PEAK TO AVERAGE RATIO (CCDF) - n25

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Signal Analyzer	Keysight	N9030B	R332	2022-07-28	2023-07-28
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

Because the conducted Output Power was measured using a RMS Average detector, the Peak to Average Power Ratio (PAPR) was measured to show that the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed the rule part defined limit.

The PAPR measurement method is described in ANSI C63.26 section 5.2.3.4.
The PAPR was measured using the CCDF function of the spectrum analyzer.

Per FCC part 24.232(d), the PAPR limit shall not exceed 13 dB for more than the ANSI described 0.1% of the time.

RF conducted emissions was performed only on one port. The testing was performed on the same version of hardware (AHFIG) as the original certification test. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

PEAK TO AVERAGE RATIO (CCDF) - n25

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.2°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	60.9%
Project:	None			Barometric Pres.:	1005 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Band n25 carriers are enabled at maximum power (80 watts/carrier).

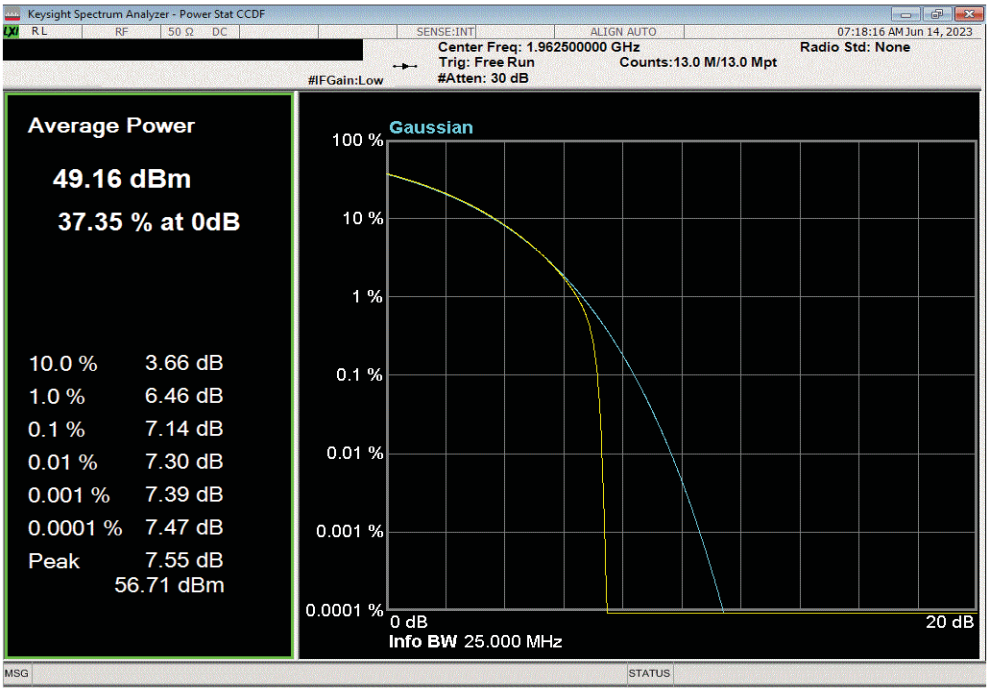
DEVIATIONS FROM TEST STANDARD

None

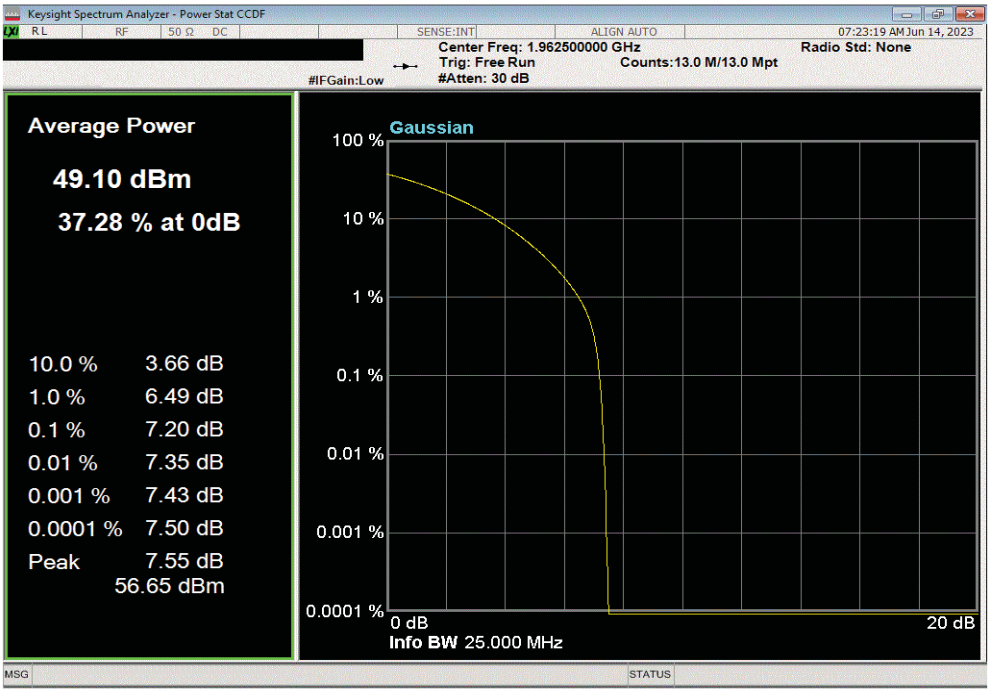
Configuration #	NOKI0053-2	Signature

	0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
Band n25 1930 MHz - 1995 MHz, 5G NR			
Port 1			
25 MHz Bandwidth			
QPSK Modulation			
Mid Channel 1962.5 MHz	7.14	13	Pass
16-QAM Modulation			
Mid Channel 1962.5 MHz	7.2	13	Pass
64-QAM Modulation			
Mid Channel 1962.5 MHz	7.15	13	Pass
256-QAM Modulation			
Low Channel 1942.5 MHz	7.44	13	Pass
Mid Channel 1962.5 MHz	7.15	13	Pass
High Channel 1982.5 MHz	7.18	13	Pass
30 MHz Bandwidth			
QPSK Modulation			
Mid Channel 1962.5 MHz	7.69	13	Pass
16-QAM Modulation			
Mid Channel 1962.5 MHz	7.53	13	Pass
64-QAM Modulation			
Mid Channel 1962.5 MHz	7.45	13	Pass
256-QAM Modulation			
Low Channel 1945.0 MHz	7.67	13	Pass
Mid Channel 1962.5 MHz	7.45	13	Pass
High Channel 1980.0 MHz	7.48	13	Pass

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, QPSK Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.14	13	Pass

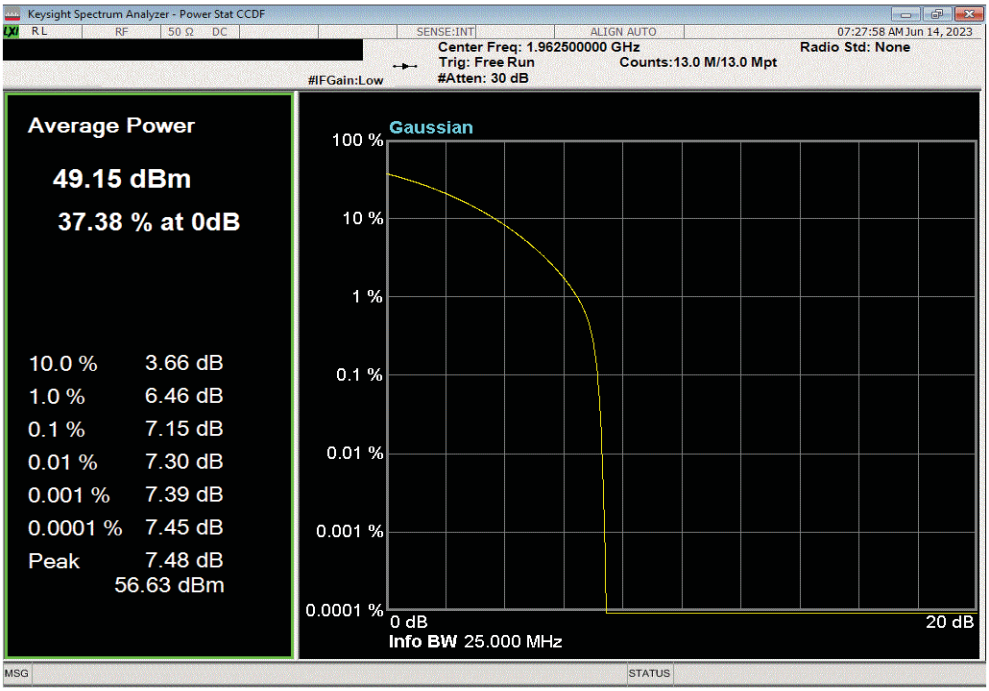


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.2	13	Pass

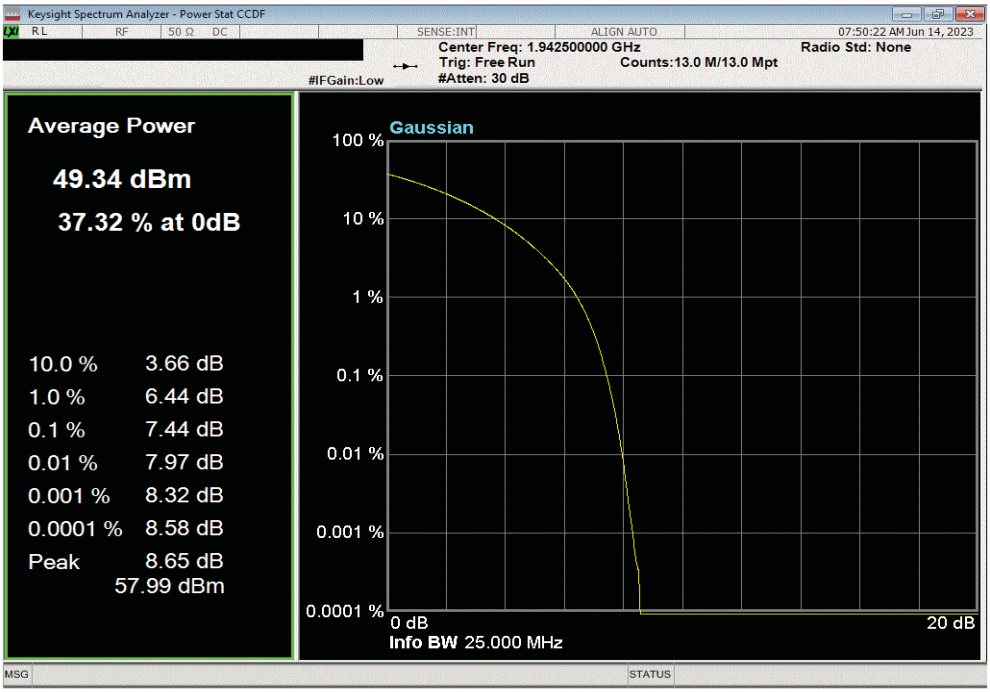


PEAK TO AVERAGE RATIO (CCDF) - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.15	13	Pass

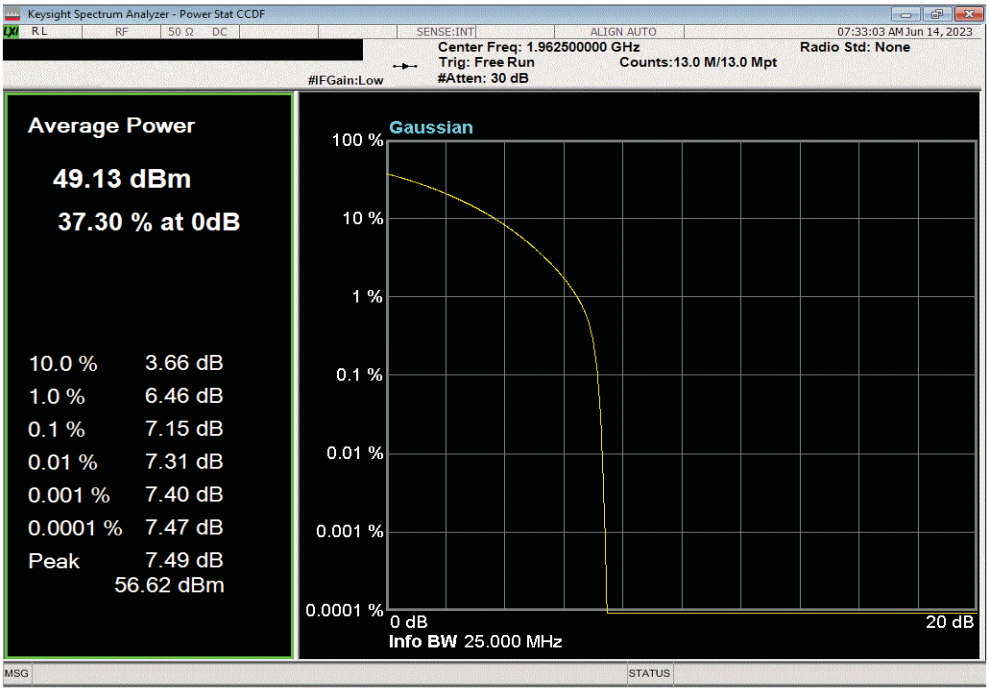


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.44	13	Pass

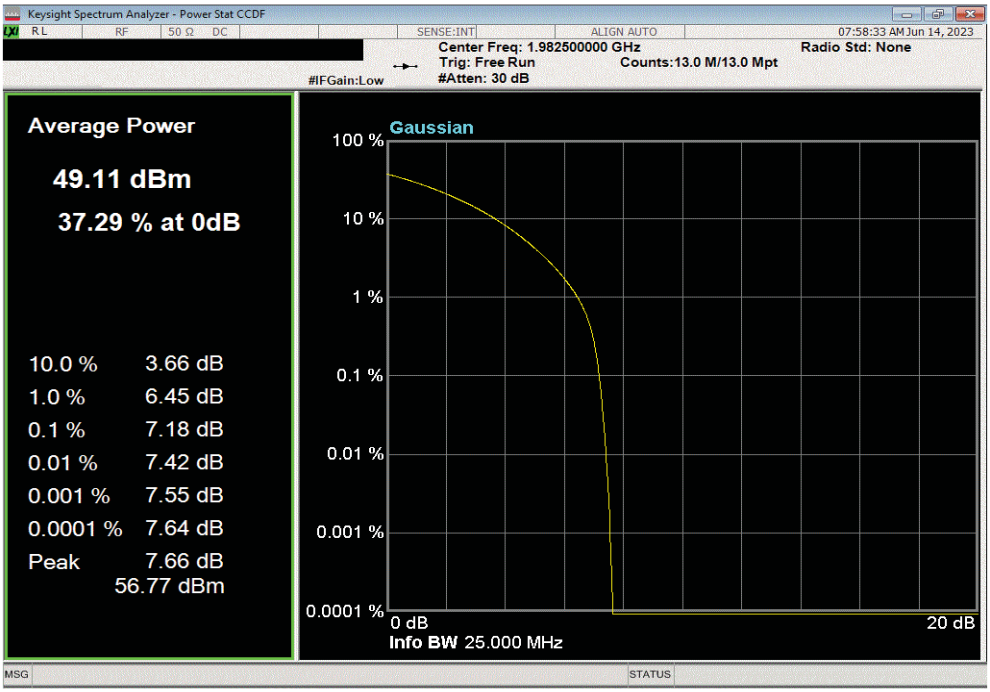


PEAK TO AVERAGE RATIO (CCDF) - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.15	13	Pass

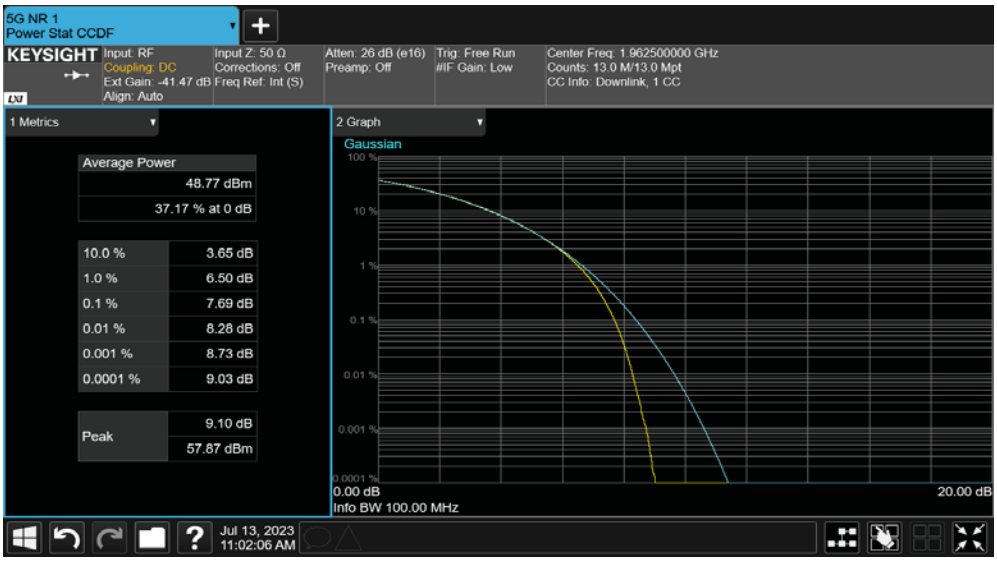


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.18	13	Pass

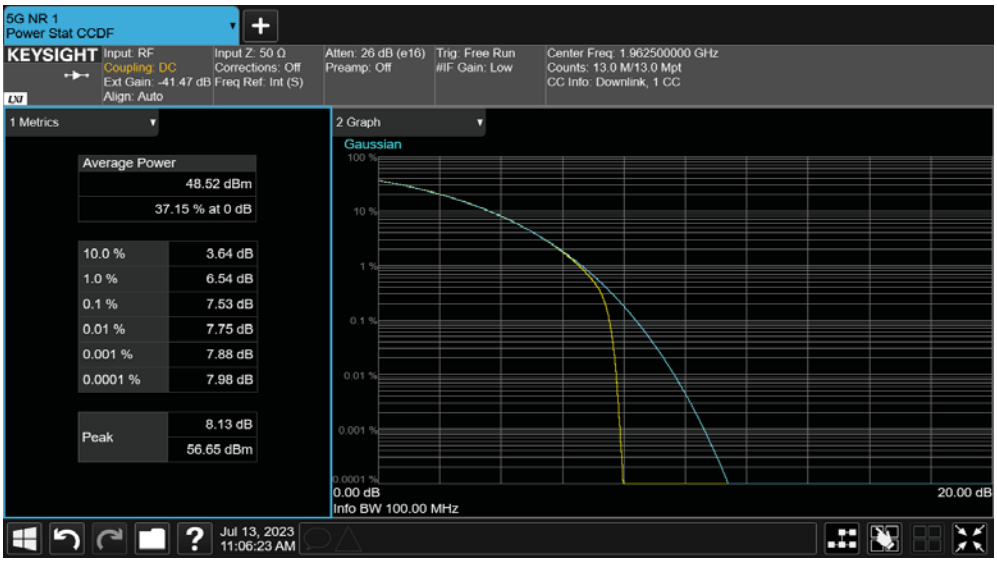


PEAK TO AVERAGE RATIO (CCDF) - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, QPSK Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.69	13	Pass

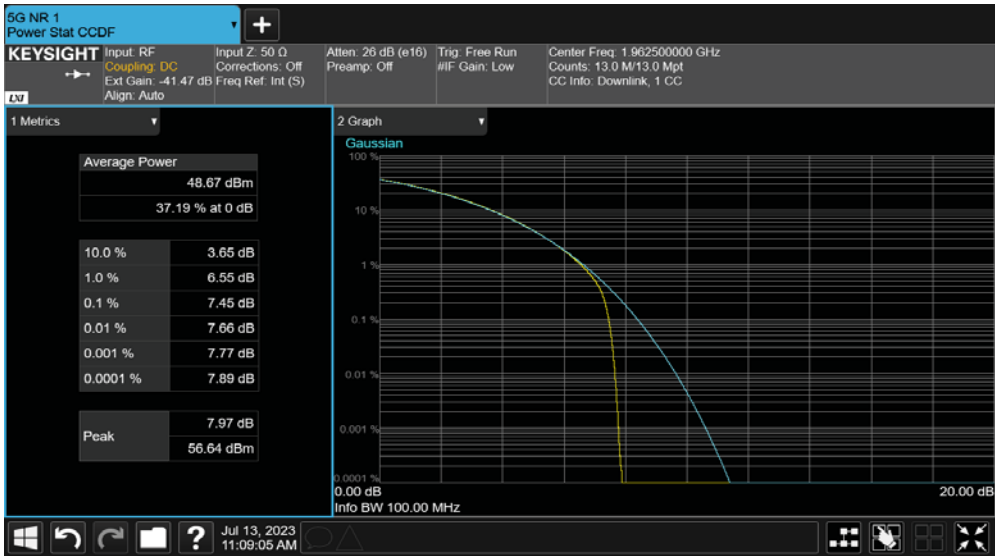


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.53	13	Pass

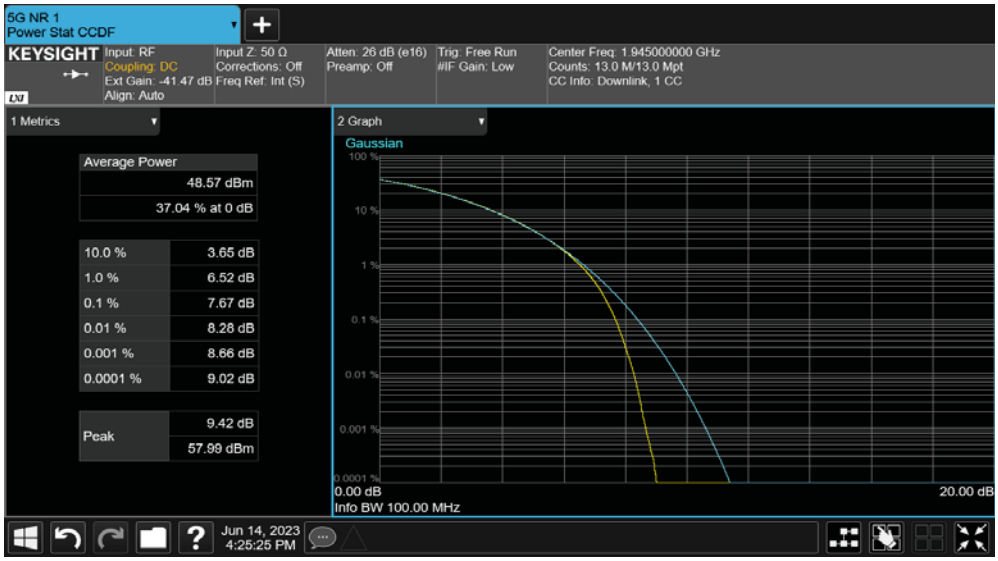


PEAK TO AVERAGE RATIO (CCDF) - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.45	13	Pass

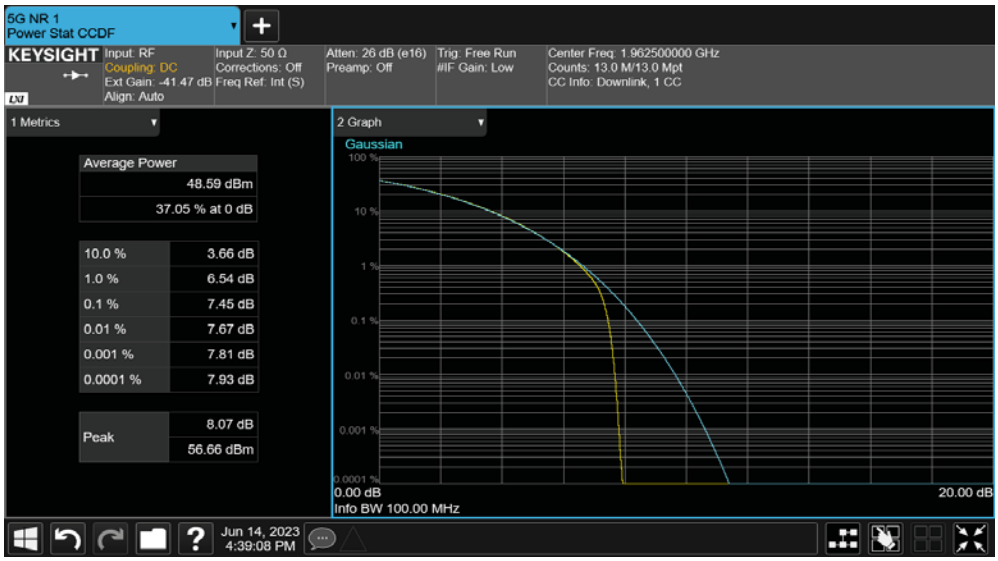


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 1945.0 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.67	13	Pass

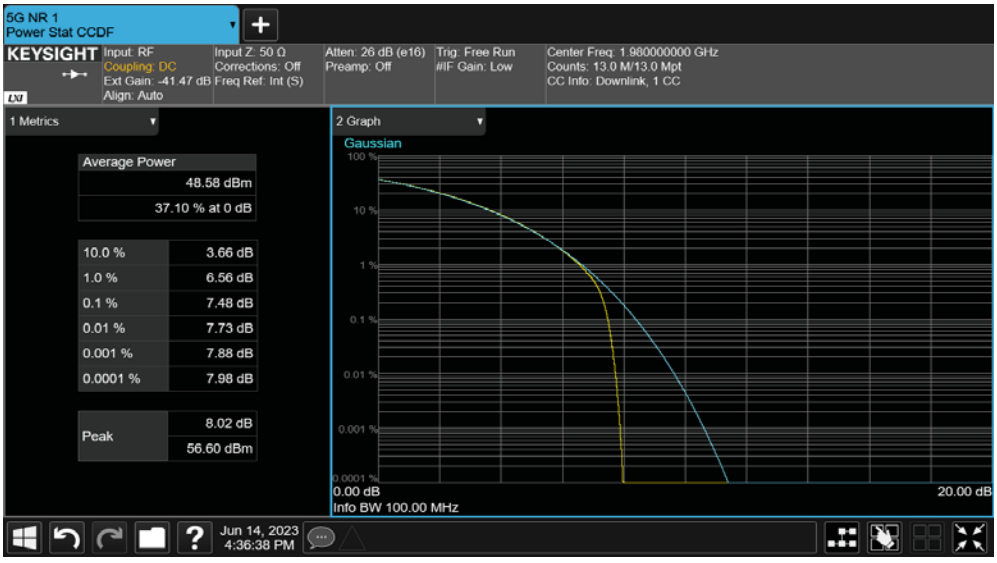


PEAK TO AVERAGE RATIO (CCDF) - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1962.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.45	13	Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 1980.0 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.48	13	Pass



PEAK TO AVERAGE RATIO (CCDF) - n66

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Signal Analyzer	Keysight	N9030B	R332	2022-07-28	2023-07-28

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

Because the conducted Output Power was measured using a RMS Average detector, the Peak to Average Power Ratio (PAPR) was measured to show that the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed the rule part defined limit.

