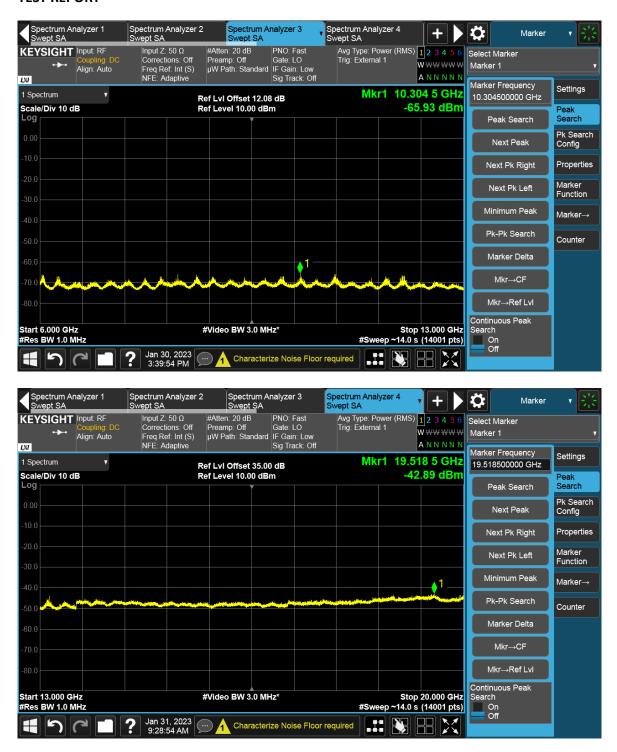


Channel Position T Spectrum Analyzer 3 Swept SA Spectrum Analyzer 1 Swept SA Spectrum Analyzer 2 Swept SA Spectrum Analyzer 4 Swept SA Marker KEYSIGHT Input: RF Input Z: 50 Ω Corrections: Off PNO: Fast Gate: LO Avg Type: Power (RMS) 1 2 3 4 5 6 Trig: External 1 #Atten: 10 dB Select Marker Preamp: Off wwwww Marker 1 Align: Auto Freq Ref: Int (S) NFE: Adaptive μW Path: Standard IF Gain: Low Sig Track: Off ANNNNN LXI Marker Frequency Settings Mkr1 1.929 0 GHz 1 Spectrum 1.929000000 GHz Ref Lvl Offset 42.73 dB -34.49 dBm Scale/Div 10 dB Ref Level 20.00 dBm Peak Search Peak Search Pk Search Next Peak Config Next Pk Right Properties Marker Next Pk Left Function Minimum Peak Marker→ Pk-Pk Search Counter Marker Delta Mkr→CF Mkr→Ref LvI Continuous Peak Stop 1.9290 GHz #Sweep ~4.01 s (4001 pts) #Video BW 3.0 MHz* Start 9 kHz #Res BW 1.0 MHz On Off Jan 31, 2023 1:04:10 PM ? A Characterize Noise Floor required Spectrum Analyzer 1 Swept SA Spectrum Analyzer 3 Swept SA Spectrum Analyzer 2 Spectrum Analyzer 4 Marker Swept SA Avg Type: Power (RMS) 1 2 3 4 5 6 Trig: External 1 KEYSIGHT Input: RF #Atten: 10 dB PNO: Fast Select Marker Corrections: Off Freq Ref: Int (S) Preamp: Off Gate: LO µW Path: Standard IF Gain: Low **w** **** Marker 1 Align: Auto