The PAPR measurement method is described in ANSI C63.26 section 5.2.3.4.
The PAPR was measured using the CCDF function of the spectrum analyzer.

Per FCC part 27.50(d)(5) and RSS-139 section 5.5. the maximum peak-to-average power ratio (PAPR) is 13dB.

RF conducted emissions was performed only on one port. The testing was performed on the same version of hardware (AHFIG) as the original certification test. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

PEAK TO AVERAGE RATIO (CCDF) - n66

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.1°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	61%
Project:	None			Barometric Pres.:	1005 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 27:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Band n66 carriers are enabled at maximum power (40 watts/carrier).

DEVIATIONS FROM TEST STANDARD

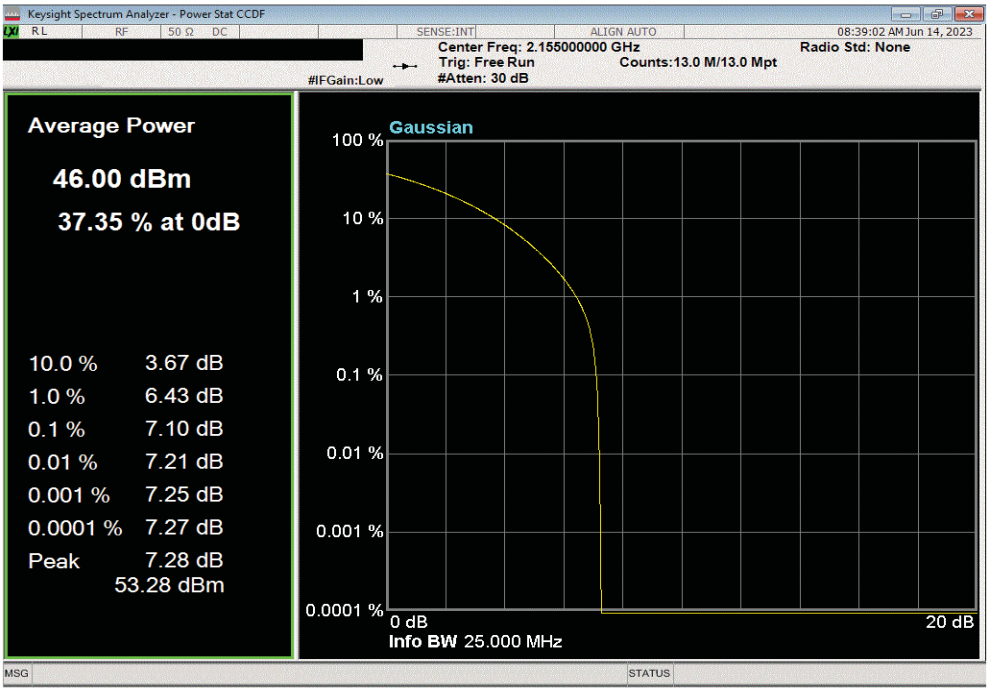
None

Configuration #	NOKI0053-2	Signature

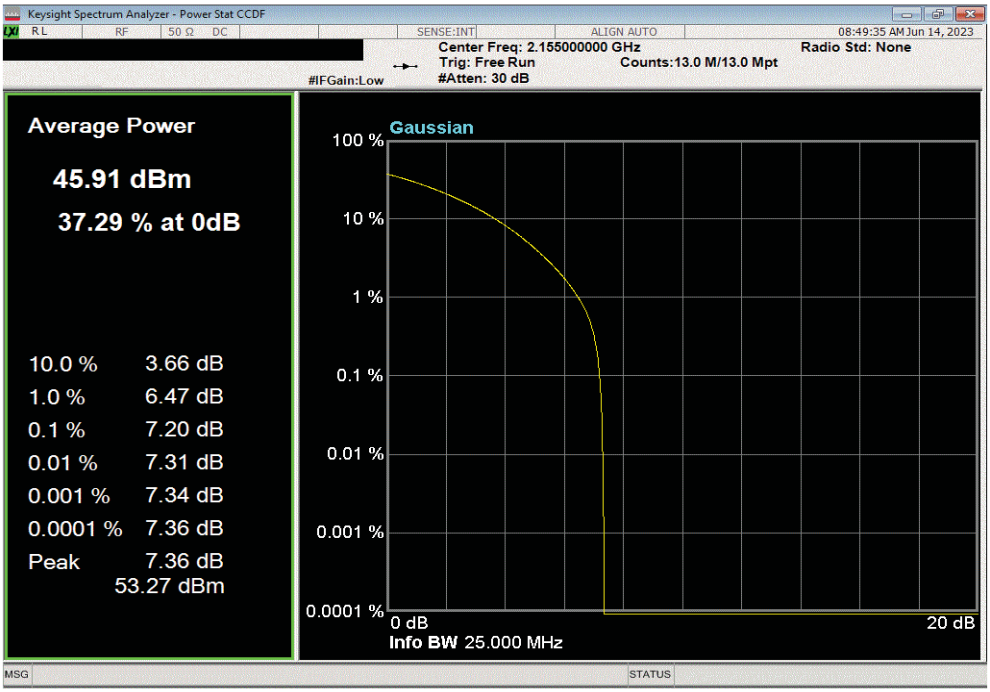
	0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
Band n66 2110 MHz - 2200 MHz, 5G NR			
Port 1			
25 MHz Bandwidth			
QPSK Modulation			
Mid Channel 2155 MHz	7.10	13	Pass
16-QAM Modulation			
Mid Channel 2155 MHz	7.20	13	Pass
64-QAM Modulation			
Mid Channel 2155 MHz	7.10	13	Pass
256-QAM Modulation			
Low Channel 2122.5 MHz	7.21	13	Pass
Mid Channel 2155 MHz	7.14	13	Pass
High Channel 2187.5 MHz	7.24	13	Pass
30 MHz Bandwidth			
QPSK Modulation			
Mid Channel 2155 MHz	7.49	13	Pass
16-QAM Modulation			
Mid Channel 2155 MHz	7.51	13	Pass
64-QAM Modulation			
Mid Channel 2155 MHz	7.45	13	Pass
256-QAM Modulation			
Low Channel 2125 MHz	7.52	13	Pass
Mid Channel 2155 MHz	7.52	13	Pass
High Channel 2185 MHz	7.55	13	Pass

PEAK TO AVERAGE RATIO (CCDF) - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, QPSK Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.1	13	Pass

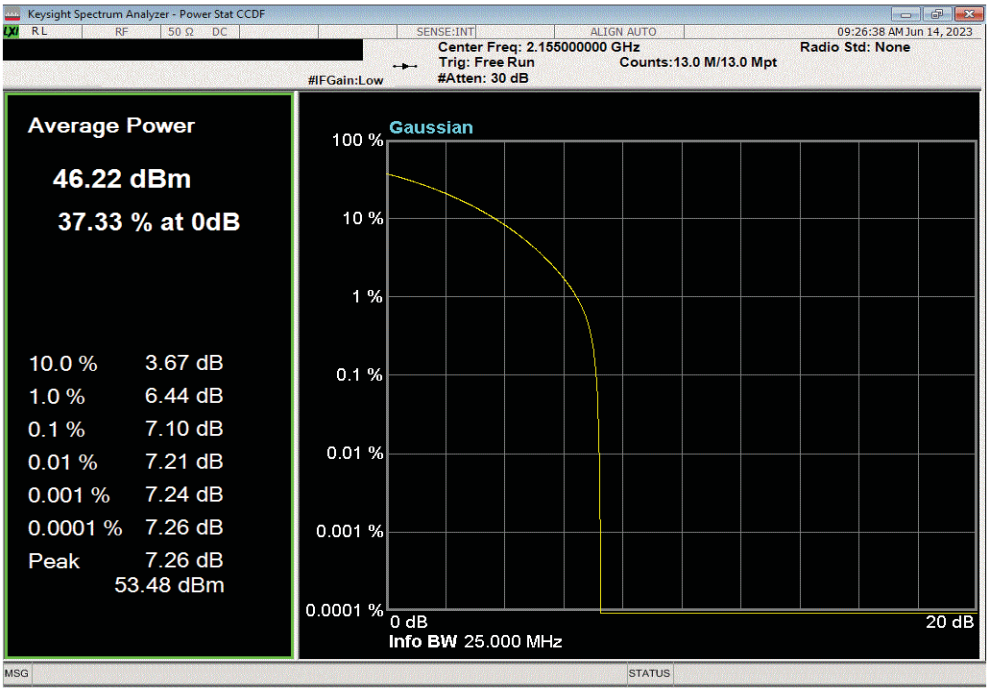


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.2	13	Pass

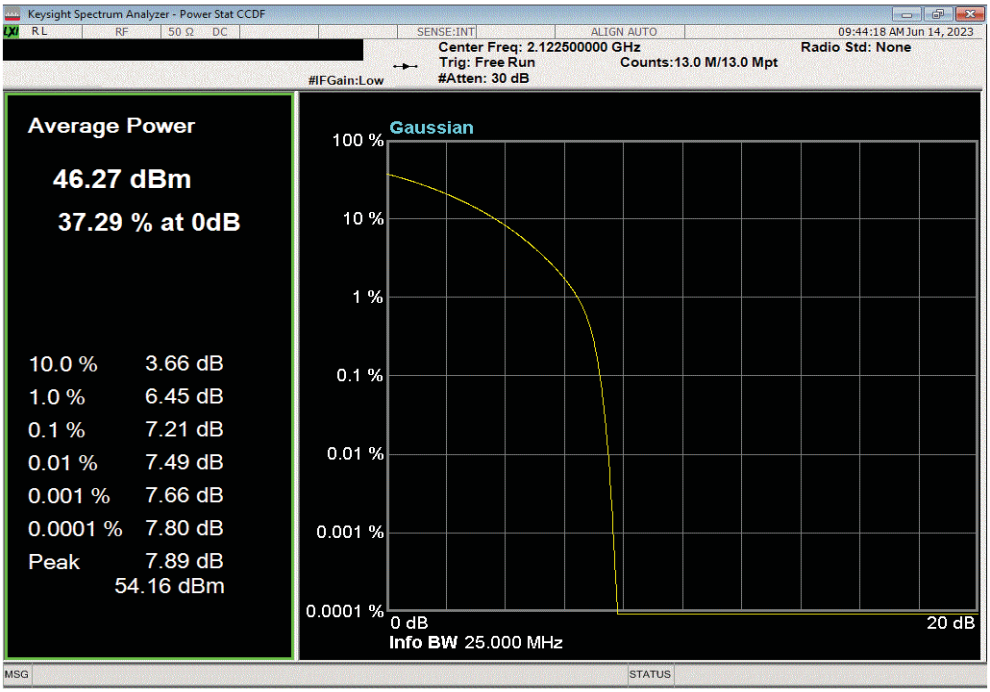


PEAK TO AVERAGE RATIO (CCDF) - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.1	13	Pass

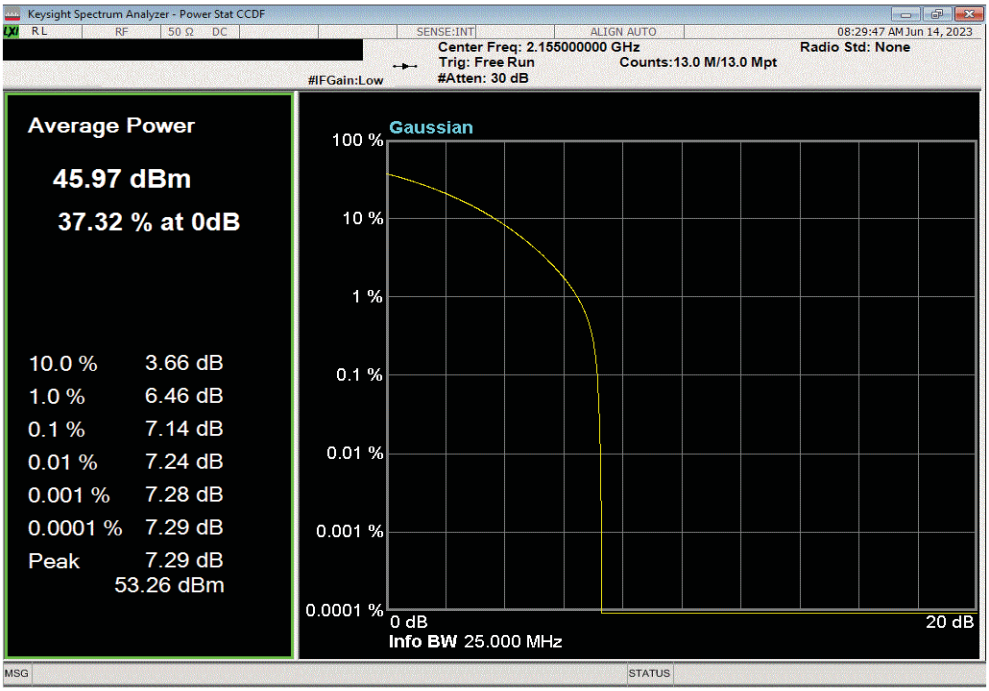


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.21	13	Pass

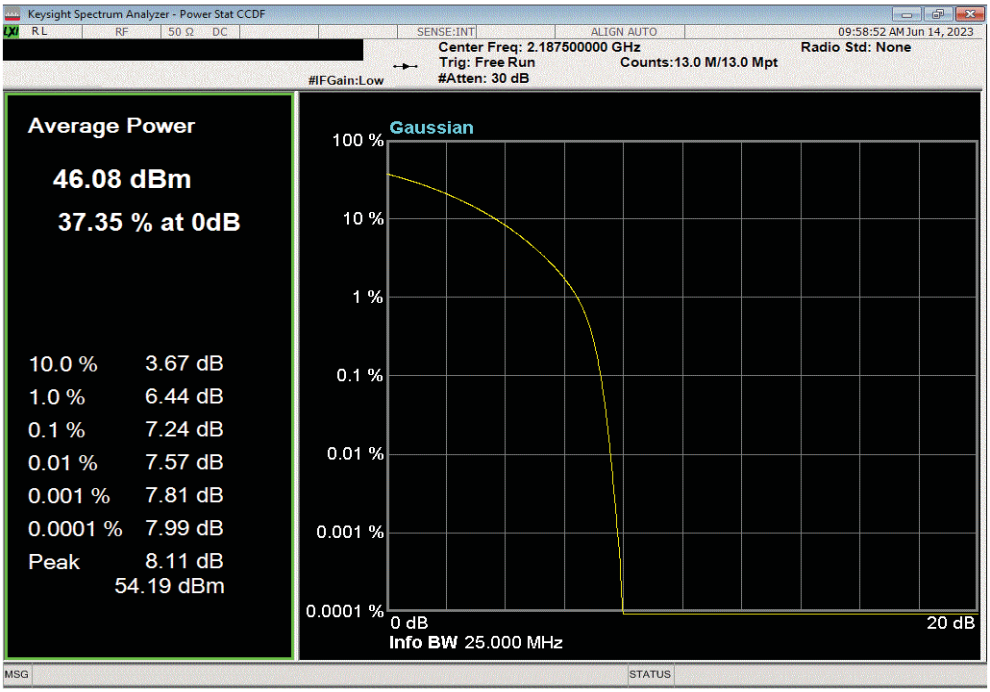


PEAK TO AVERAGE RATIO (CCDF) - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.14	13	Pass

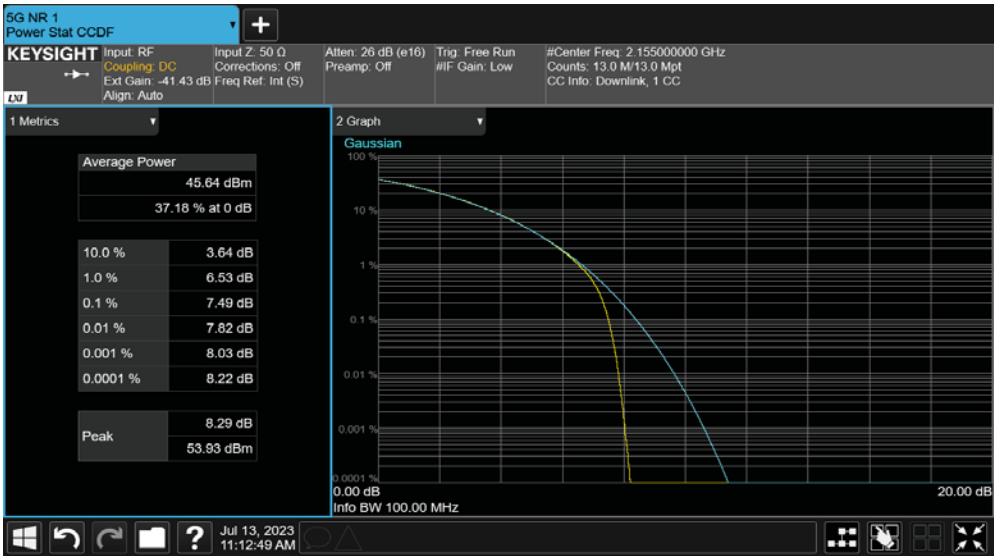


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 2187.5 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.24	13	Pass

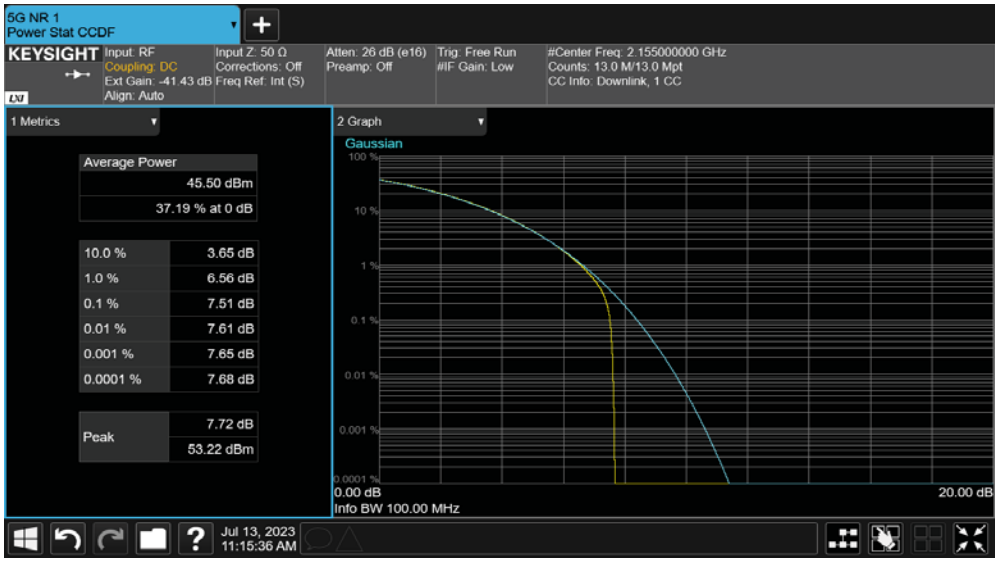


PEAK TO AVERAGE RATIO (CCDF) - n66

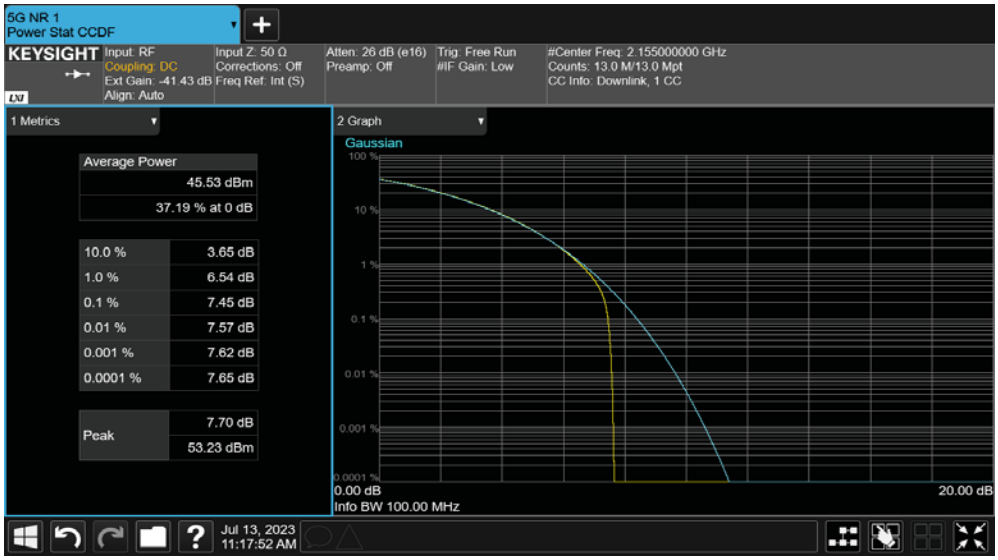
Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, QPSK Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.49	13	Pass