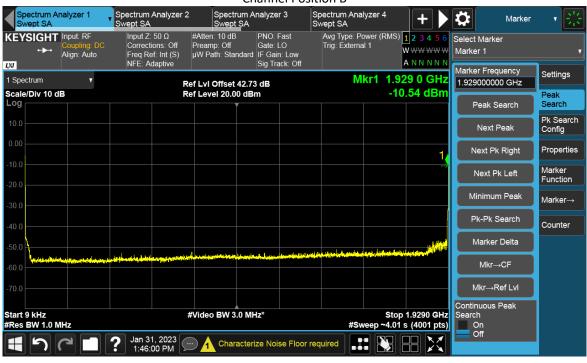


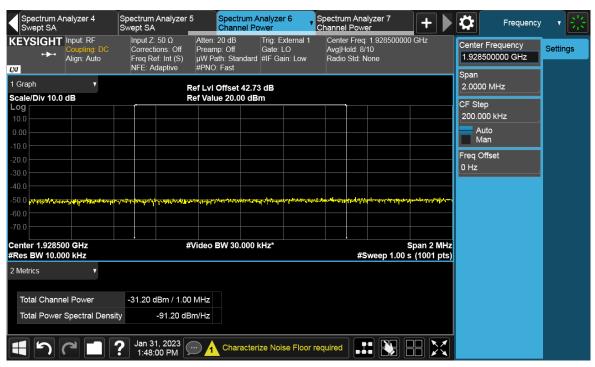


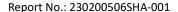


Antenna Port	Antenna Port Channel Position		Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
A B		256QAM	30	1000	-19.02
A M		256QAM	30	1000	-19.02
Α	Т	256QAM	30	1000	-19.02

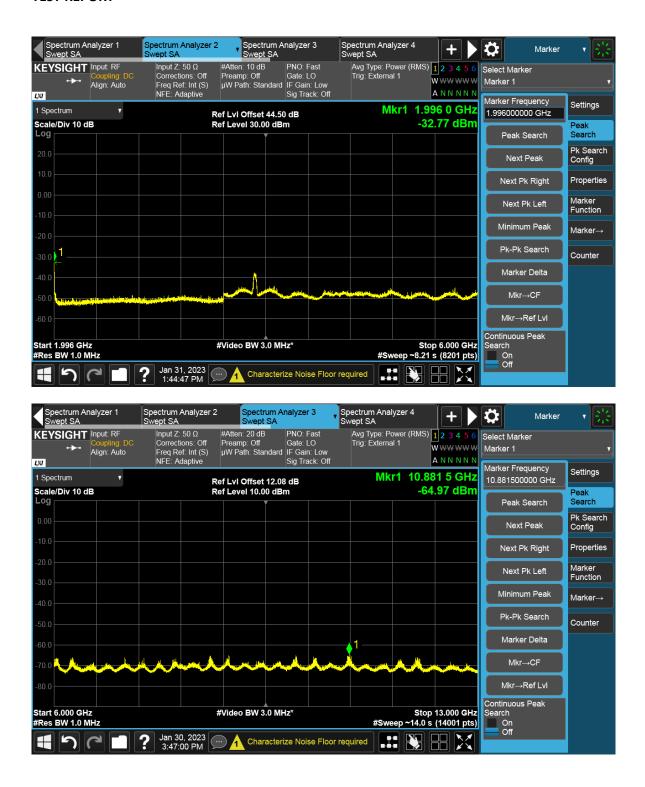
Channel Position B

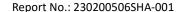










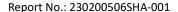




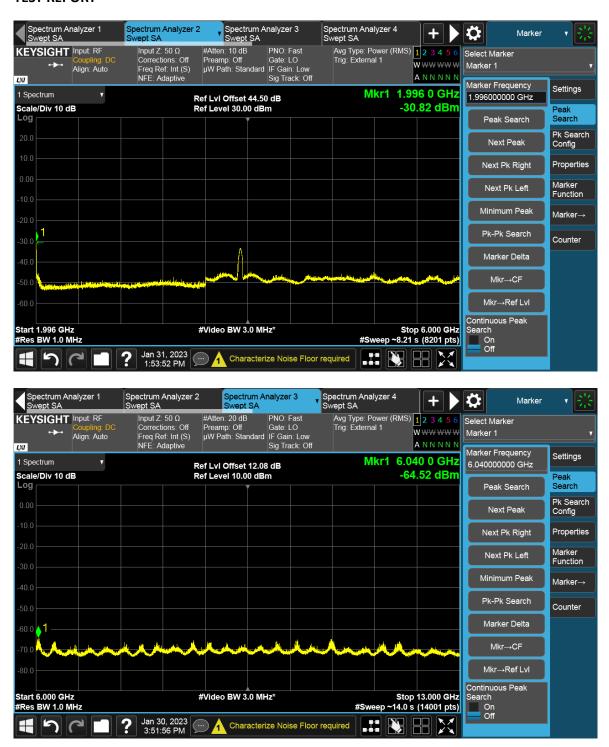


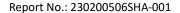
Channel Position M







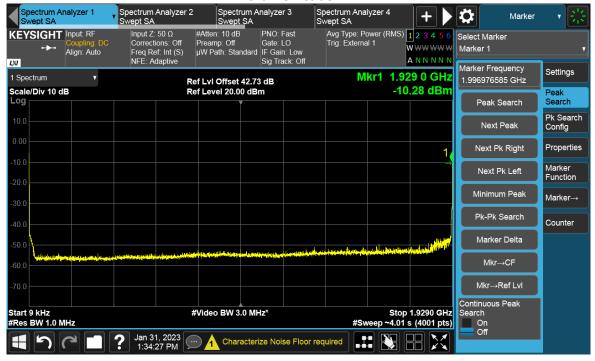


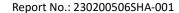




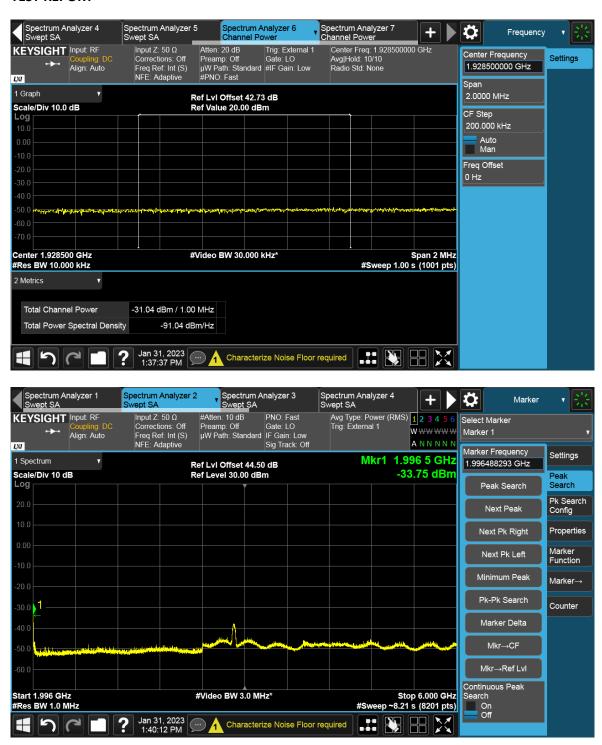