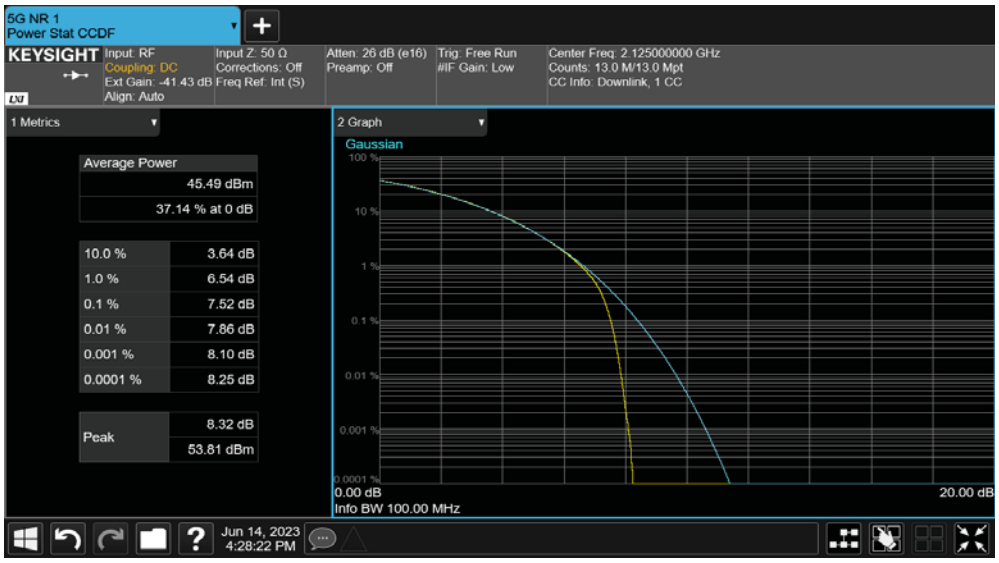
Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.51	13	Pass



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 64-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.45	13	Pass

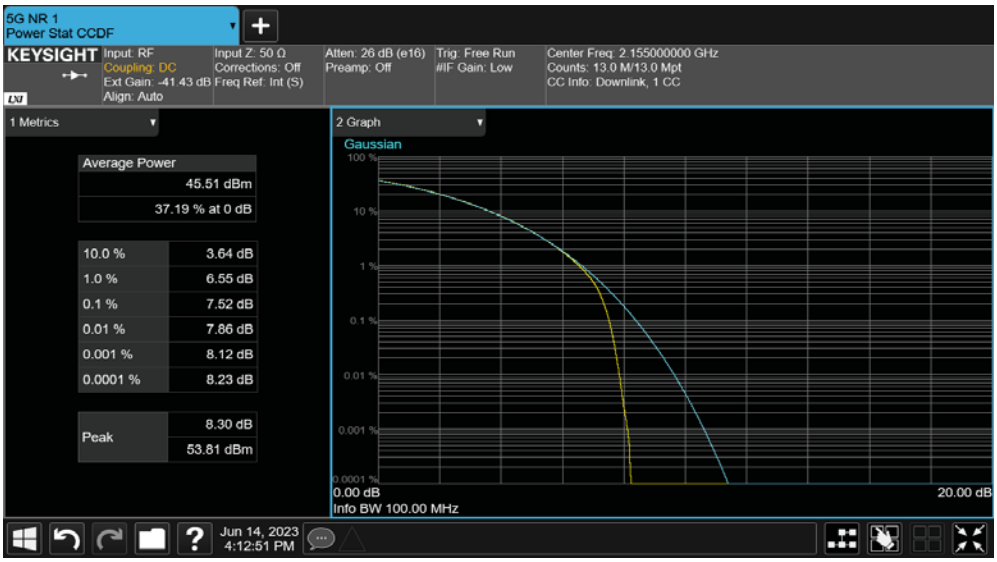


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 2125 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.52	13	Pass

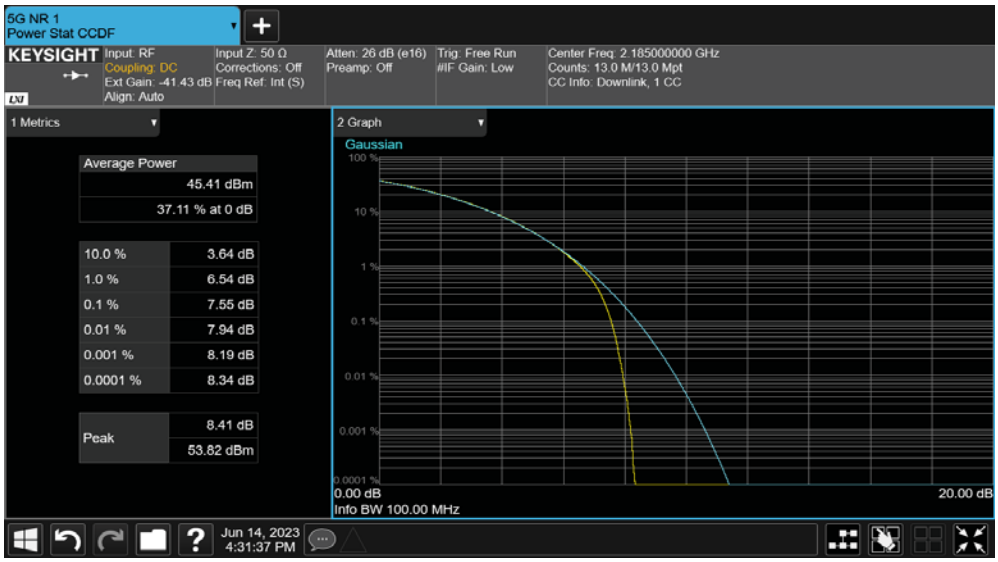


PEAK TO AVERAGE RATIO (CCDF) - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.52	13	Pass



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 2185 MHz						
				0.1% PAPR Value (dB)	0.1% PAPR Limit (dB)	Result
				7.55	13	Pass



BAND EDGE COMPLIANCE - MULTICARRIER

element

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

All limits were adjusted by a factor of [-10*log(4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911.

Per section 27.53(h)(1) and 24.238(a), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

Per 27.53(h)(3) and 24.238(b), emissions seen up to 1 MHz outside of authorized operating frequency range band edges shell be measured with a RBW of 1% of the measured emission bandwidth Any emission seen to be > 1 MHz further outside the band edges shall be measured with a RBW of 1 MHz. However, a narrower RBW of at least 1% of the emission bandwidth is still allowed provided that the measured power is integrated over the full reference bandwidth of 1 MHz.

Multicarrier Test Case 1 (PCS Multicarrier LBE): In the PCS band _Two NR 30MHz carriers (with minimum spacing between carrier frequencies) at the lower band edge (1945 & 1975MHz). In AWS band NR 5MHz carrier is enable at middle channel (2155.0MHz) at full power (40W). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~40W/PCS carrier and 40W/AWS carrier) with a total port power of 120 watts.

Multicarrier Test Case 2 (PCS Multicarrier UBE): In the PCS band _Two NR 30MHz carriers (with minimum spacing between carrier frequencies) at the upper band edge (1950 & 1980MHz). In AWS band NR 5MHz carrier is enable at middle channel (2155.0MHz) at full power (40W). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~40W/PCS carrier and 40W/AWS carrier) with a total port power of 120 watts.

Multicarrier Test Case 3 (AWS Multicarrier LBE): In the AWS band _Two NR 30MHz carriers (with minimum spacing between carrier frequencies) at the lower band edge (2125 & 2155MHz). In PCS band NR 5MHz carrier is enable at middle channel (1962.5MHz) at full power (80W). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~20W/AWS carrier and 80W/PCS carrier) with a total port power of 120 watts.

Multicarrier Test Case 4 (AWS Multicarrier UBE): In the AWS band _Two NR 30MHz carriers (with minimum spacing between carrier frequencies) at the upper band edge (2185 & 2155MHz). In PCS band NR 5MHz carrier is enable at middle channel (1962.5MHz) at full power (80W). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~20W/AWS carrier and 80W/PCS carrier) with a total port power of 120 watts.

Multicarrier Multiband Test Case 5 : In the PCS band _Three NR 5MHz carriers with Two NR 5MHz (minimum spacing between carrier frequencies) at the lower band edge (1932.5 & 1937.5 MHz) and one NR 5MHz carrier (maximum spacing with other two) at the upper band edge (1992.5 MHz). In AWS band_ Three NR 5MHz carriers with Two NR 5MHz (minimum spacing between carrier frequencies) at the lower band edge (2112.5 & 2117.5 MHz) and one NR 5MHz carrier (maximum spacing with other two) at the upper band edge (2197.5 MHz). The smallest channel bandwidth was selected to maximize carrier power spectral density. The carriers are operated at maximum power (~13.3W/AWS carrier and ~26.6W/PCS carrier) with a total port power of 120 watts.
maximize carrier power spectral density. The carriers are operated at maximum power (~13.3W/AWS carrier and ~26.6W/PCS carrier) with a total port power of 120 watts.

RF conducted emissions testing was performed only on one port. The testing was performed on the same version of hardware (AHFIG) as the original certification test. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in the original certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The band edge testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there was small variation in band edge measurements over modulation types from previous certification testing for other channel bandwidths. (See ANSI C63.26. clause 5.7.2e).

BAND EDGE COMPLIANCE - MULTICARRIER

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	20.8°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	63%
Project:	None			Barometric Pres.:	1007 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015
FCC 27:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Power per carrier is called out in the data below.

DEVIATIONS FROM TEST STANDARD

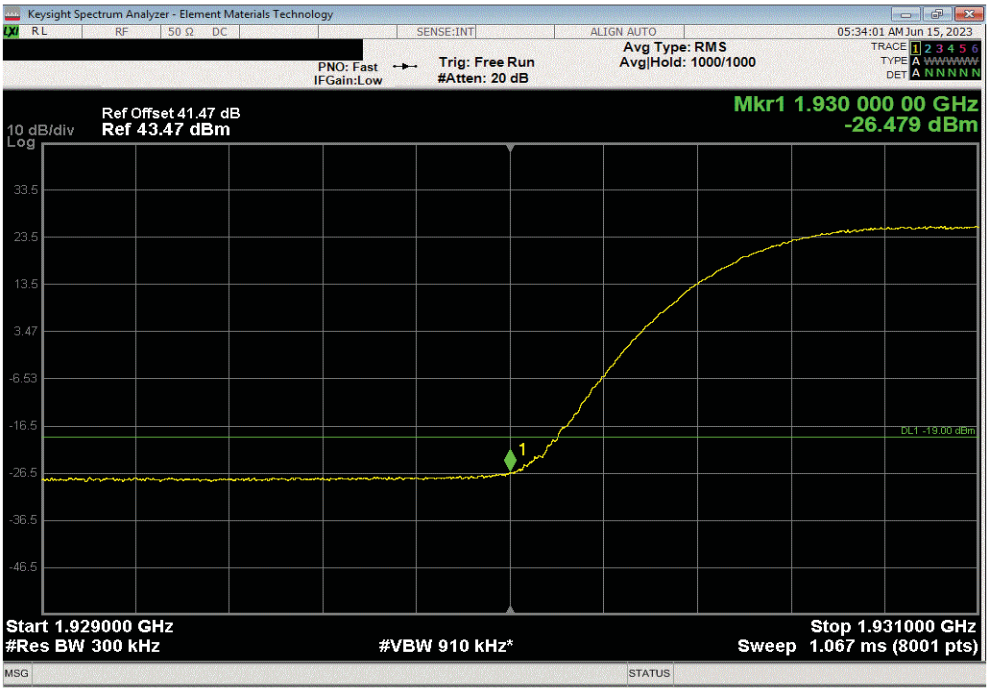
None

Configuration #	NOKI0053-2	Signature

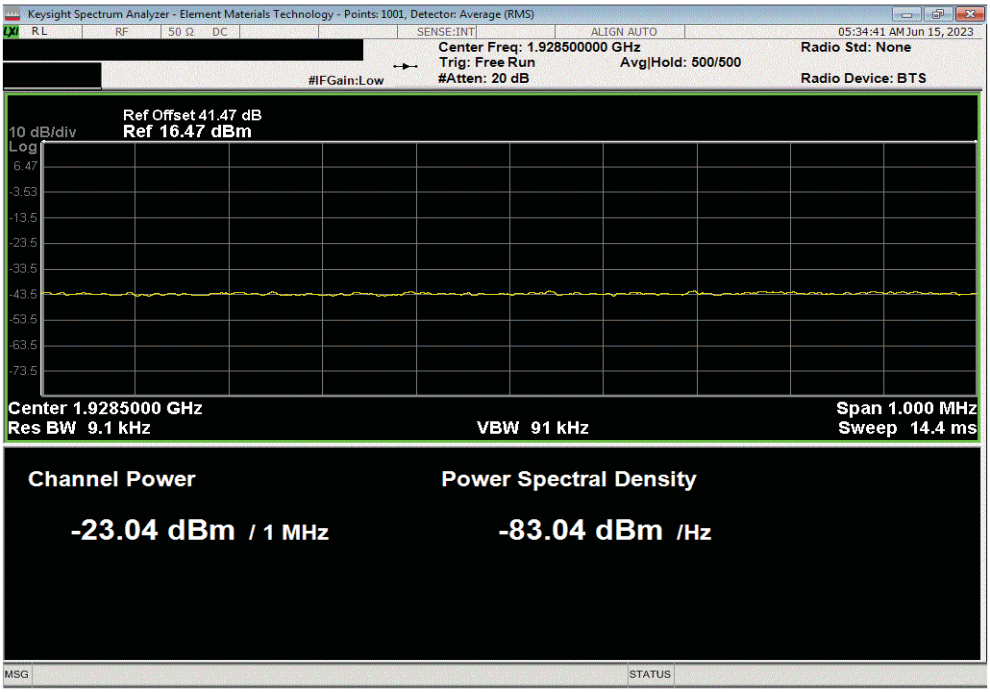
		Frequency Range	Max Value (dBm)	Limit (dBm)	Result
Port 1, NR, PCS Band and AWS Band, MultiCarrier					
	QPSK				
	MulitCarrier Test Case 1				
	Low 1945 MHz n25 NR30 40W (PCS)	1	-26.5	-19	Pass
	Low 1945 MHz n25 NR30 40W (PCS)	2	-32.0	-19	Pass
	Low 1945 MHz n25 NR30 40W (PCS)	3	-22.5	-19	Pass
	MulitCarrier Test Case 2				
	High 1980 MHz n25 NR30 40W (PCS)	1	-25.3	-19	Pass
	High 1980 MHz n25 NR30 40W (PCS)	2	-21.5	-19	Pass
	High 1980 MHz n25 NR30 40W (PCS)	3	-20.6	-19	Pass
	MulitCarrier Test Case 3				
	Low 2125 MHz n66 NR30 20W (AWS)	1	-31.0	-19	Pass
	Low 2125 MHz n66 NR30 20W (AWS)	2	-28.7	-19	Pass
	Low 2125 MHz n66 NR30 20W (AWS)	3	-28.2	-19	Pass
	MulitCarrier Test Case 4				
	High 2185 MHz n66 NR30 20W (AWS)	1	-30.6	-19	Pass
	High 2185 MHz n66 NR30 20W (AWS)	2	-27.8	-19	Pass
	High 2185 MHz n66 NR30 20W (AWS)	3	-27.4	-19	Pass
	MulitCarrier Test Case 5				
	Low 1932.5 MHz n25 NR5 26.6W (PCS)	1	-26.4	-19	Pass
	Low 1932.5 MHz n25 NR5 26.6W (PCS)	2	-20.3	-19	Pass
	Low 1932.5 MHz n25 NR5 26.6W (PCS)	3	-20.1	-19	Pass
	High 1992.5 MHz n25 NR5 26.6W (PCS)	1	-25.2	-19	Pass
	High 1992.5 MHz n25 NR5 26.6W (PCS)	2	-19.8	-19	Pass
	High 1992.5 MHz n25 NR5 26.6W (PCS)	3	-20.0	-19	Pass
	Low 2112.5 MHz n66 NR5 13.3W (AWS)	1	-28.7	-19	Pass
	Low 2112.5 MHz n66 NR5 13.3W (AWS)	2	-24.0	-19	Pass
	Low 2112.5 MHz n66 NR5 13.3W (AWS)	3	-23.6	-19	Pass
	High 2197.5 MHz n66 NR5 13.3W (AWS)	1	-27.6	-19	Pass
	High 2197.5 MHz n66 NR5 13.3W (AWS)	2	-21.9	-19	Pass
	High 2197.5 MHz n66 NR5 13.3W (AWS)	3	-22.1	-19	Pass

BAND EDGE COMPLIANCE - MULTICARRIER

Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 1, Low 1945 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-26.48	-19	Pass

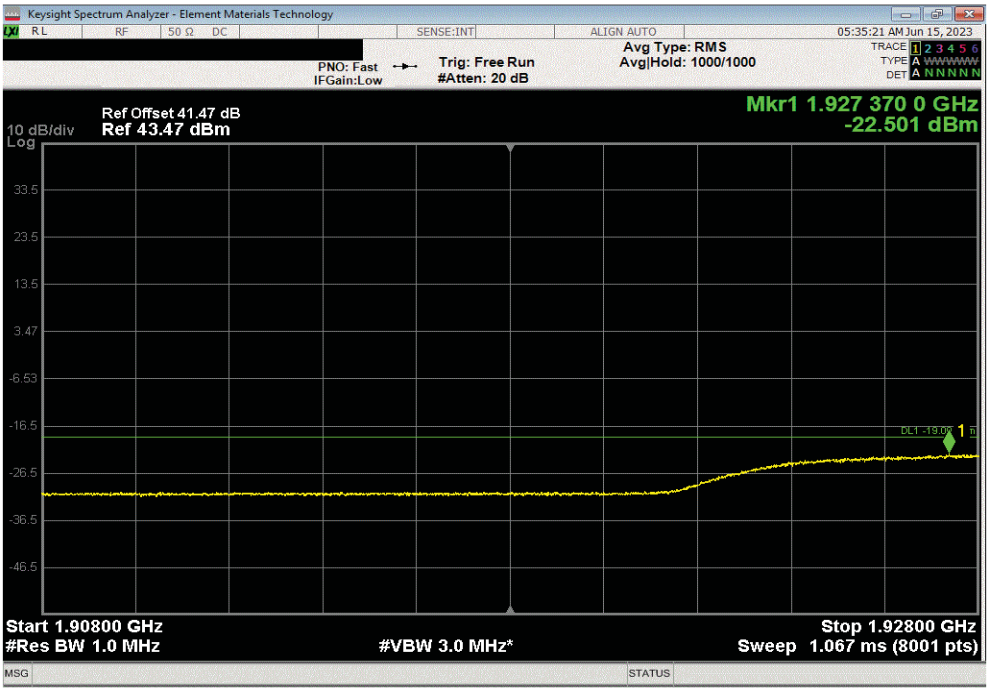


Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 1, Low 1945 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-32.04	-19	Pass

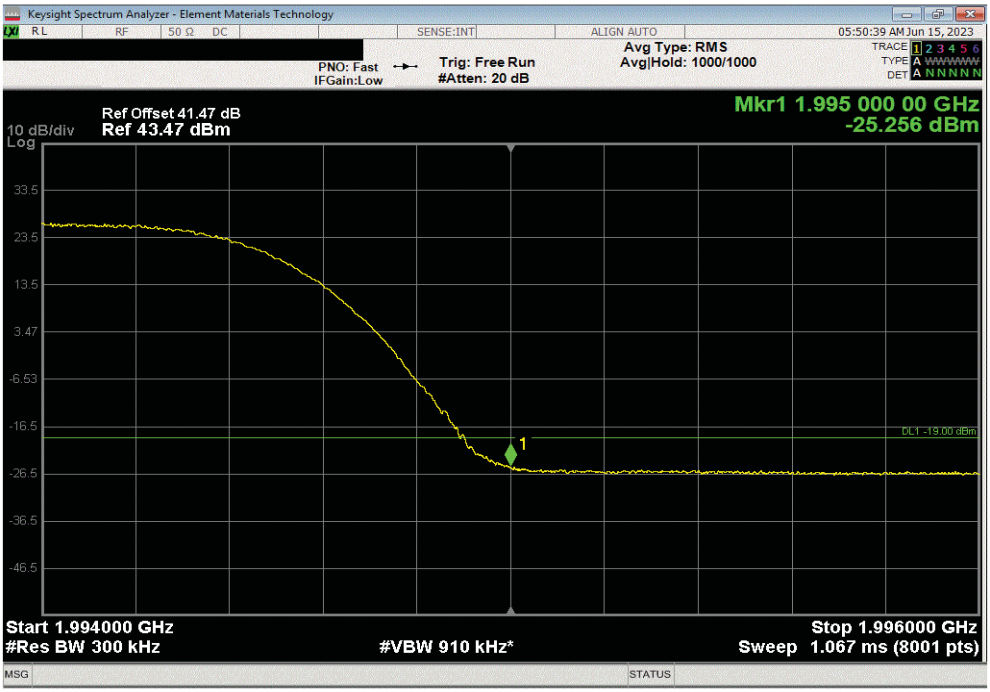


BAND EDGE COMPLIANCE - MULTICARRIER

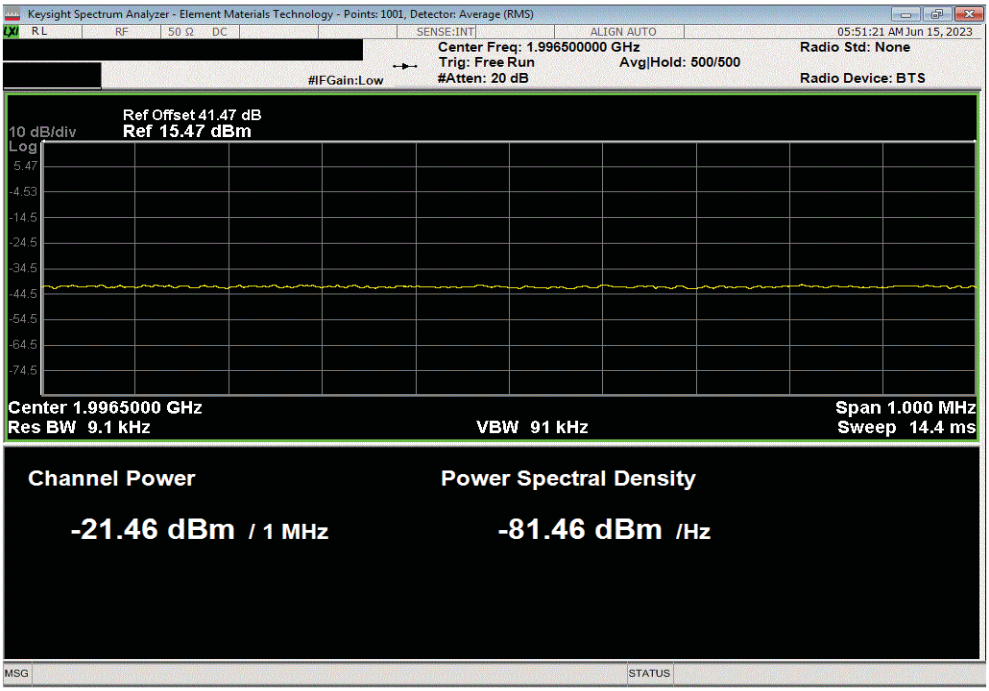
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 1, Low 1945 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-22.50	-19	Pass