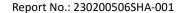
Channel Position T



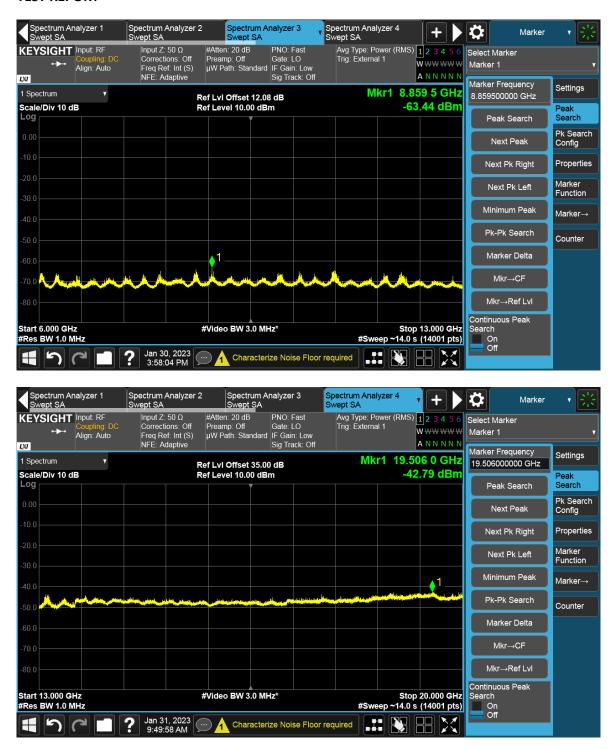


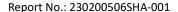










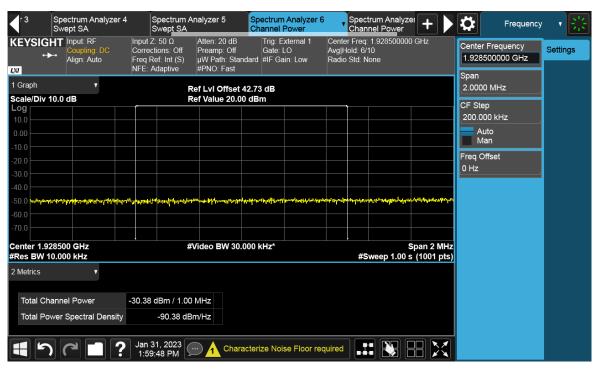




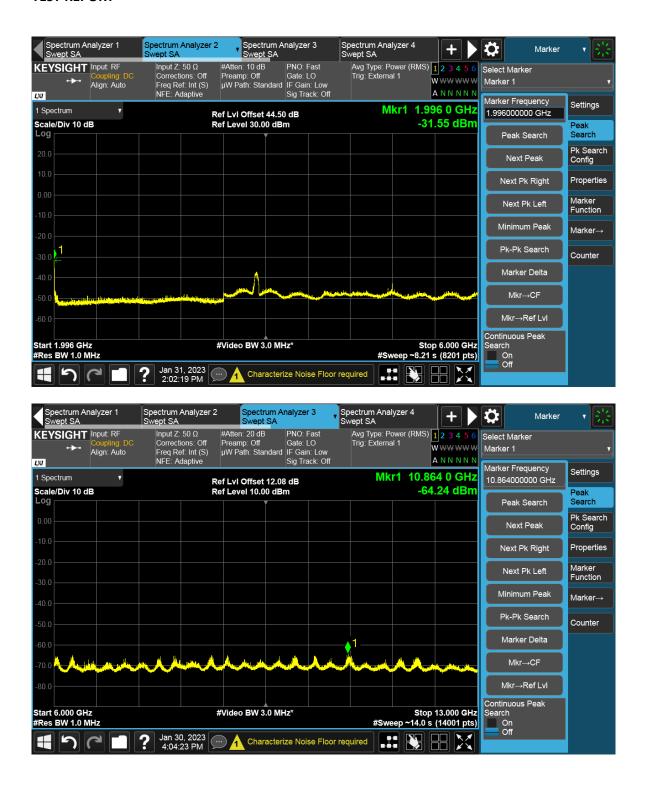
Antenna Port	ntenna Port Channel Position		Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
A B		256QAM	40	1000	-19.02
Α	M	256QAM	40	1000	-19.02
A	T	256QAM	40	1000	-19.02