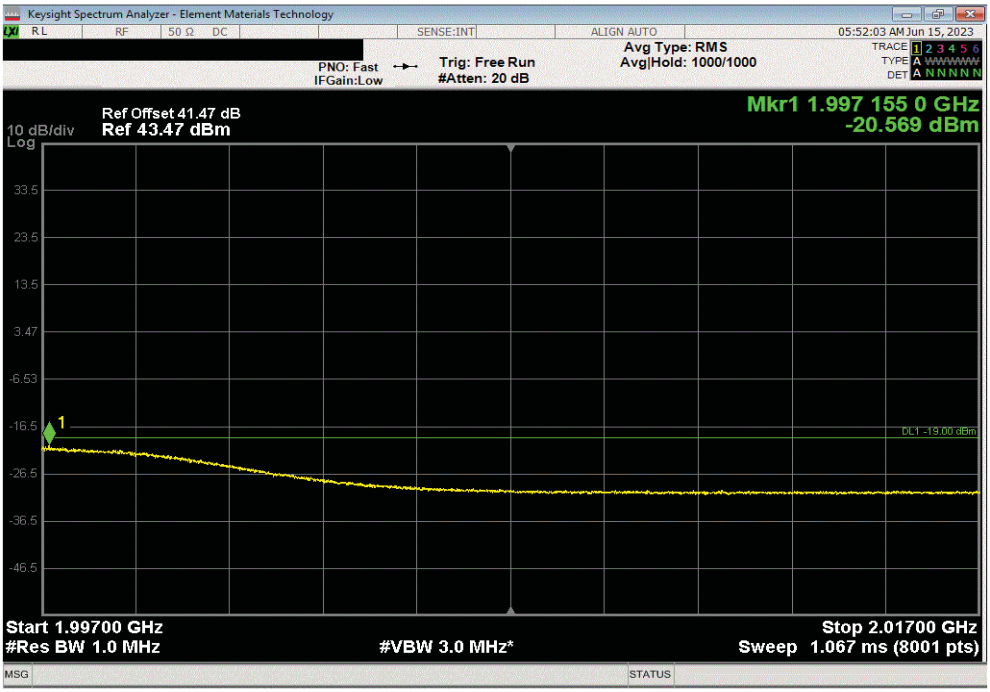
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 2, High 1980 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-25.26	-19	Pass



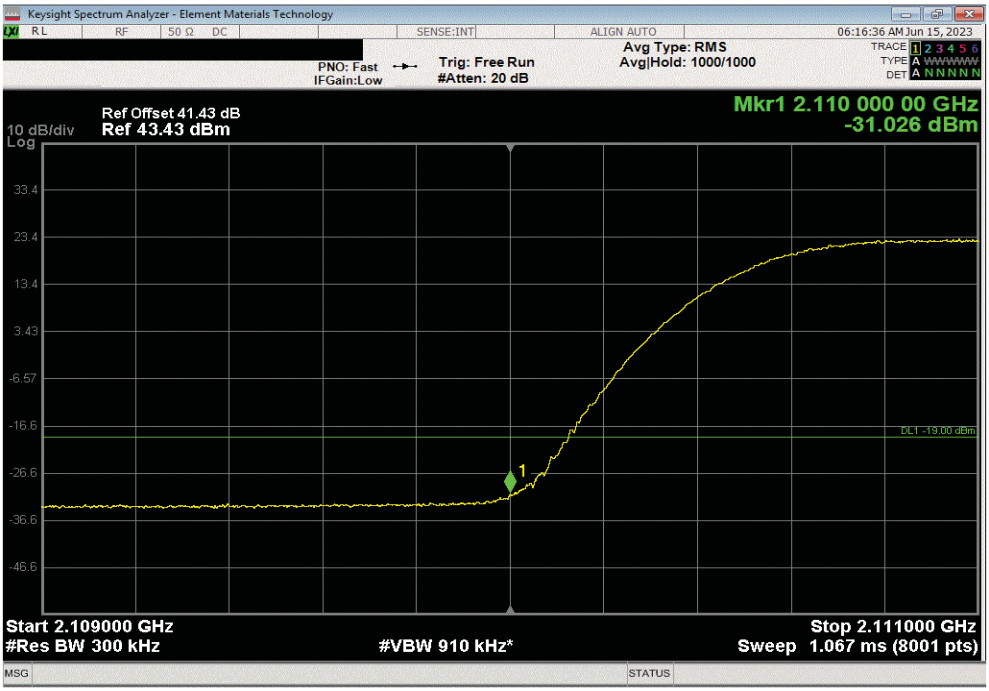
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 2, High 1980 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-21.46	-19	Pass



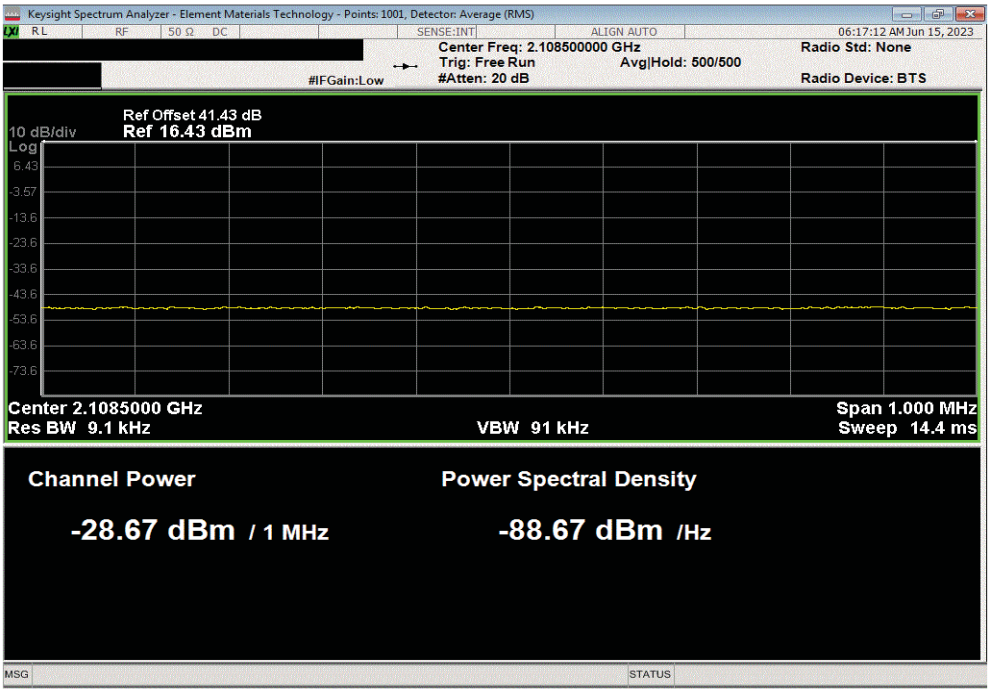
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 2, High 1980 MHz n25 NR30 40W (PCS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-20.57	-19	Pass



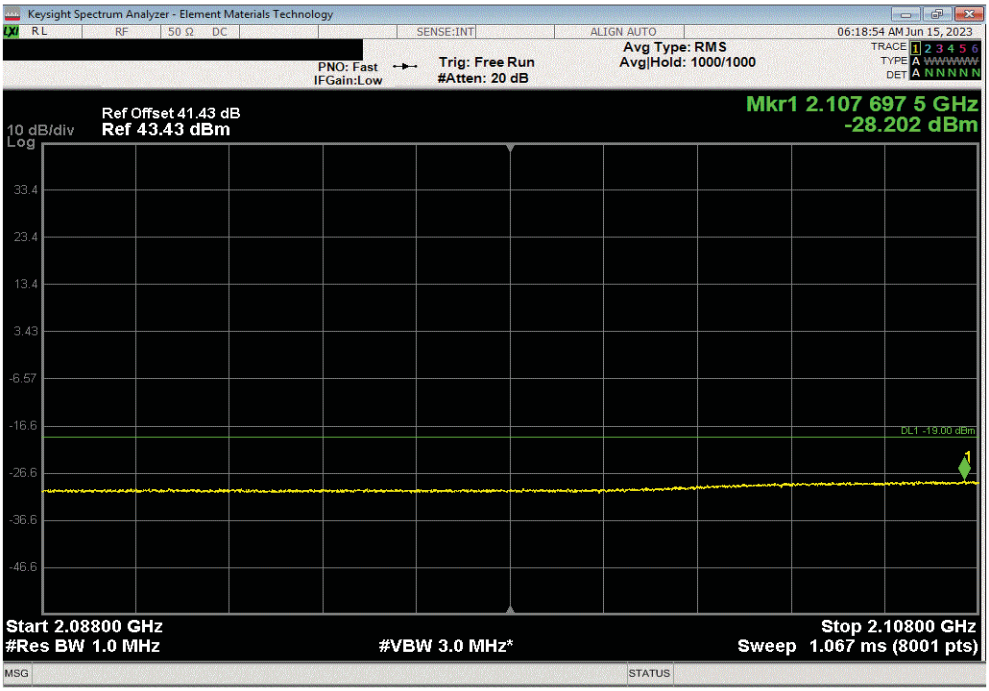
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 3, Low 2125 MHz n66 NR30 20W (AWS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-31.03	-19	Pass



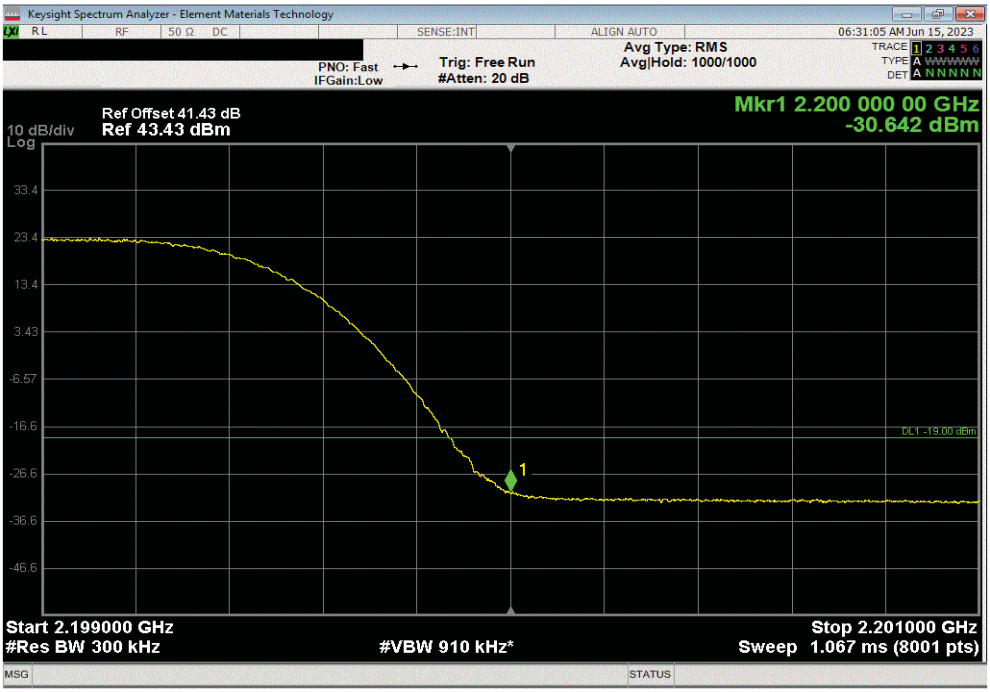
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 3, Low 2125 MHz n66 NR30 20W (AWS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-28.67	-19	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 3, Low 2125 MHz n66 NR30 20W (AWS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-28.20	-19	Pass

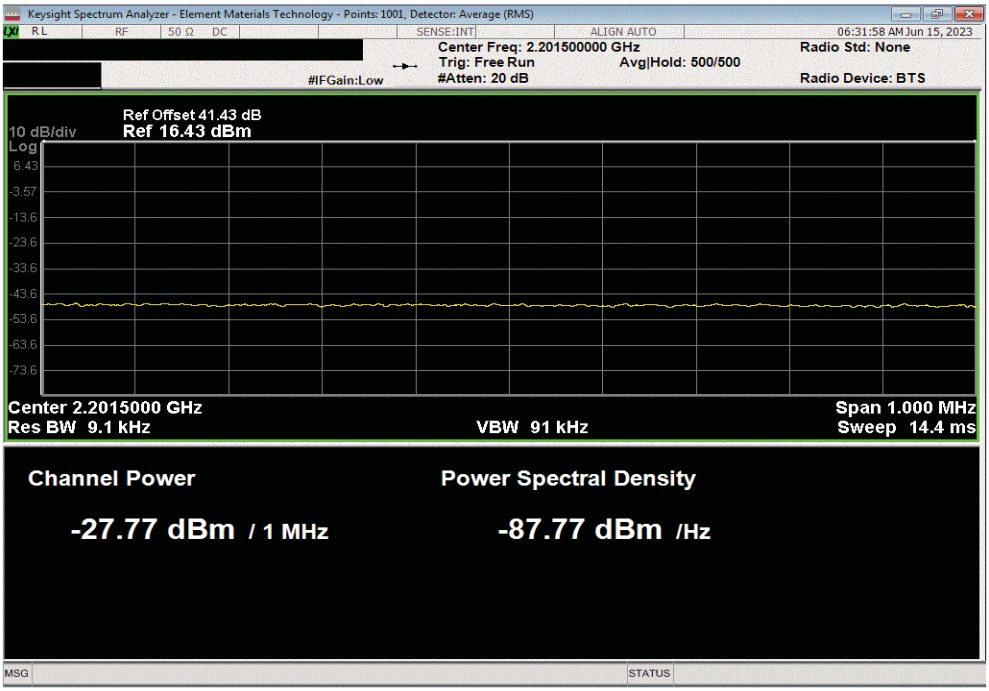


Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 4, High 2185 MHz n66 NR30 20W (AWS)						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-30.64	-19	Pass



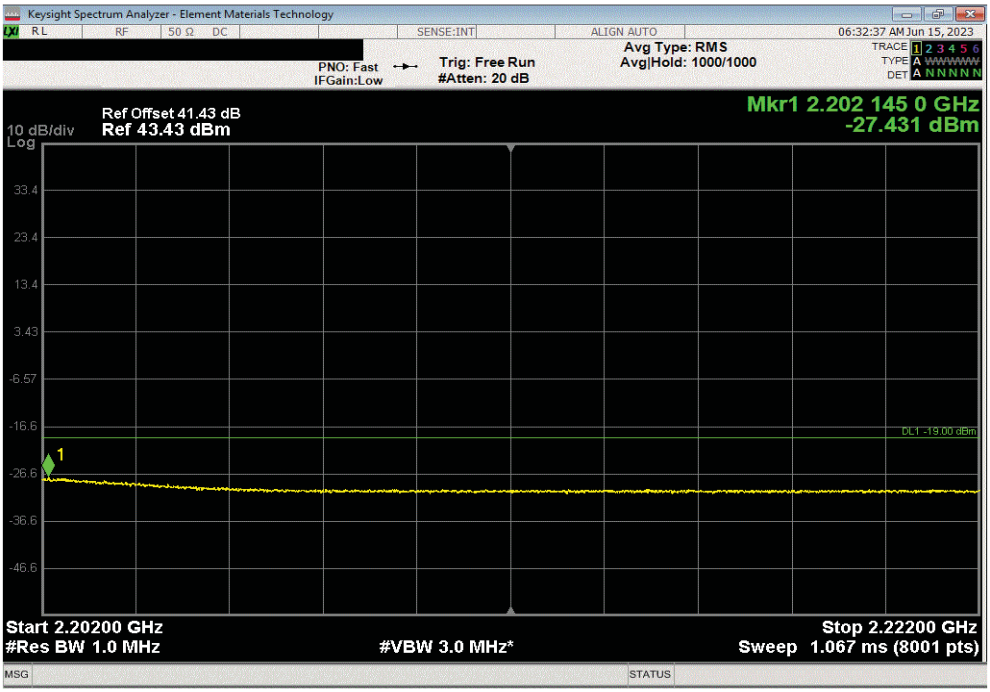
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 4, High 2185 MHz n66 NR30 20W (AWS)

	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-27.77	-19	Pass



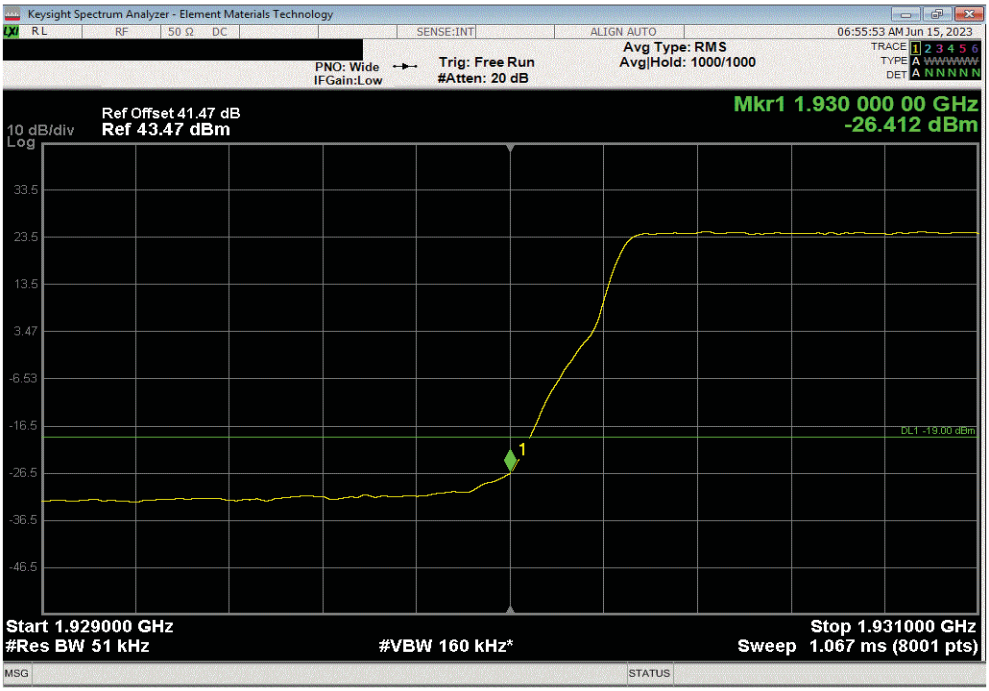
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 4, High 2185 MHz n66 NR30 20W (AWS)

	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-27.43	-19	Pass



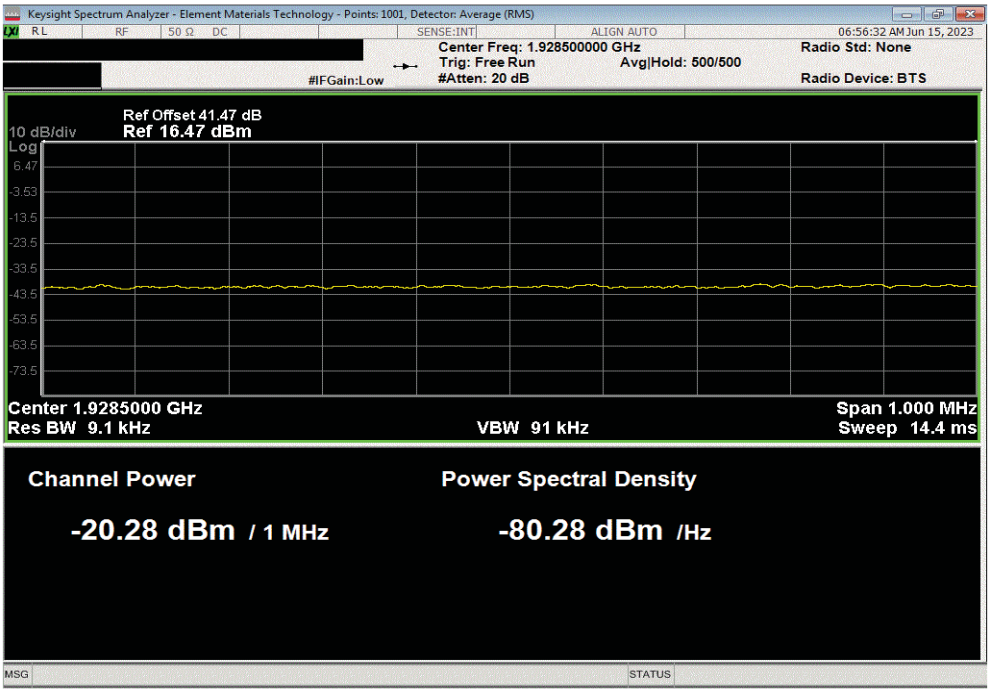
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 1932.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	1			-26.41	-19	Pass



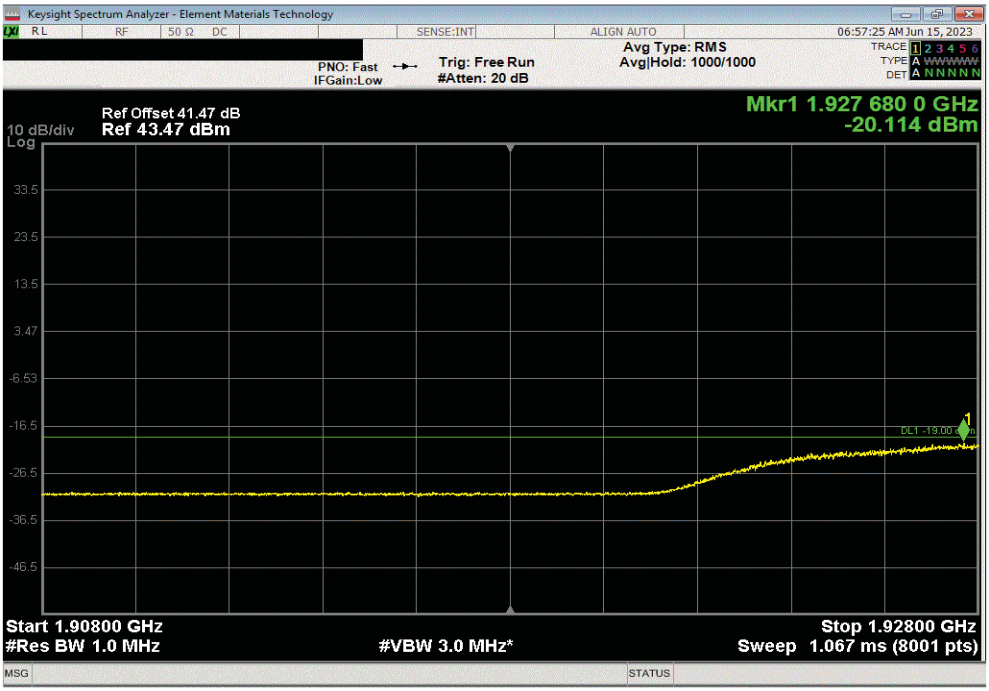
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 1932.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	2			-20.28	-19	Pass



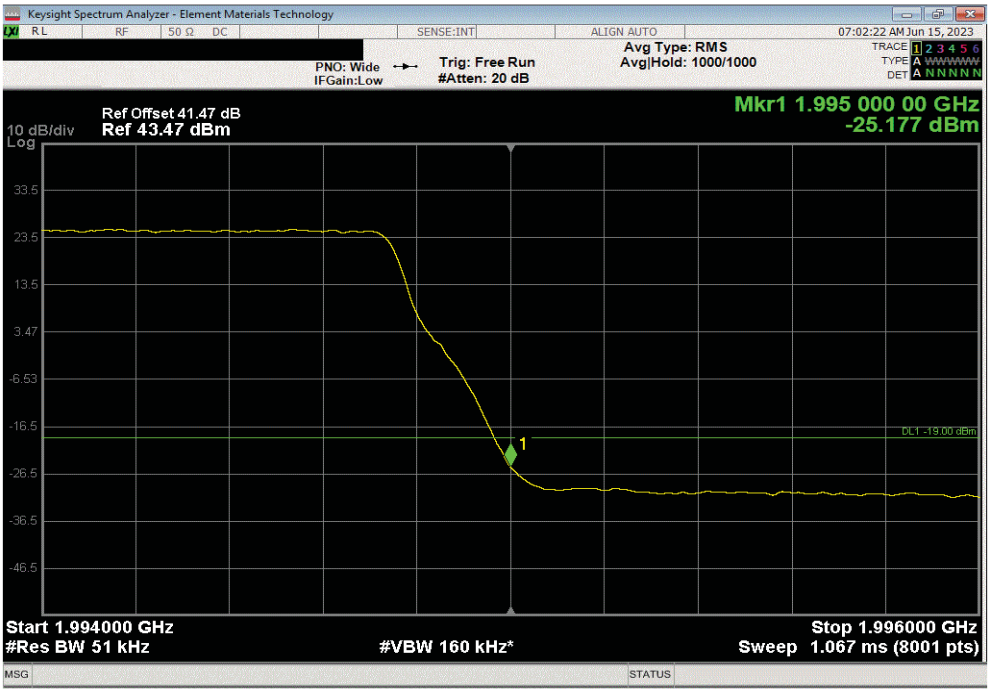
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 1932.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	3			-20.11	-19	Pass



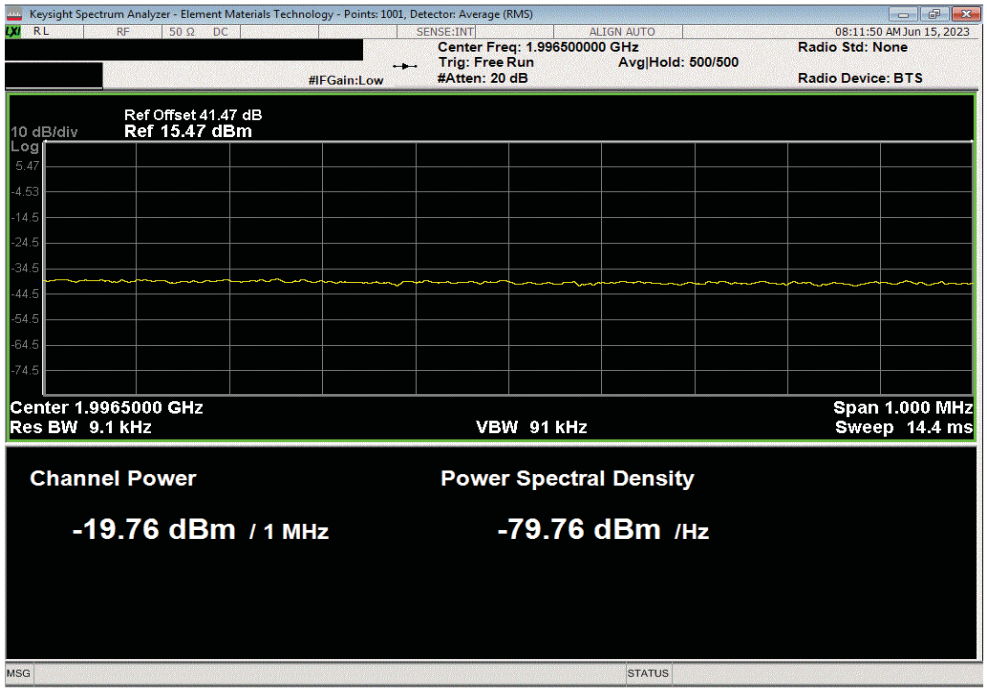
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 1992.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	1			-25.18	-19	Pass



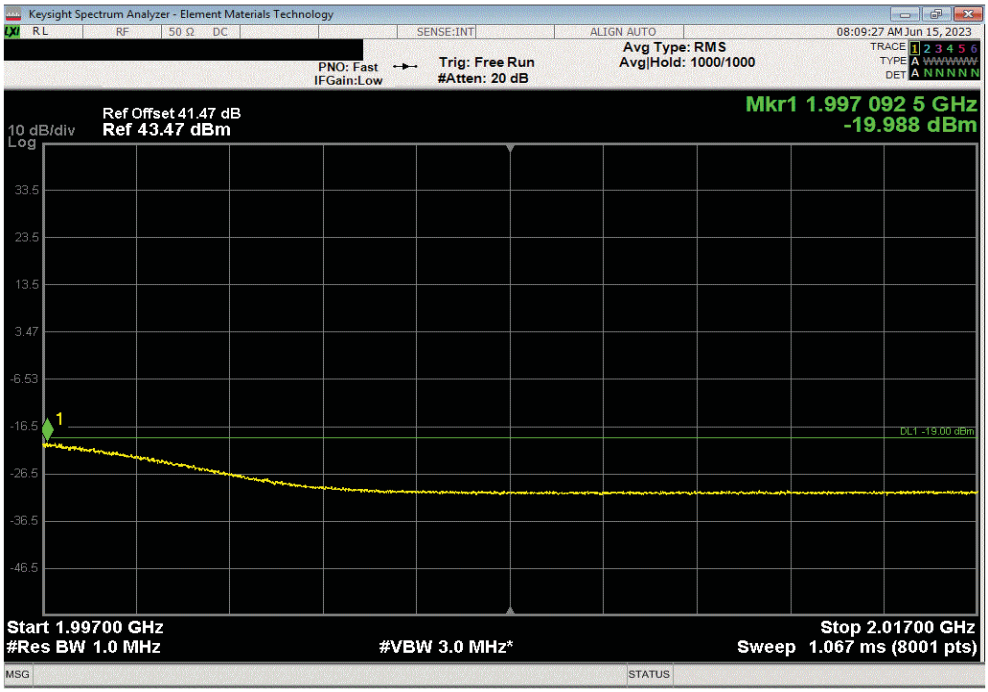
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 1992.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	2			-19.76	-19	Pass



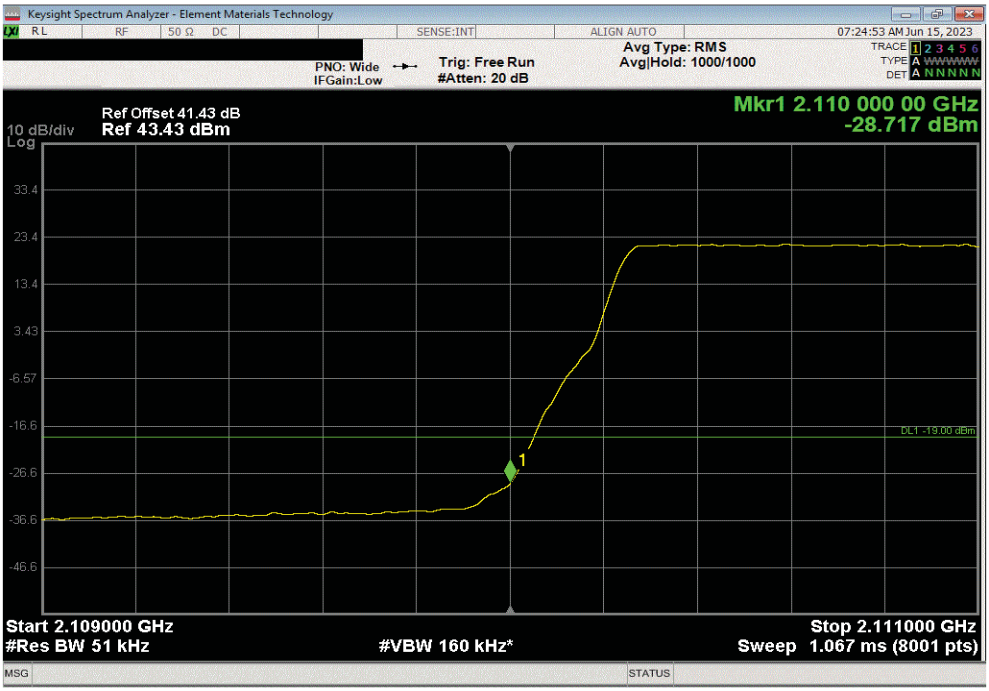
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 1992.5 MHz n25 NR5 26.6W (PCS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	3			-19.99	-19	Pass



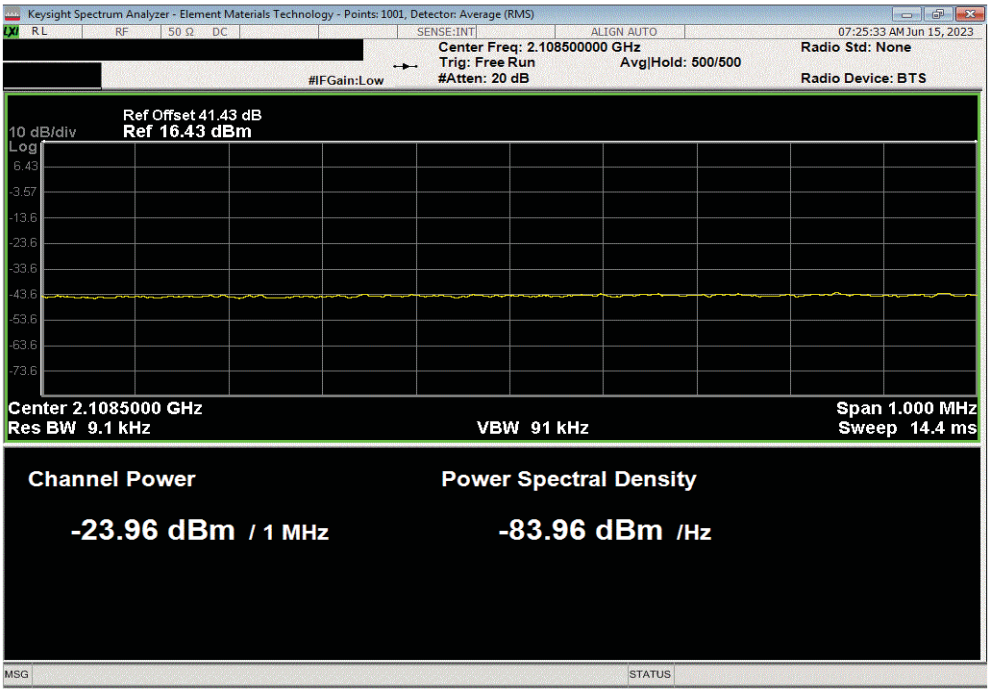
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 2112.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	1			-28.72	-19	Pass



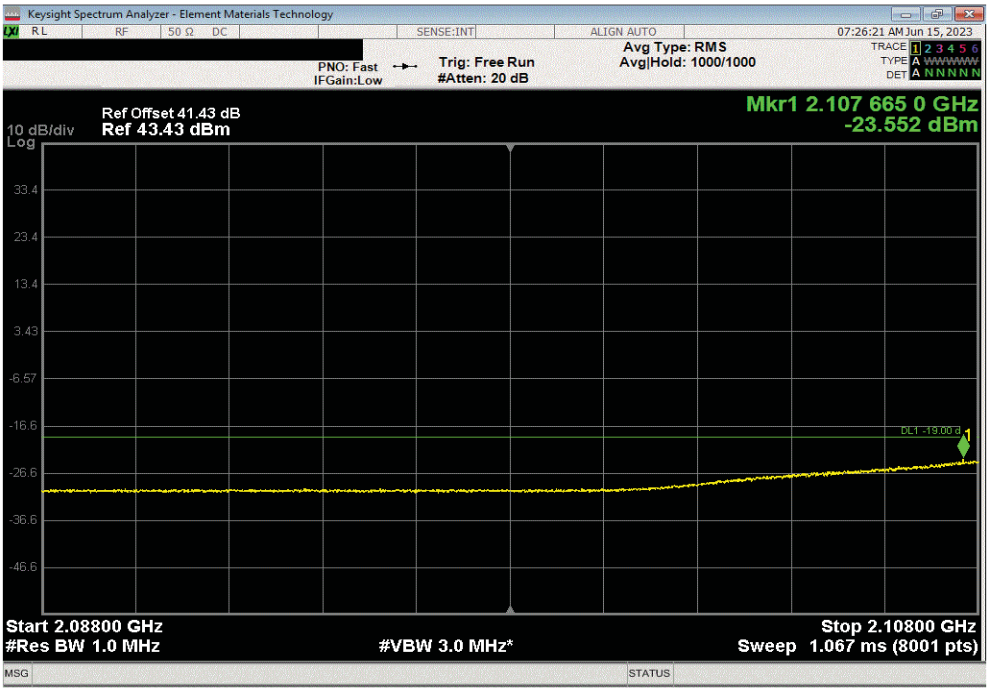
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 2112.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	2			-23.96	-19	Pass



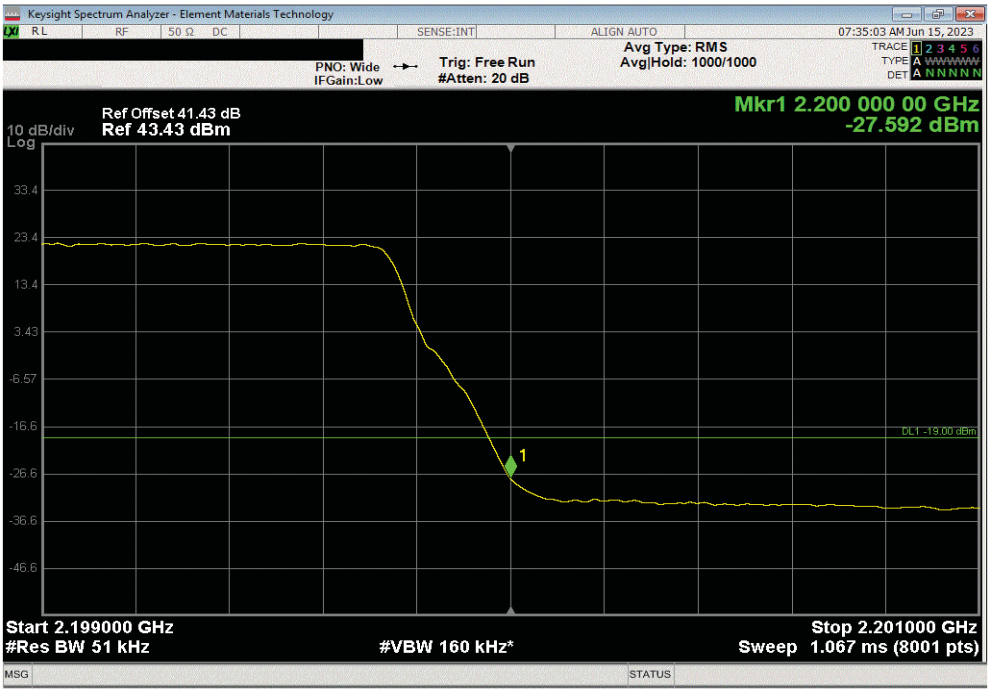
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, Low 2112.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	3			-23.55	-19	Pass



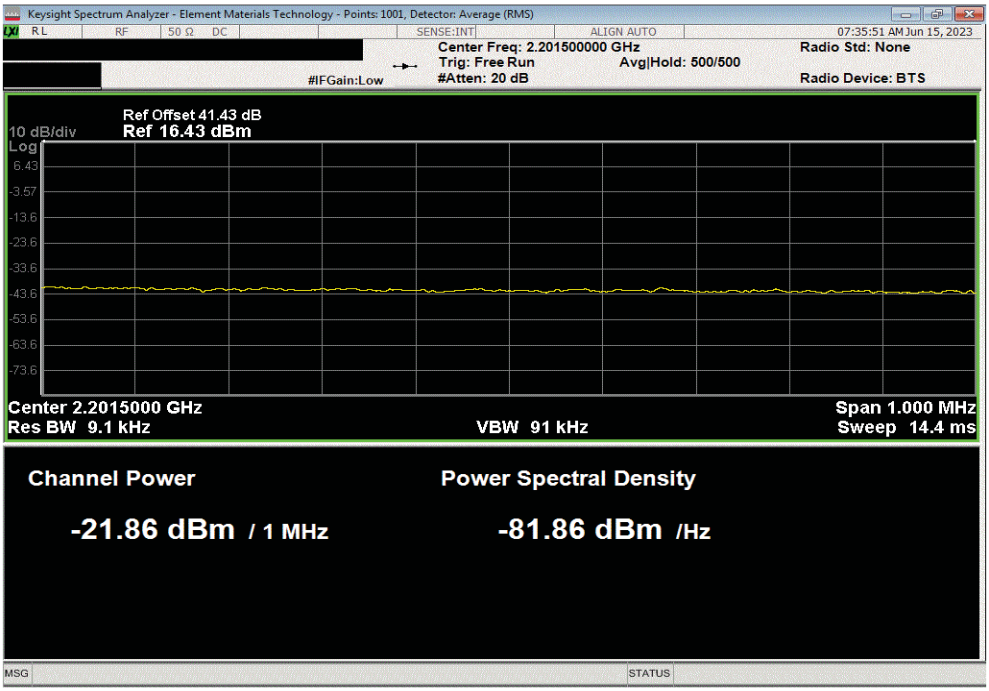
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 2197.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	1			-27.59	-19	Pass



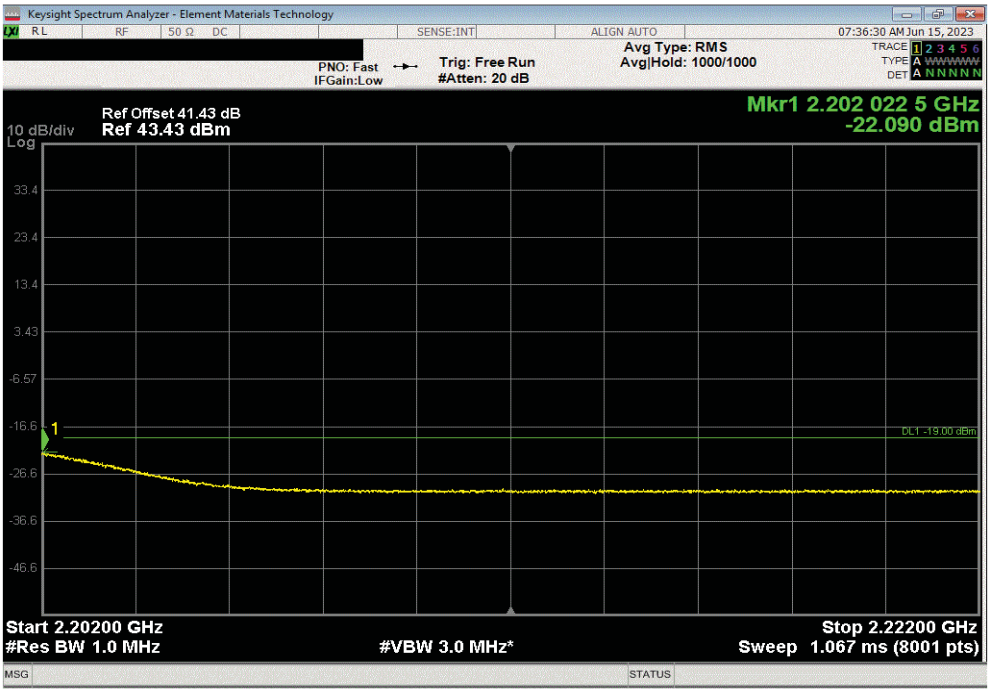
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 2197.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	2			-21.86	-19	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, MulitCarrier Test Case 5, High 2197.5 MHz n66 NR5 13.3W (AWS)

Frequency Range				Max Value (dBm)	Limit (dBm)	Result
	3			-22.09	-19	Pass



BAND EDGE COMPLIANCE - n25

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

All limits were adjusted by a factor of [-10*log(4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911.

Per FCC 24.238(a), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

Per FCC 24.238(b), emissions seen up to 1 MHz outside of authorized operating frequency range band edges shell be measured with a RBW of 1% of the measured emission bandwidth. Any emission seen to be > 1 MHz further outside the band edges shall be measured with a RBW of 1 MHz. However, a narrower RBW of at least 1% of the emission bandwidth is still allowed provided that the measured power is integrated over the full reference bandwidth of 1 MHz.

RF conducted emissions testing was performed on one port. The testing was performed on the same version of hardware (AHFIG) as the original certification test. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in the original certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The band edge testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there was small variation in band edge measurements over modulation types from previous certification testing for other channel bandwidths. (See ANSI C63.26. clause 5.7.2e).

BAND EDGE COMPLIANCE - n25

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/13/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.3°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	58.1%
Project:	None			Barometric Pres.:	1010 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Band n25 carriers are enabled at maximum power (80 watts/carrier).