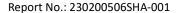
Channel Position B







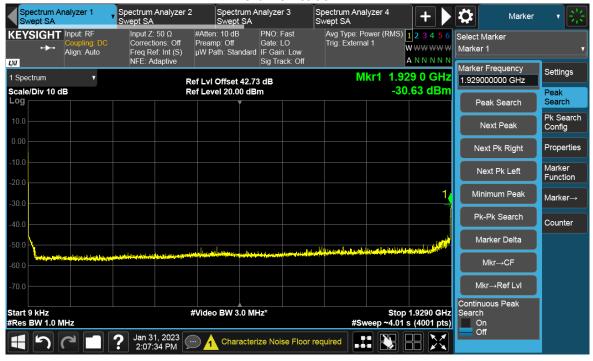


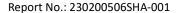




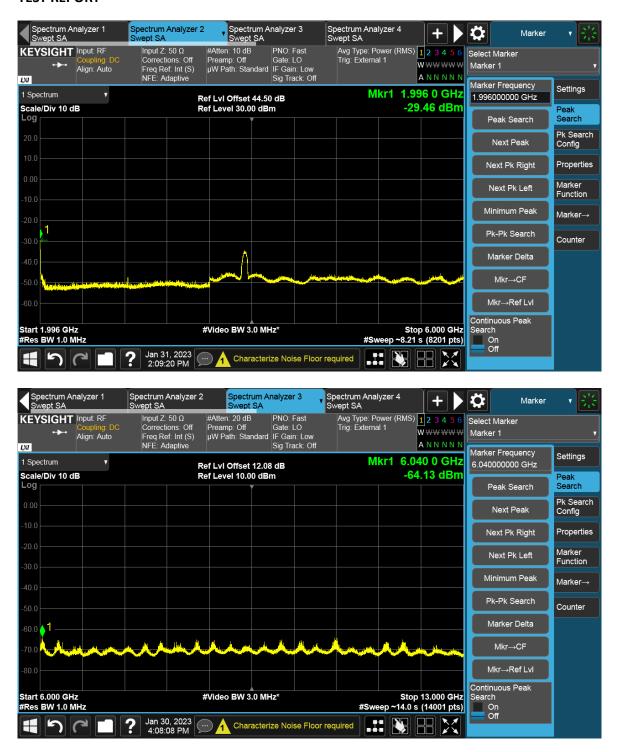


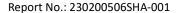
Channel Position M









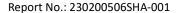




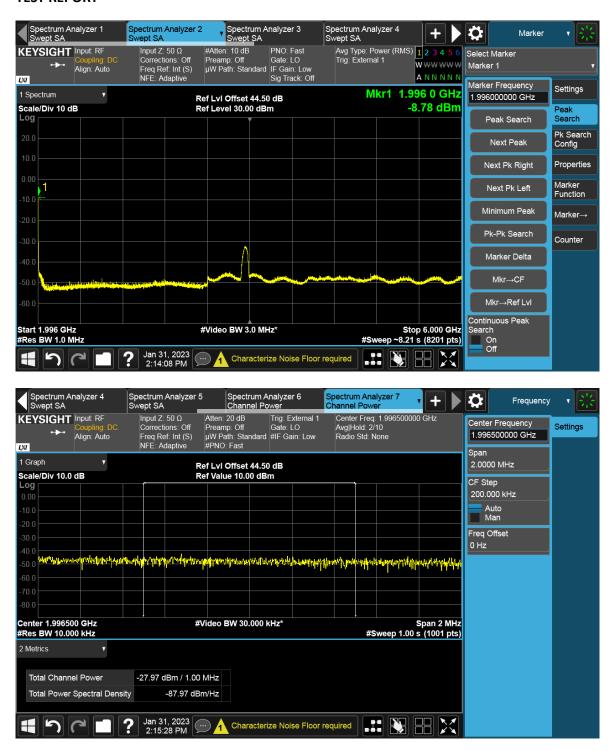


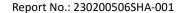