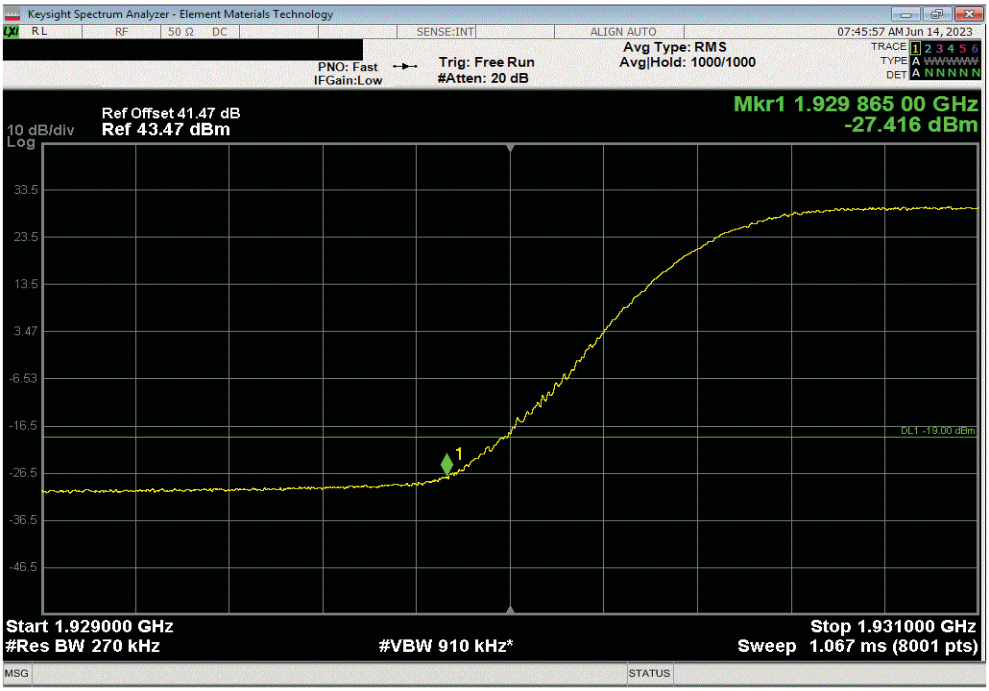
DEVIATIONS FROM TEST STANDARD

None

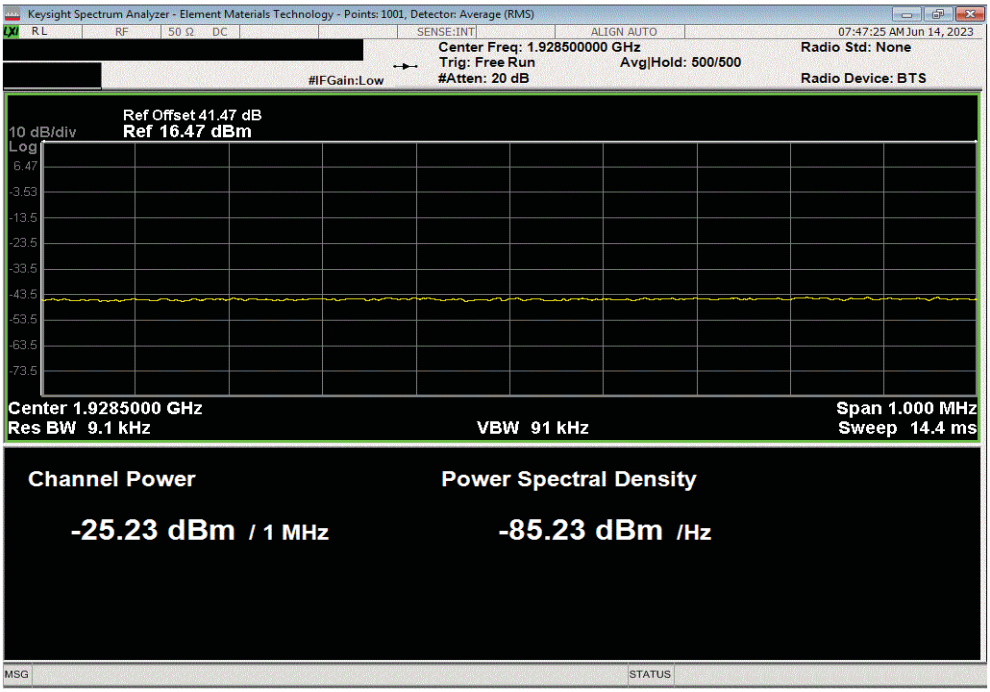
Configuration #	NOKI0053-2	Signature

		Frequency Range	Max Value (dBm)	Limit (dBm)	Result
Band n25 1930 MHz - 1995 MHz, 5G NR					
Port 1					
25 MHz Bandwidth					
256-QAM Modulation					
	Low Channel 1942.5 MHz	1	-27.4	-19	Pass
	Low Channel 1942.5 MHz	2	-25.2	-19	Pass
	Low Channel 1942.5 MHz	3	-24.8	-19	Pass
	High Channel 1982.5 MHz	1	-26.0	-19	Pass
	High Channel 1982.5 MHz	2	-23.5	-19	Pass
	High Channel 1982.5 MHz	3	-23.2	-19	Pass
30 MHz Bandwidth					
256-QAM Modulation					
	Low Channel 1945.0 MHz	1	-25.8	-19	Pass
	Low Channel 1945.0 MHz	2	-24.5	-19	Pass
	Low Channel 1945.0 MHz	3	-24.4	-19	Pass
	High Channel 1980.0 MHz	1	-25.4	-19	Pass
	High Channel 1980.0 MHz	2	-23.9	-19	Pass
	High Channel 1980.0 MHz	3	-23.3	-19	Pass

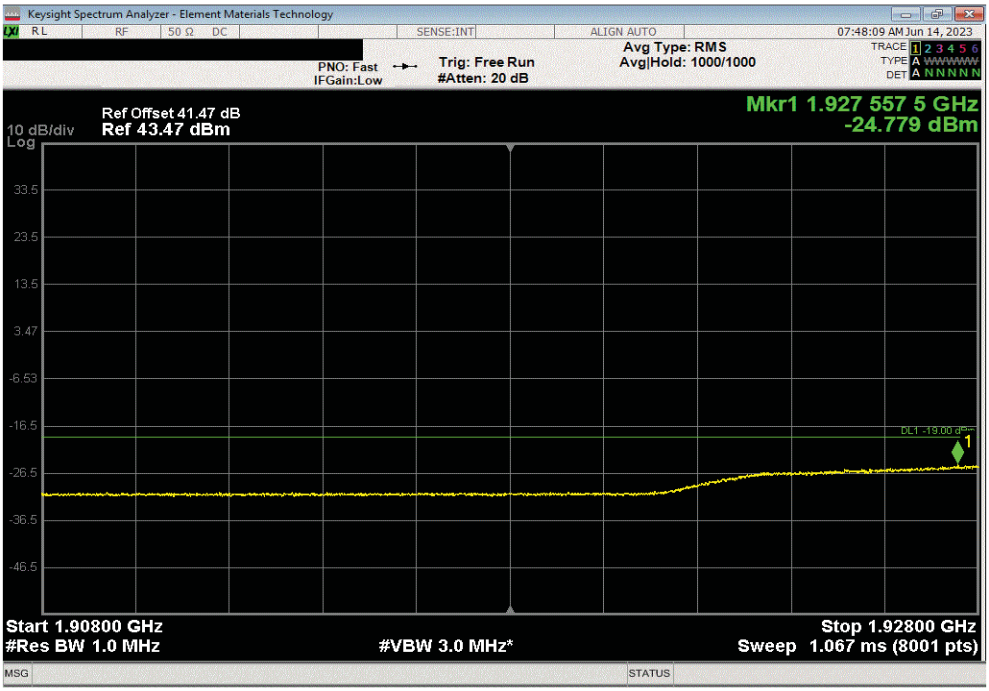
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-27.42	-19	Pass



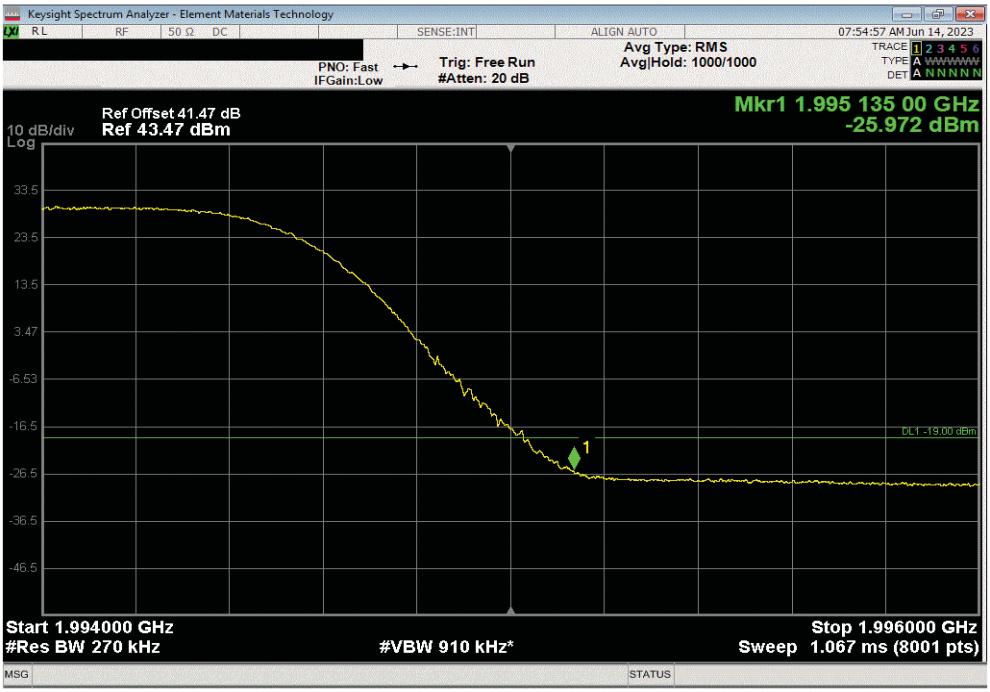
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-25.23	-19	Pass



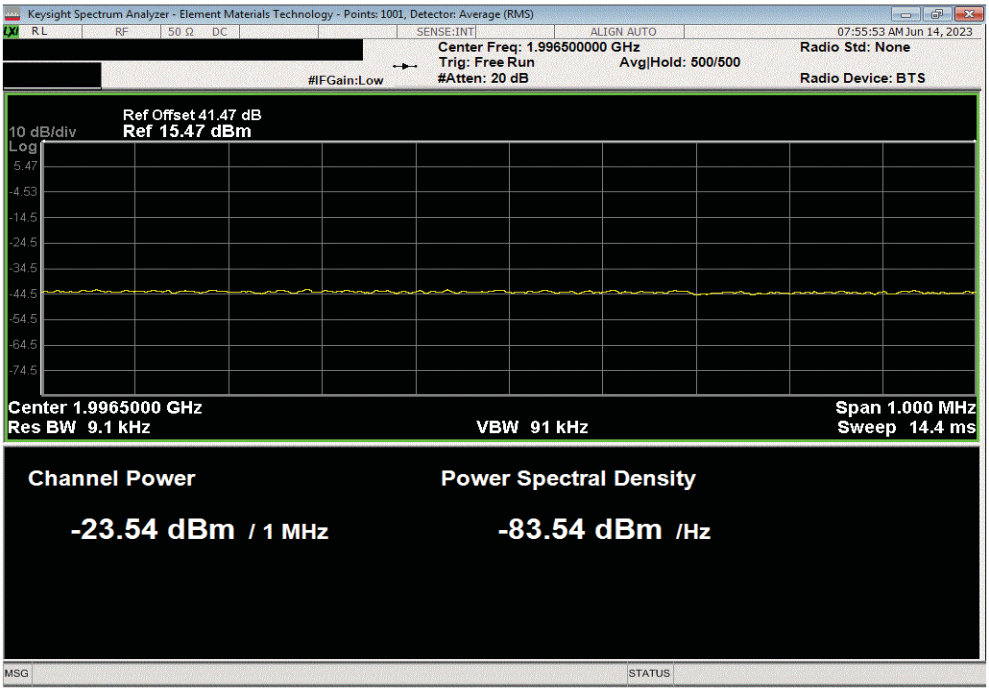
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-24.78	-19	Pass



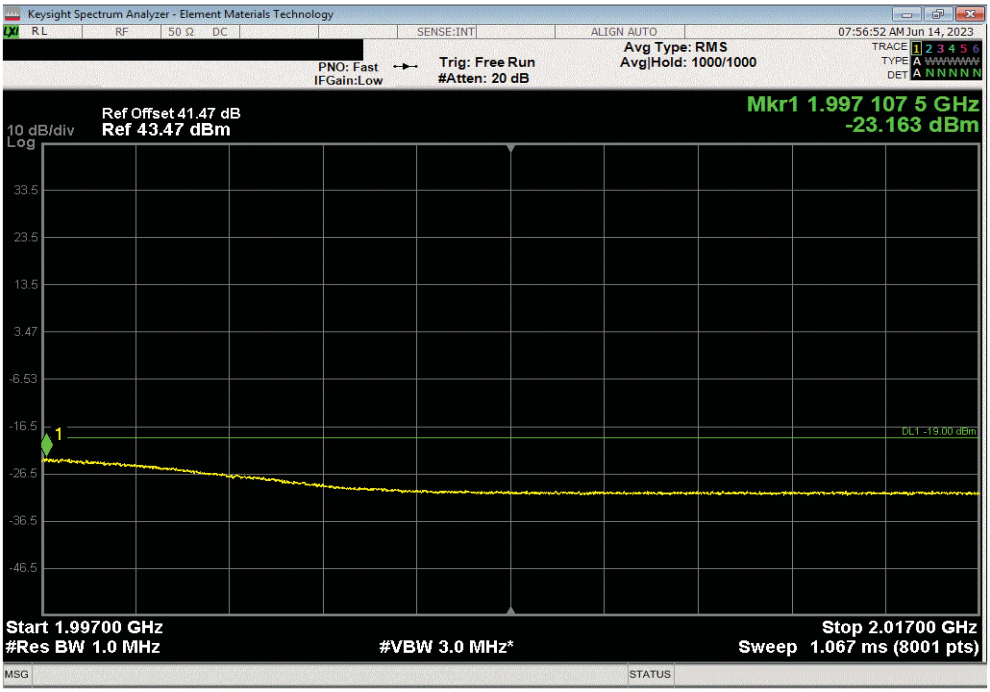
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-25.97	-19	Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-23.54	-19	Pass

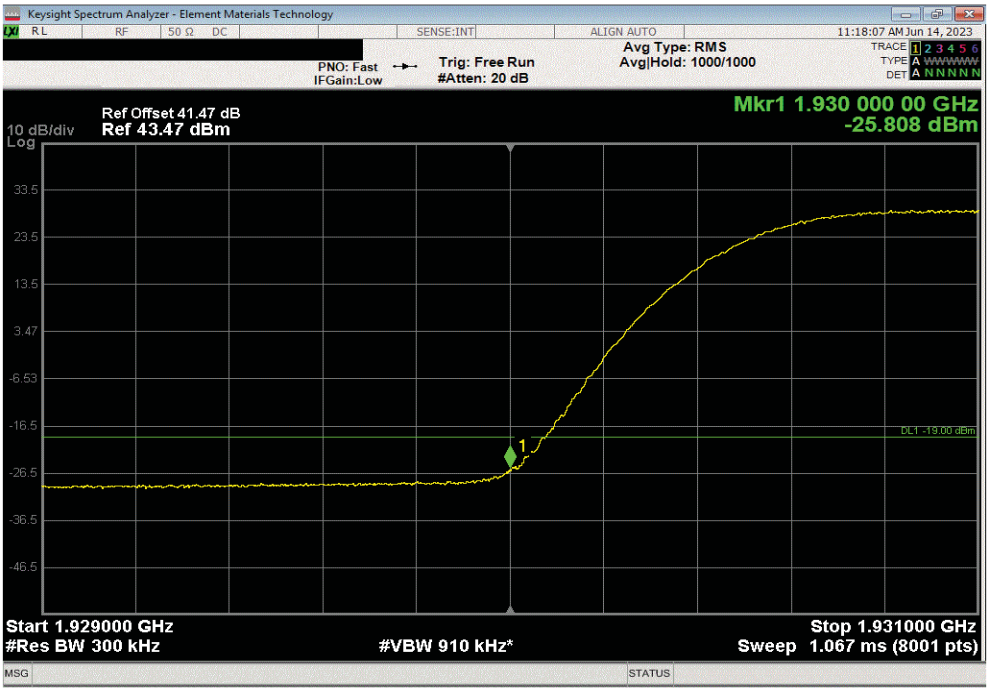


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-23.16	-19	Pass

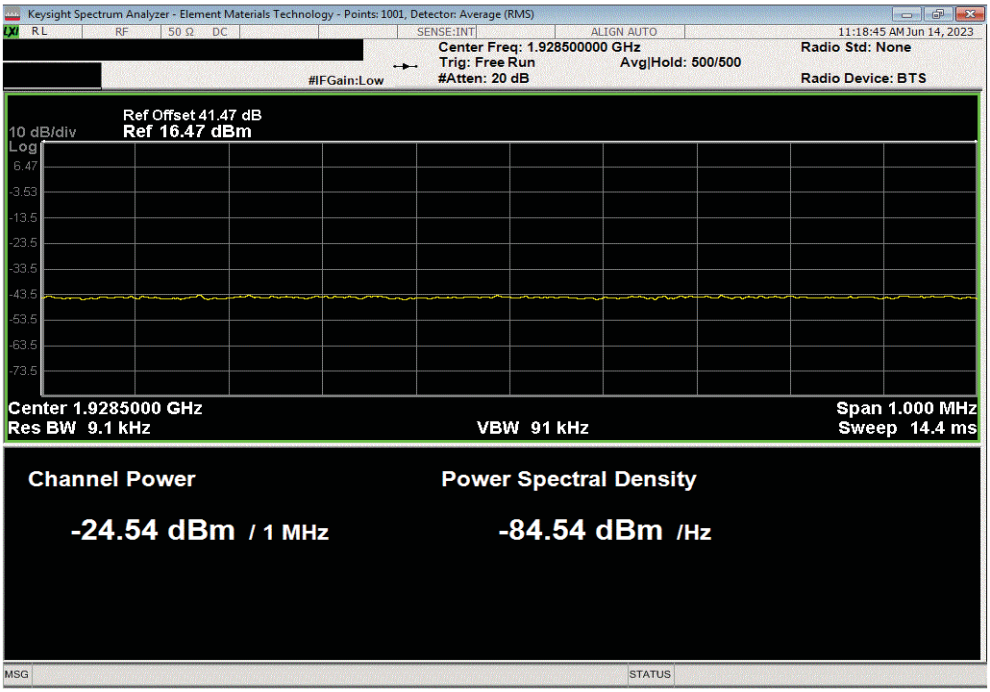


BAND EDGE COMPLIANCE - n25

Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 1945.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-25.81	-19	Pass

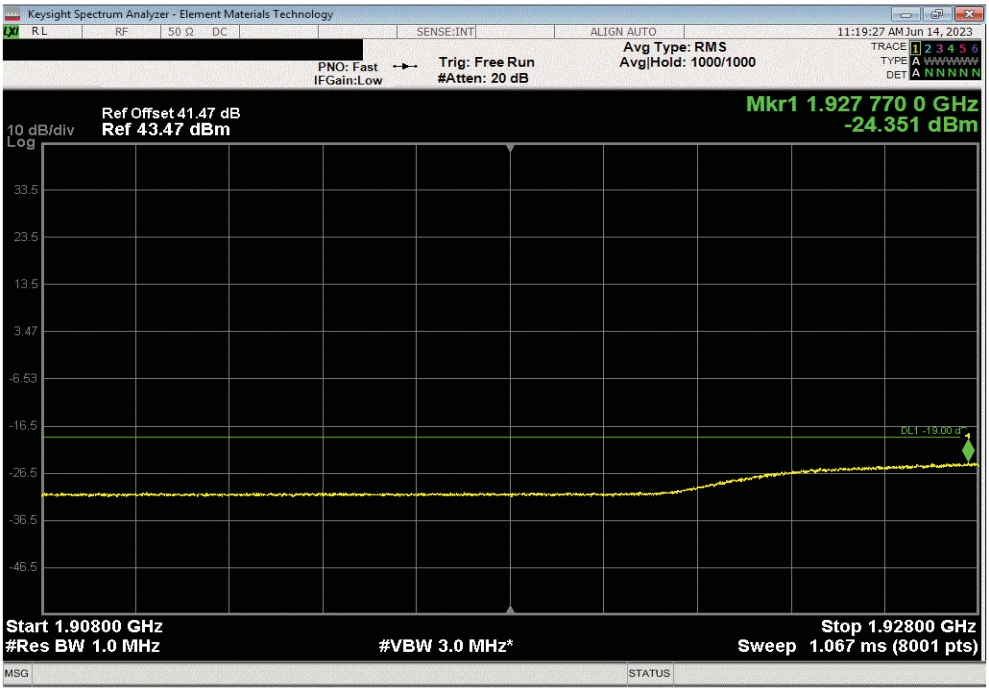


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 1945.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-24.54	-19	Pass

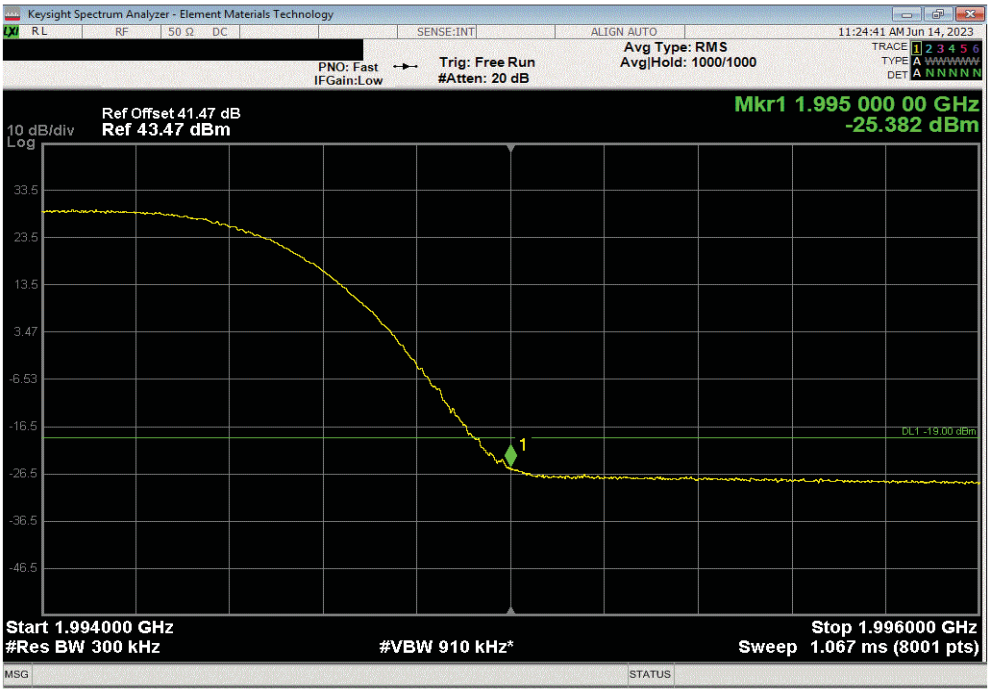


BAND EDGE COMPLIANCE - n25

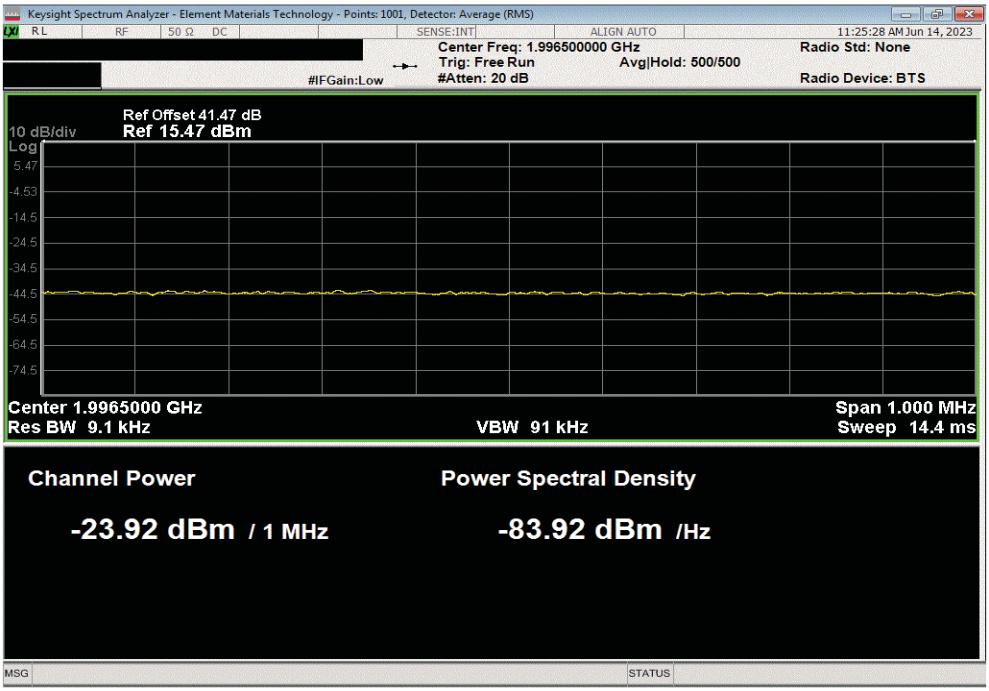
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 1945.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-24.35	-19	Pass



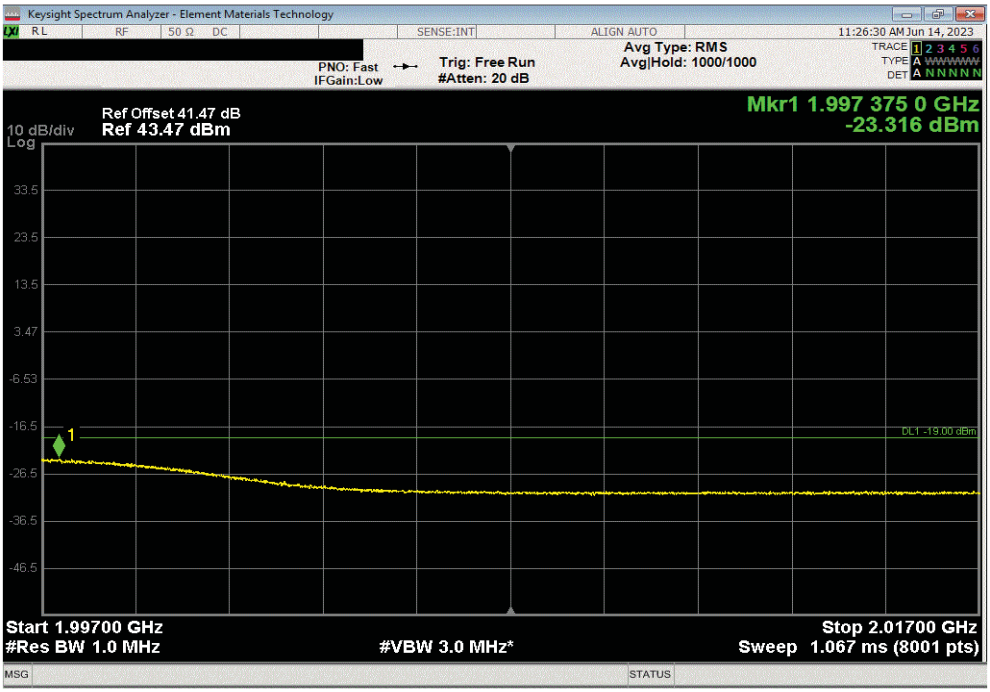
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 1980.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	1			-25.38	-19	Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 1980.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	2			-23.92	-19	Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 1980.0 MHz						
	Frequency Range			Max Value (dBm)	Limit (dBm)	Result
	3			-23.32	-19	Pass



BAND EDGE COMPLIANCE - n66

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

RF conducted emissions was performed only on one port. The testing was performed on the same version of hardware (AHFIG) as the original certification test. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

All limits were adjusted by a factor of [-10*log(4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911

Per section FCC 27.53(h)(1), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

The RBW to be used for these measurements are per 27.53(h)(3). Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified).The requirements for FCC/IC measurements are detailed in KDB971168 D01 v03r01 and ANSI 63.26.

The band edge testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there was small variation in band edge measurements over modulation types from previous certification testing for other channel bandwidths. (See ANSI C63.26. clause 5.7.2e).

BAND EDGE COMPLIANCE - n66

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/13/2023
Customer:	Nokia Solutions and Networks			Temperature:	21°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	59.5%
Project:	None			Barometric Pres.:	1010 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 27:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Band n66 carriers are enabled at maximum power (40 watts/carrier).

DEVIATIONS FROM TEST STANDARD

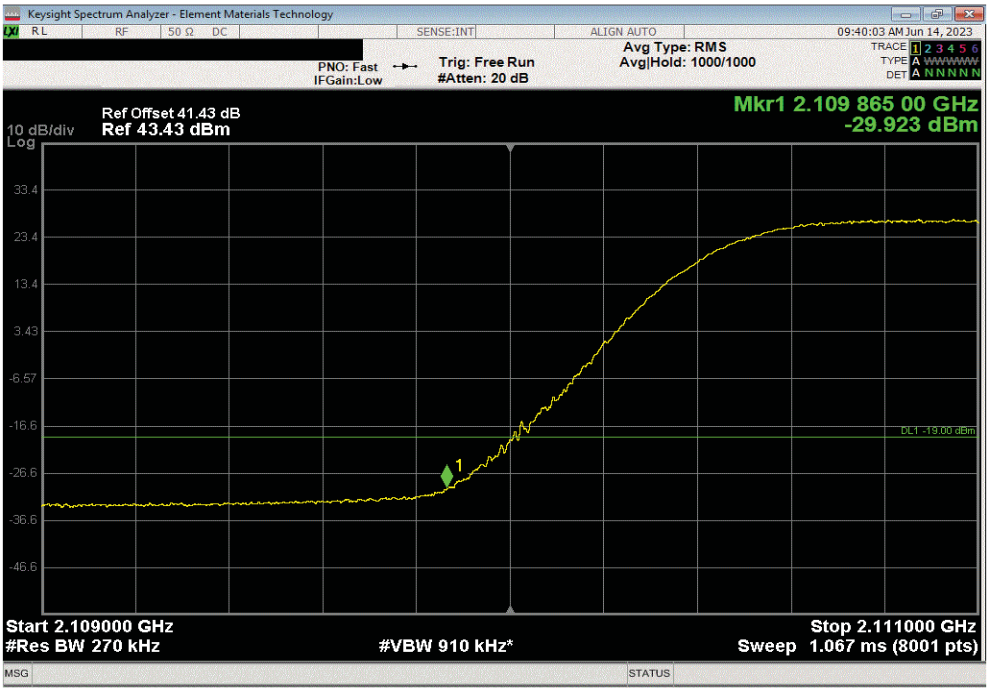
None

Configuration #	NOKI0053-2	Signature

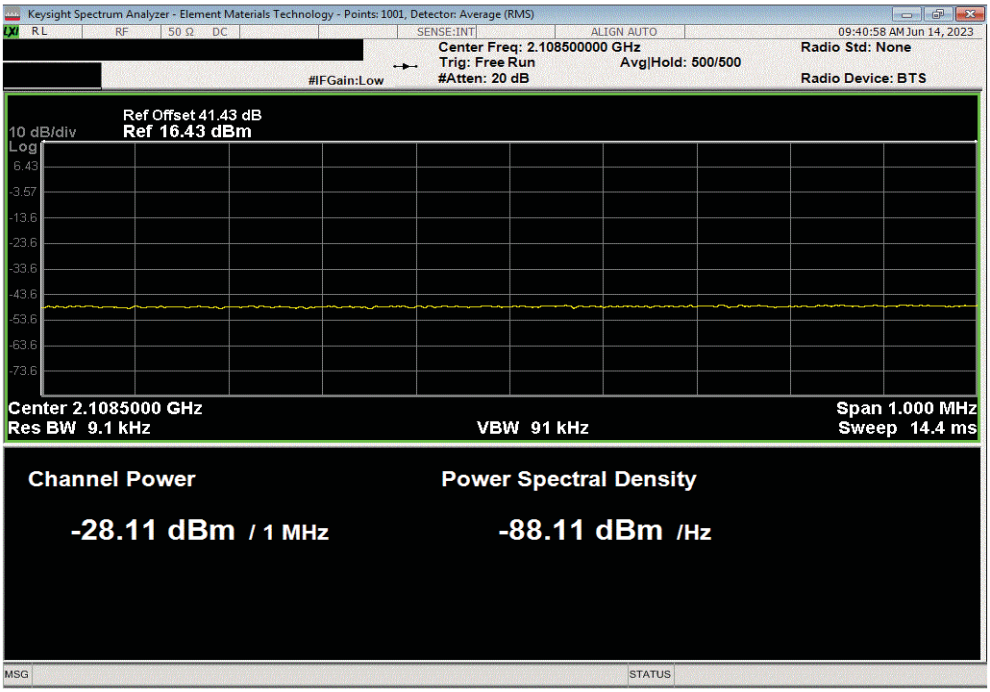
		Frequency Range	Max Value (dBm)	Limit < (dBm)	Result
Band n66 2110 MHz - 2200 MHz, 5G NR					
Port 1					
25 MHz Bandwidth					
256-QAM Modulation					
	Low Channel 2122.5 MHz	1	-29.9	-19	Pass
	Low Channel 2122.5 MHz	2	-28.1	-19	Pass
	Low Channel 2122.5 MHz	3	-27.5	-19	Pass
	High Channel 2187.5 MHz	1	-20.4	-19	Pass
	High Channel 2187.5 MHz	2	-27.1	-19	Pass
	High Channel 2187.5 MHz	3	-27.1	-19	Pass
30 MHz Bandwidth					
256-QAM Modulation					
	Low Channel 2125 MHz	1	-29.3	-19	Pass
	Low Channel 2125 MHz	2	-28.5	-19	Pass
	Low Channel 2125 MHz	3	-28.2	-19	Pass
	High Channel 2185 MHz	1	-29.3	-19	Pass
	High Channel 2185 MHz	2	-27.6	-19	Pass
	High Channel 2185 MHz	3	-27.5	-19	Pass

BAND EDGE COMPLIANCE - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	1			-29.92	-19	Pass

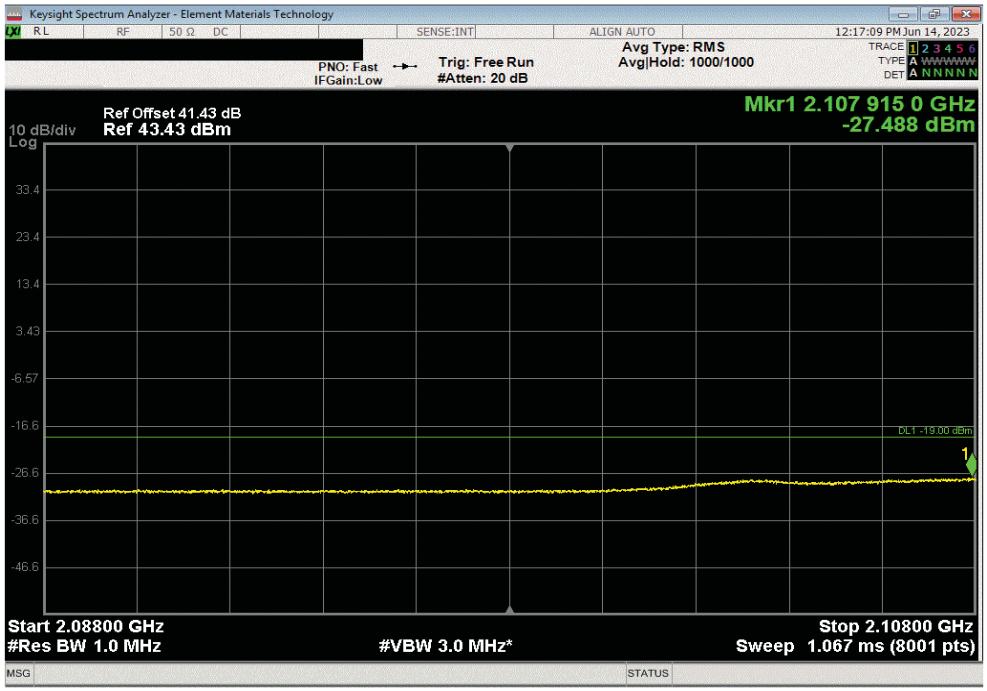


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	2			-28.11	-19	Pass

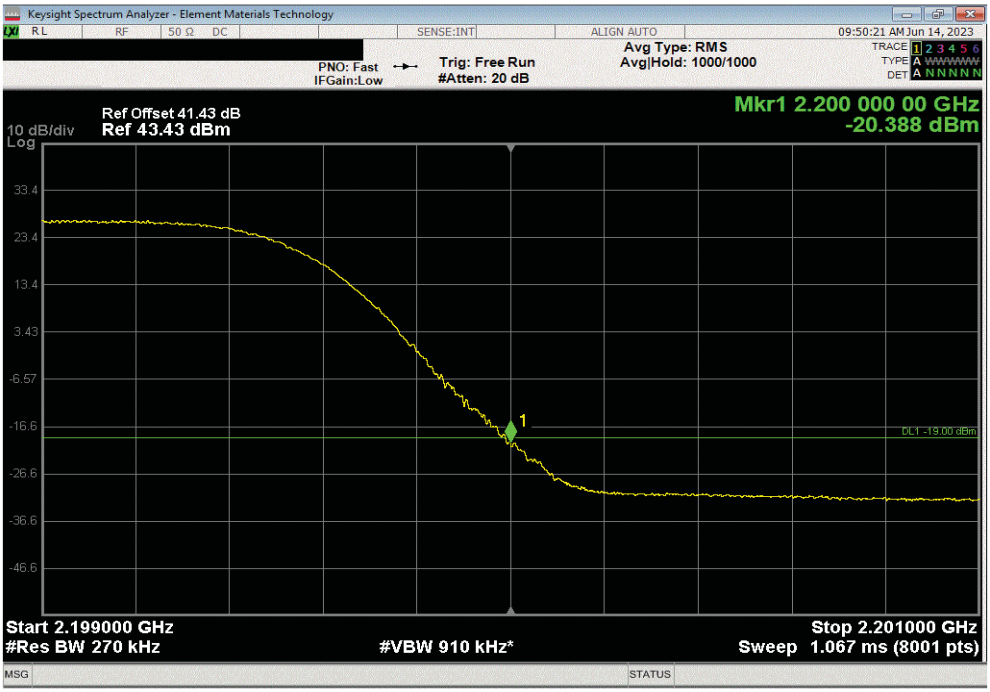


BAND EDGE COMPLIANCE - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	3			-32.92	-19	Pass

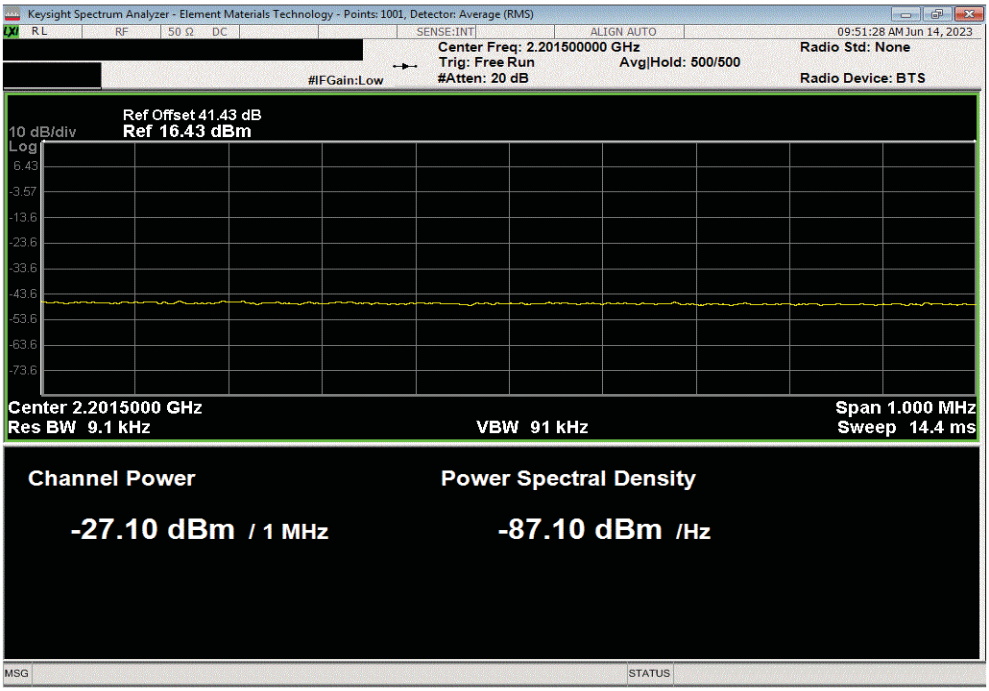


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 2187.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	1			-20.39	-19	Pass

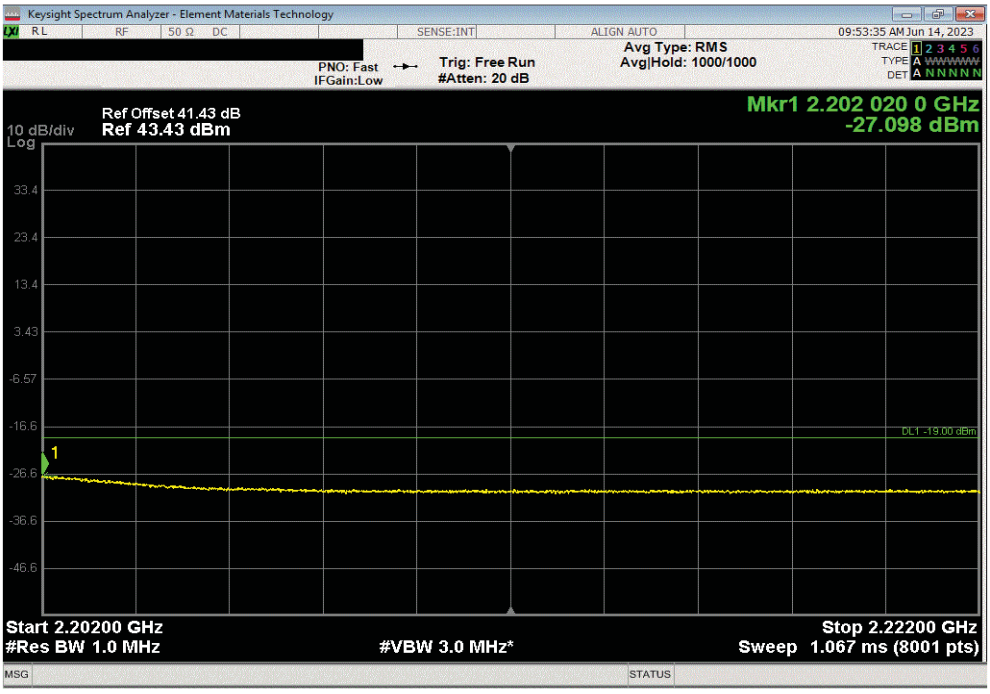


BAND EDGE COMPLIANCE - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 2187.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	2			-27.10	-19	Pass

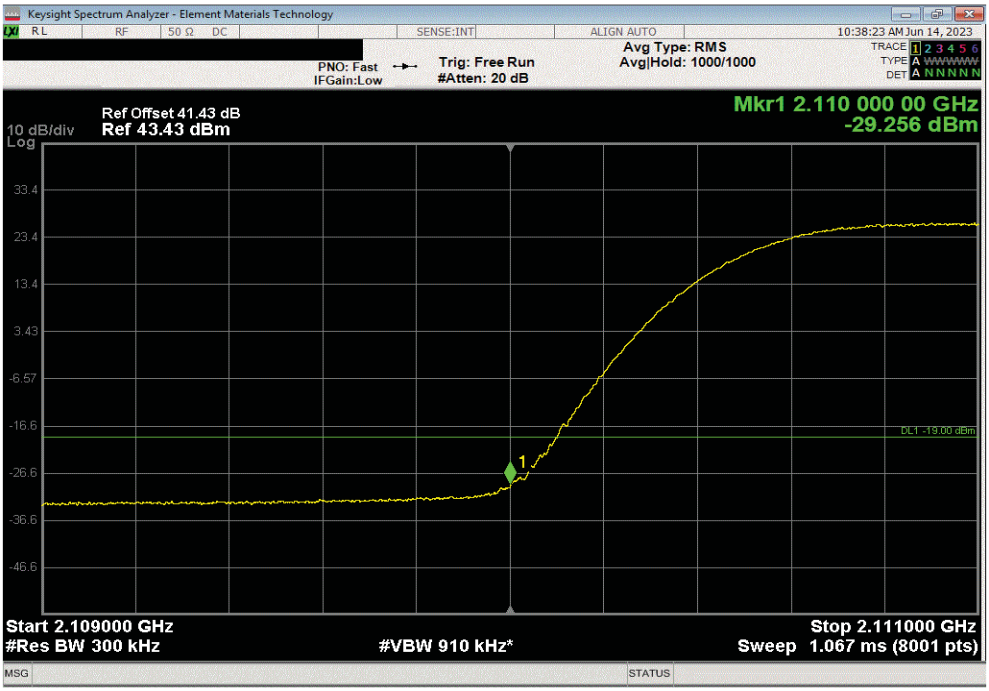


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 2187.5 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	3			-27.10	-19	Pass

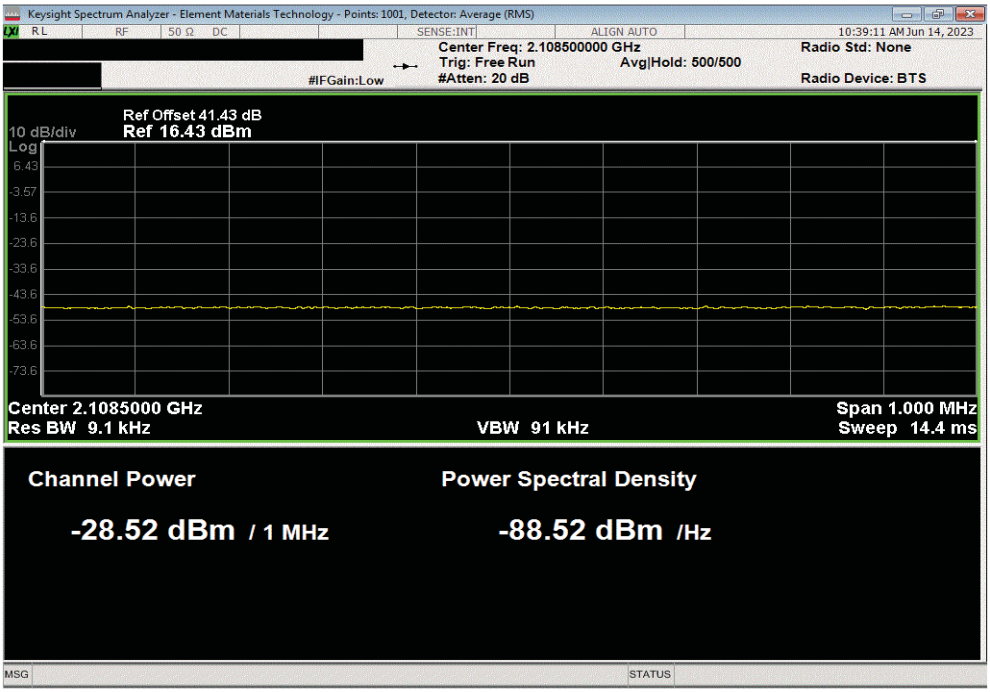


BAND EDGE COMPLIANCE - n66

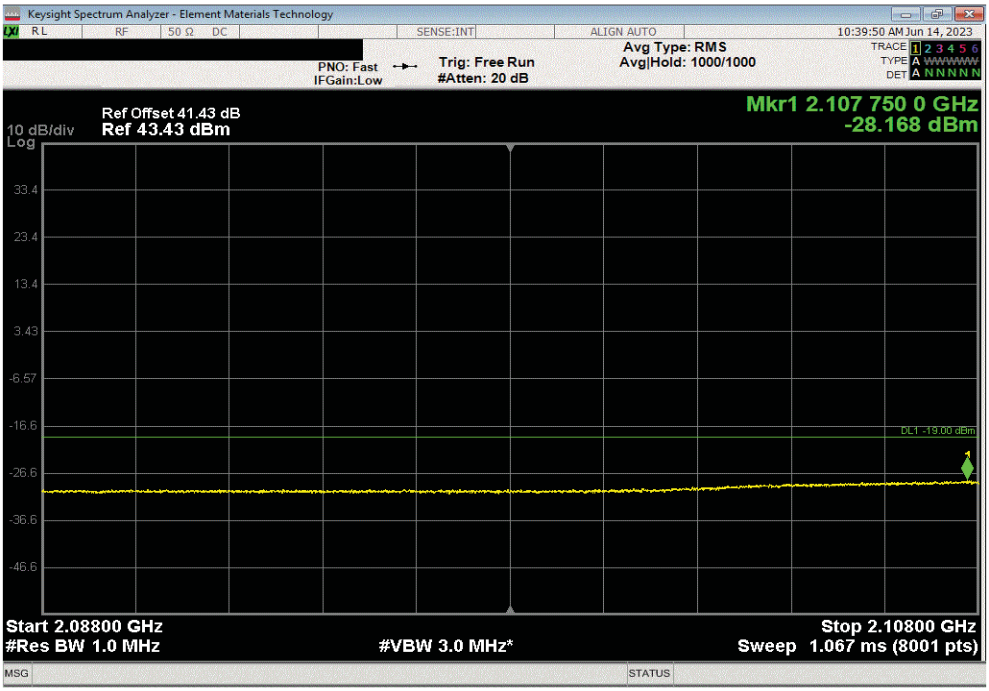
Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 2125 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	1			-29.26	-19	Pass