Channel Position T



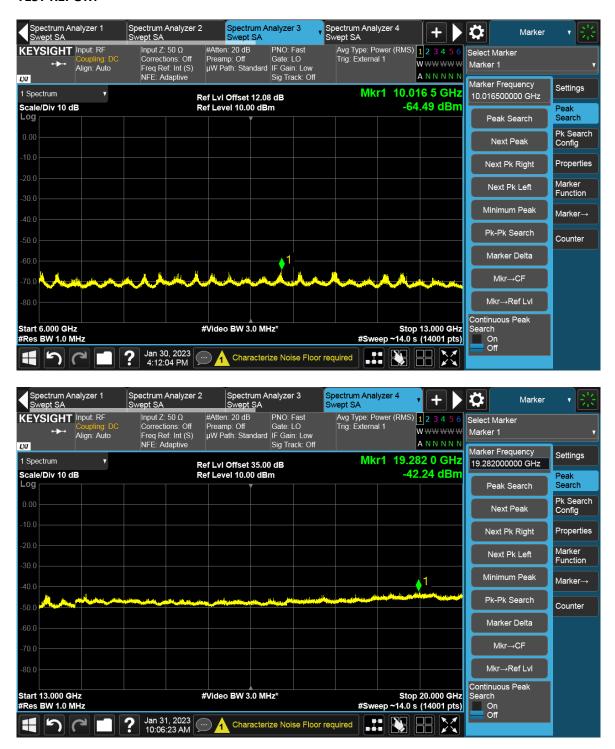


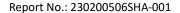










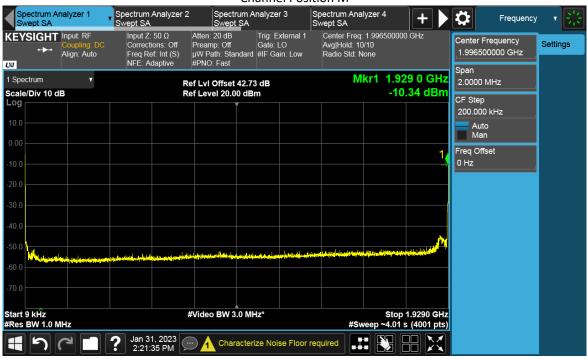


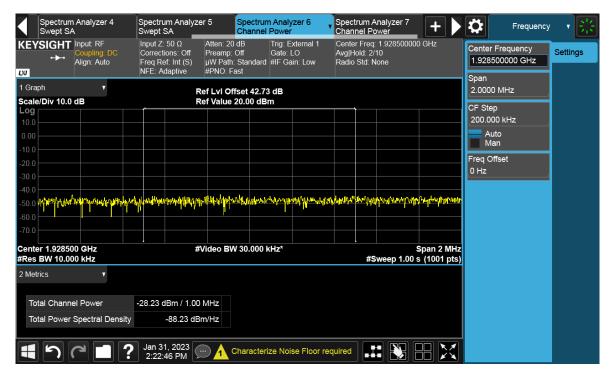


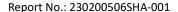
NR-2C

Antenna Port	Channel Position	Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
Α	M	256QAM	25	1000	-19.02

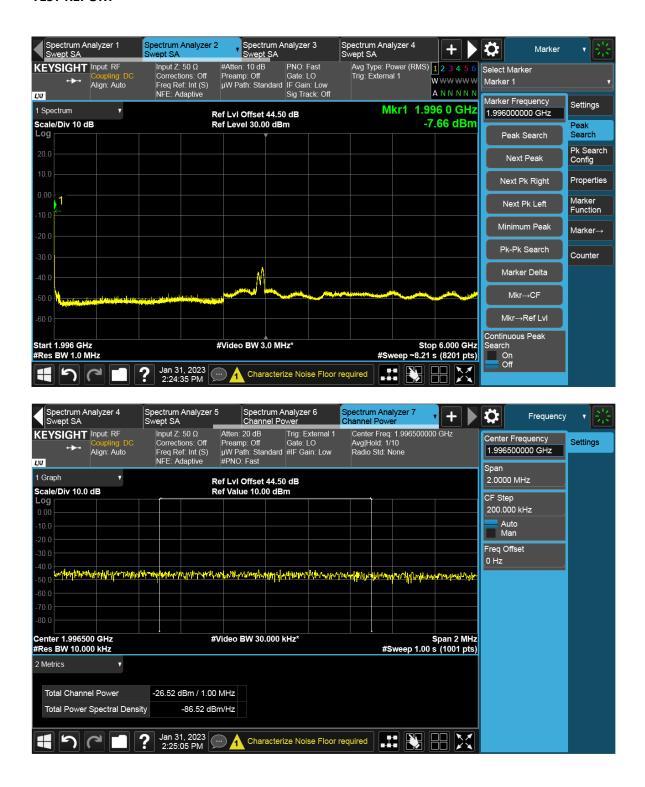
Channel Position M

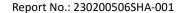










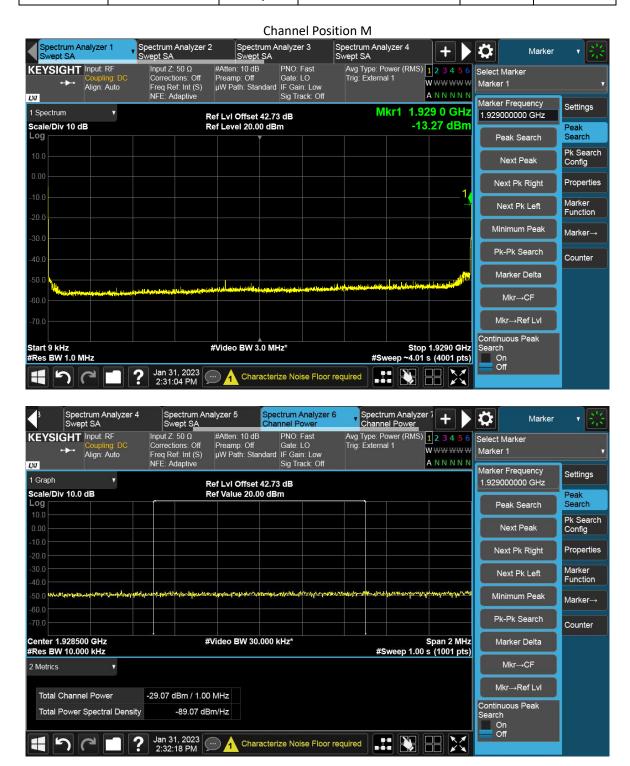


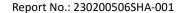




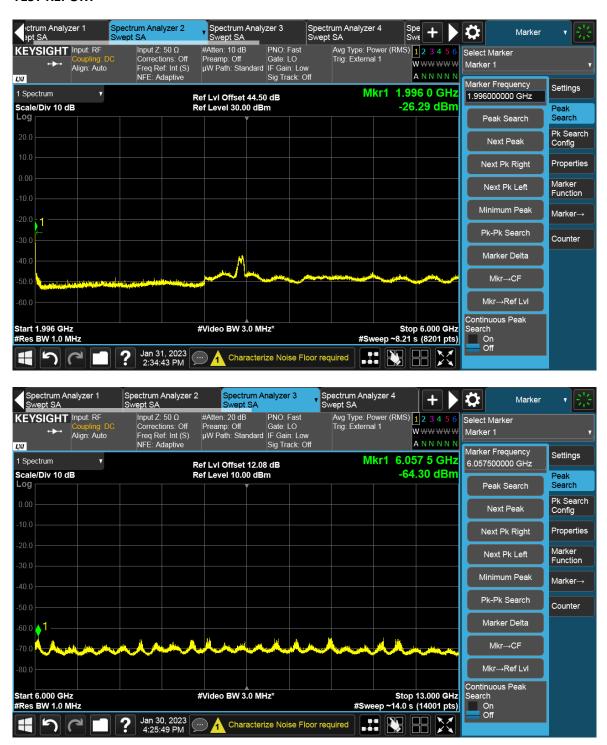


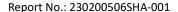
Antenna Port Channel Position Modulation Carrier BW (MHz) RBW (kHz) Limit (dBm) A M 256QAM 30 1000 -19.02

















Report No.: 230200506SHA-001

7 Frequency Stability

Test result: Tested

7.1 Limit

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

7.2 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.



7.3 Measurement result

Frequency Error – Temperature Variation

NR-1C, Channel Bandwidth: 40MHz

Antonno		Temperature (°C)	Frequency Stability (Hz)			
Antenna Port	Modulation		Channel	Channel	Channel	
POIL			Position B	Position M	Position T	
	256QAM	-30	0.33	0.31	0.75	
		-20	0.21	0.43	0.26	
		-10	0.22	0.70	0.52	
		0	0.27	0.25	0.13	
Α		10	0.11	0.36	0.19	
		20	0.28	0.45	0.28	
		30	0.30	0.50	0.11	
		40	0.15	0.06	0.14	
		50	0.29	0.62	0.38	

Frequency Error – Voltage Variation

NR-1C, Channel Bandwidth: 40MHz

Antonna		Temperature (°C)	Supply	Frequency Stability (Hz)		
Antenna Port	Modulation		Voltage	Channel	Channel	Channel
Port			(V)	Position B	Position M	Position T
		20	-40.8	0.07	0.48	0.59
Α	256QAM		-48.0	0.28	0.45	0.28
			-55.2	0.18	0.60	0.47