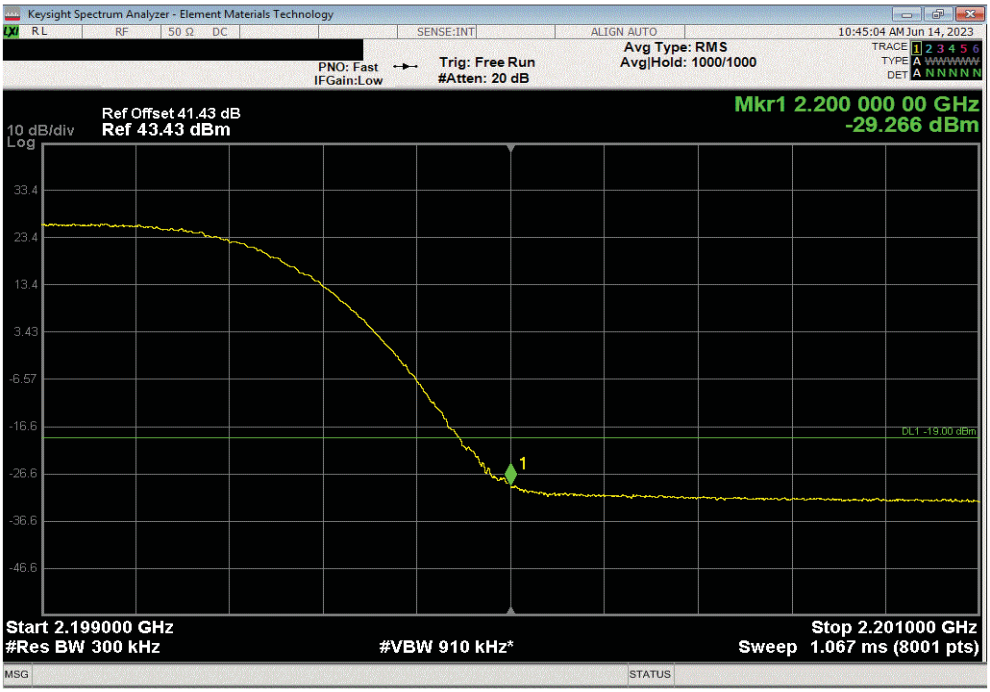
Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 2125 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	2			-28.52	-19	Pass



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel 2125 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	3			-28.17	-19	Pass

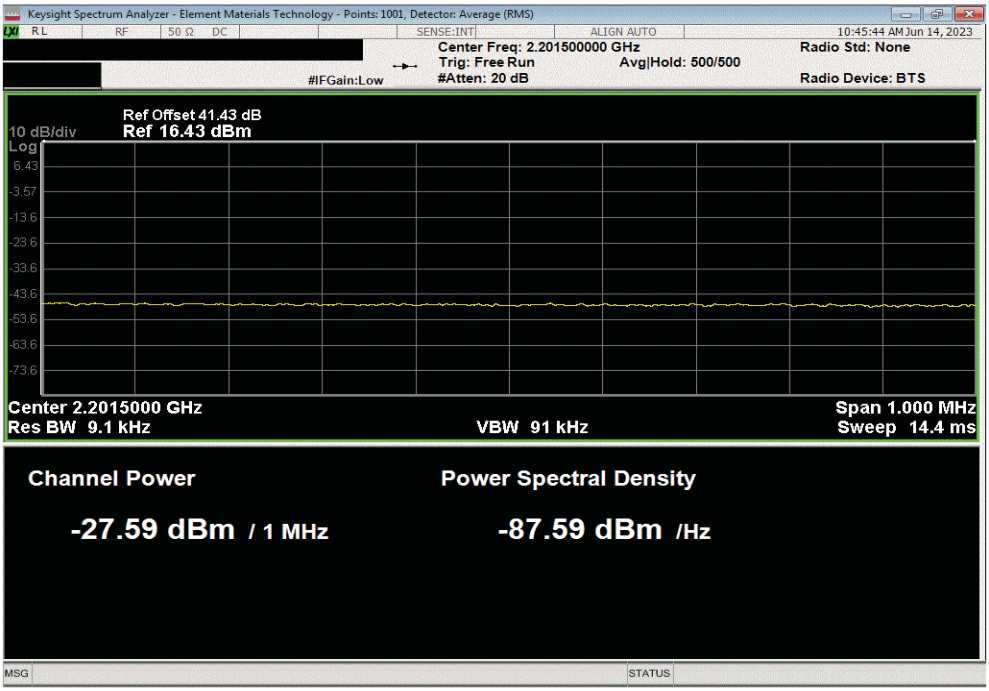


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 2185 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	1			-29.27	-19	Pass

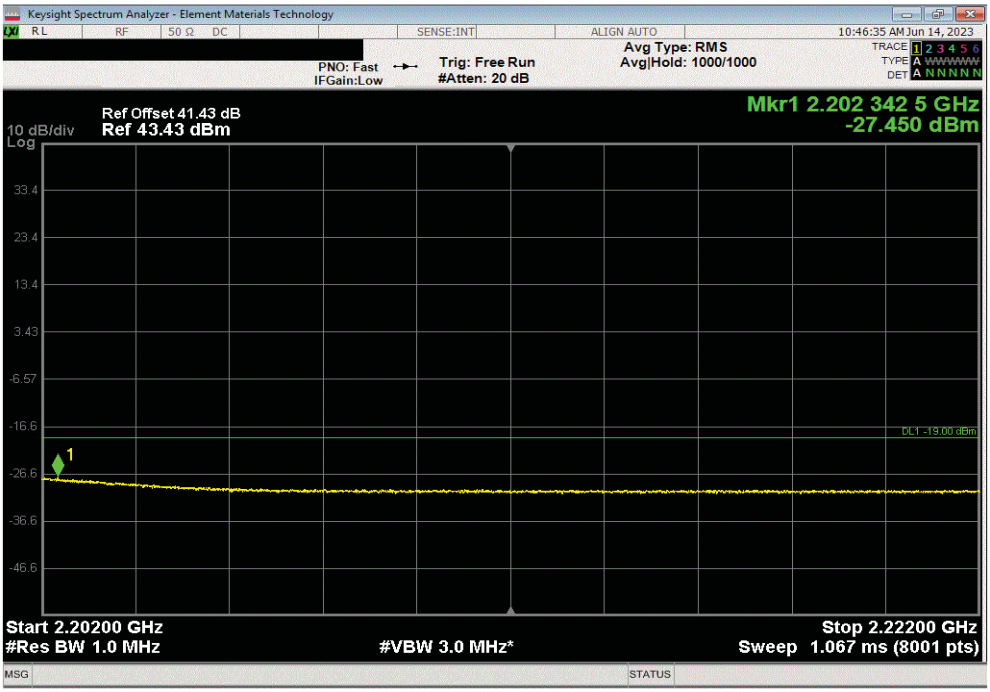


BAND EDGE COMPLIANCE - n66

Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 2185 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	2			-27.59	-19	Pass



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel 2185 MHz						
	Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
	3			-27.45	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - MULTICARRIER

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3379	AMM	2022-09-09	2023-09-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 4 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 22 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for frequency band after the first 1.0 MHz bands immediately outside and adjacent to the frequency block.

Per section FCC 24.238(a) and FCC 27.53 (h) (1), the power of any emission outside of the authorized operating frequency range cannot exceed -13sBm for a 1 MHz measurement bandwidth. The limit is adjusted to -19dBm [-13 dBm -10log (4)] per FCC KDB 662911D01v02r01 because the BTS may operate as a 4 port MIMO.

RF conducted emissions testing was performed on one port. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification report) and port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The limit for the 9kHz to 150kHz frequency range was adjusted to –49dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -49dBm = -19dBm -10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to –39dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 1MHz [i.e.: -39dBm = -19dBm -10log(1MHz/10kHz)]. The required limit of -19dBm with a RBW of > 1MHz was used for all other frequency ranges.

The spurious emission testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there is significant passing. (See ANSI C63.26. clause 5.7.2e).

SPURIOUS CONDUCTED EMISSIONS - MULTICARRIER

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.6°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	61.7%
Project:	None			Barometric Pres.:	1006 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015
FCC 27:2023	ANSI C63.26:2015

COMMENTS

All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. Multi carrier test case 1 and 2: The carriers are operated at maximum power (40W/PCS carrier and 40W/AWS carrier) with a total port power of 120 watts. Multi carrier test case 3 and 4: The carriers are operated at maximum power (~20W/AWS carrier and 80W/PCS carrier) with a total port power of 120 watts. Multi carrier test case 5: The carriers are operated at maximum power (~13.3W/AWS carrier and ~26.6W/PCS carrier) with a total port power of 120 watts.

DEVIATIONS FROM TEST STANDARD

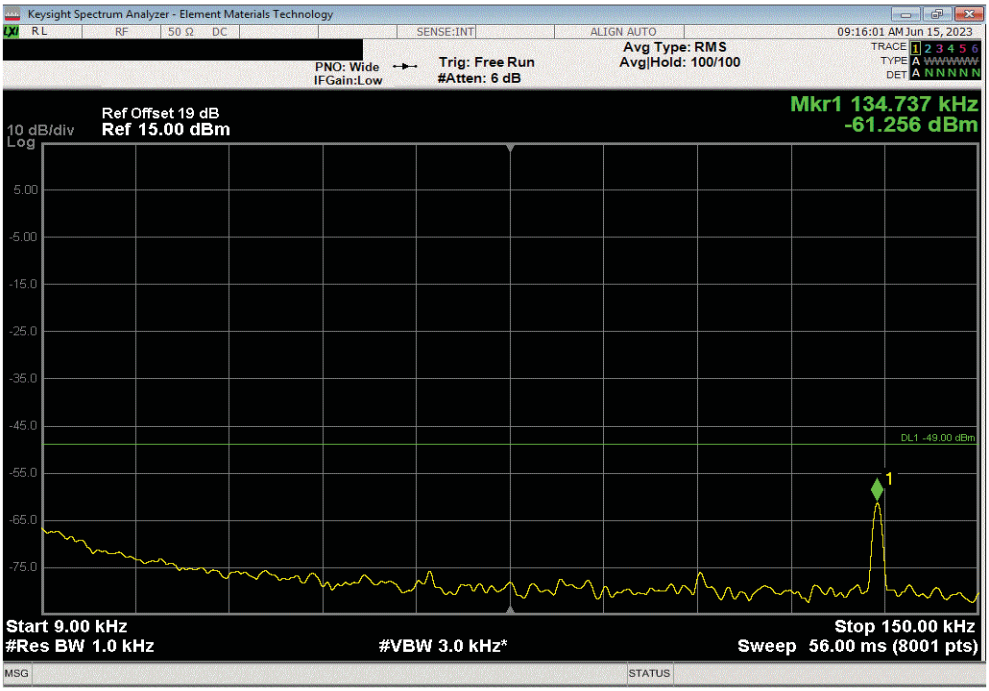
None

Configuration #	
	NOKI0053-1
	NOKI0053-2
	NOKI0053-3
	NOKI0053-4

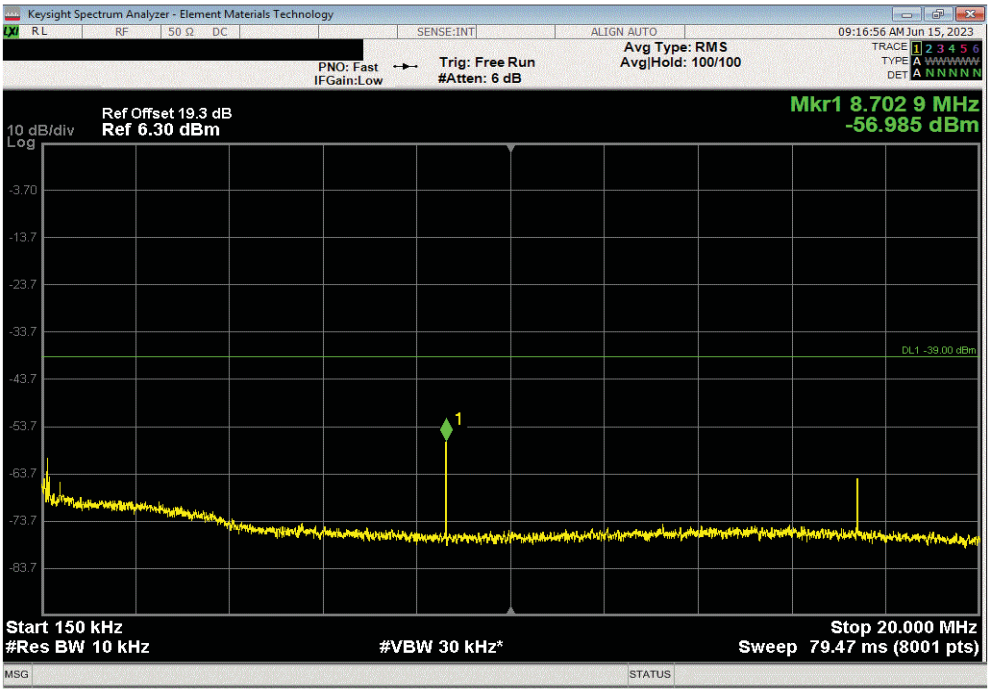
Signature

		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
Port 1, NR, PCS Band and AWS Band, MultiCarrier						
	QPSK					
		Mid				
		MultiCarrier Test Case 1	9 kHz - 150 kHz	0.13	-61.3	-49	Pass
		MultiCarrier Test Case 1	150 kHz - 20 MHz	8.70	-57.0	-39	Pass
		MultiCarrier Test Case 1	20 MHz - 3.5 GHz	3117.20	-26.4	-19	Pass
		MultiCarrier Test Case 1	1900 MHz - 2500 GHz	2201.70	-27.7	-19	Pass
		MultiCarrier Test Case 1	3.5 GHz - 13 GHz	4037.23	-49.1	-19	Pass
		MultiCarrier Test Case 1	13 GHz - 22 GHz	21666.10	-31.9	-19	Pass
		MultiCarrier Test Case 2	9 kHz - 150 kHz	0.13	-61.5	-49	Pass
		MultiCarrier Test Case 2	150 kHz - 20 MHz	8.71	-56.6	-39	Pass
		MultiCarrier Test Case 2	20 MHz - 3.5 GHz	3139.39	-26.5	-19	Pass
		MultiCarrier Test Case 2	1900 MHz - 2500 GHz	2224.98	-28.0	-19	Pass
		MultiCarrier Test Case 2	3.5 GHz - 13 GHz	4002.08	-49.2	-19	Pass
		MultiCarrier Test Case 2	13 GHz - 22 GHz	21652.15	-32.0	-19	Pass
		MultiCarrier Test Case 3	9 kHz - 150 kHz	0.13	-66.3	-49	Pass
		MultiCarrier Test Case 3	150 kHz - 20 MHz	8.71	-56.6	-39	Pass
		MultiCarrier Test Case 3	20 MHz - 3.5 GHz	3106.30	-26.5	-19	Pass
		MultiCarrier Test Case 3	1900 MHz - 2500 GHz	2230.44	-28.0	-19	Pass
		MultiCarrier Test Case 3	3.5 GHz - 13 GHz	5886.40	-39.9	-19	Pass
		MultiCarrier Test Case 3	13 GHz - 22 GHz	21639.55	-31.7	-19	Pass
		MultiCarrier Test Case 4	9 kHz - 150 kHz	0.13	-60.9	-49	Pass
		MultiCarrier Test Case 4	150 kHz - 20 MHz	8.71	-56.8	-39	Pass
		MultiCarrier Test Case 4	20 MHz - 3.5 GHz	3175.06	-26.3	-19	Pass
		MultiCarrier Test Case 4	1900 MHz - 2500 GHz	2242.26	-27.8	-19	Pass
		MultiCarrier Test Case 4	3.5 GHz - 13 GHz	5887.35	-46.8	-19	Pass
		MultiCarrier Test Case 4	13 GHz - 22 GHz	21990.55	-31.9	-19	Pass
		MultiCarrier Test Case 5	9 kHz - 150 kHz	0.13	-61.2	-49	Pass
		MultiCarrier Test Case 5	150 kHz - 20 MHz	8.71	-57.1	-39	Pass
		MultiCarrier Test Case 5	20 MHz - 3.5 GHz	3191.59	-26.5	-19	Pass
		MultiCarrier Test Case 5	1900 MHz - 2500 GHz	2230.44	-27.9	-19	Pass
		MultiCarrier Test Case 5	3.5 GHz - 13 GHz	4016.80	-49.4	-19	Pass
		MultiCarrier Test Case 5	13 GHz - 22 GHz	21640.45	-31.7	-19	Pass

Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	9 kHz - 150 kHz	0.13	-61.26	-49	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	150 kHz - 20 MHz	8.7	-56.99	-39	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1				
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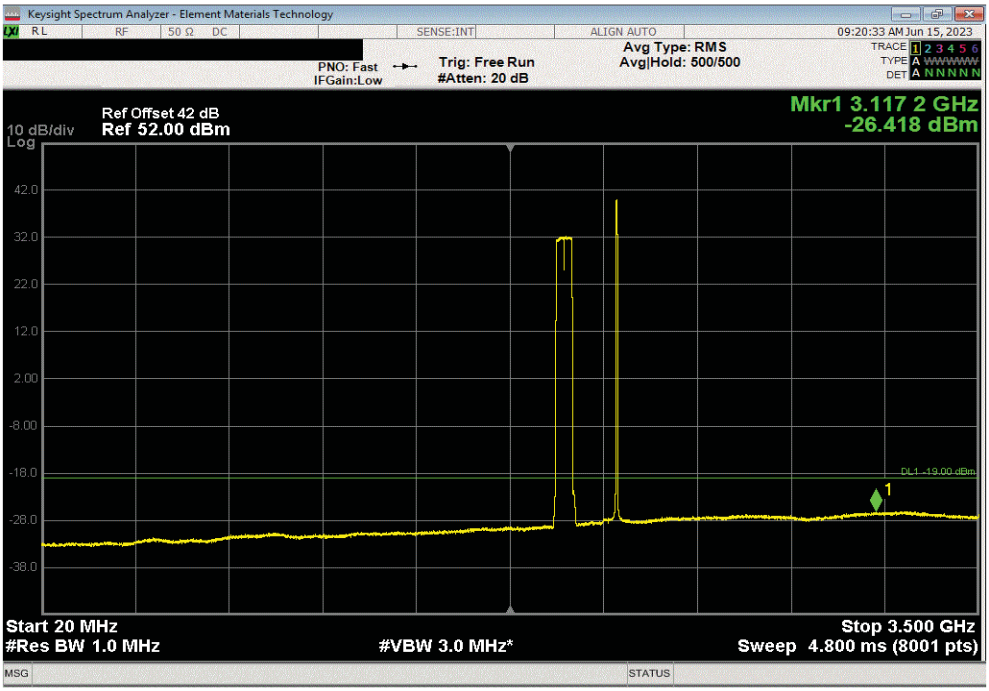
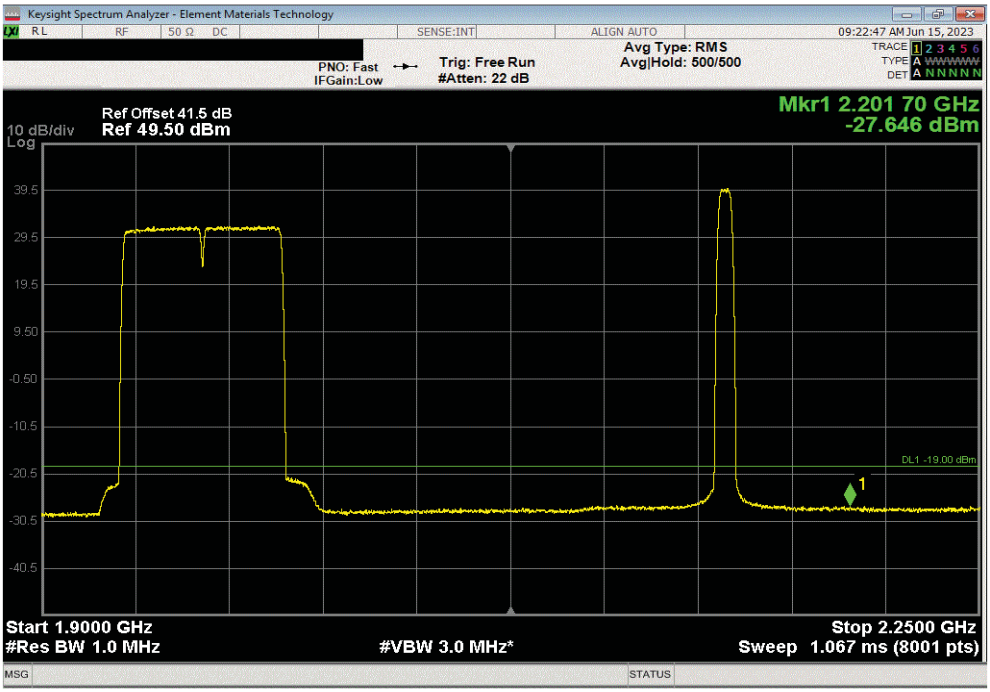
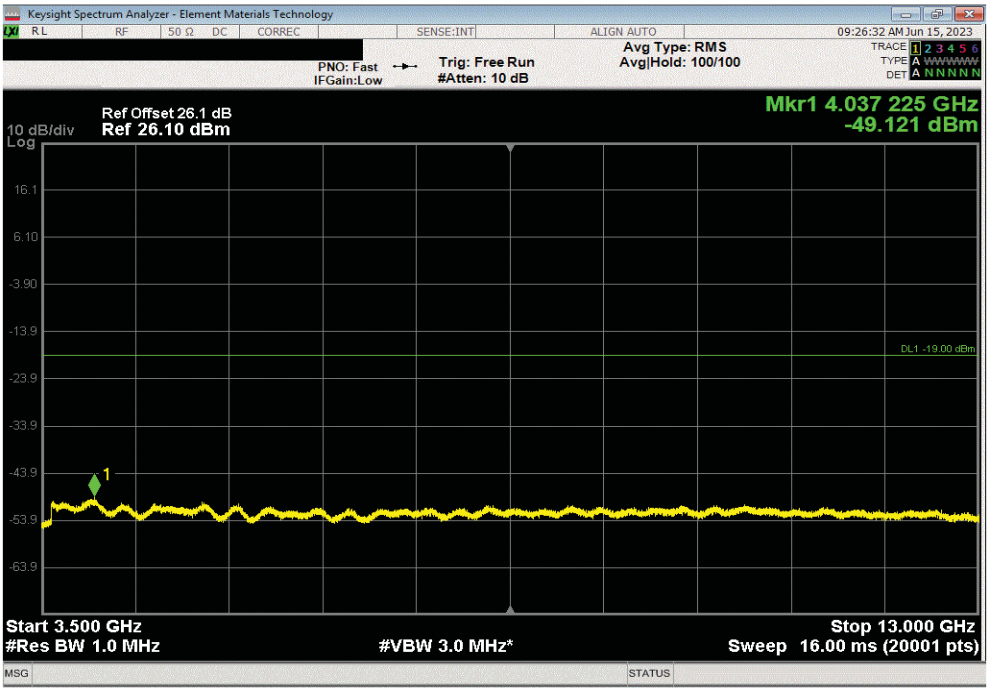
20 MHz - 3.5 GHz	3117.2	-26.42	-19	Pass



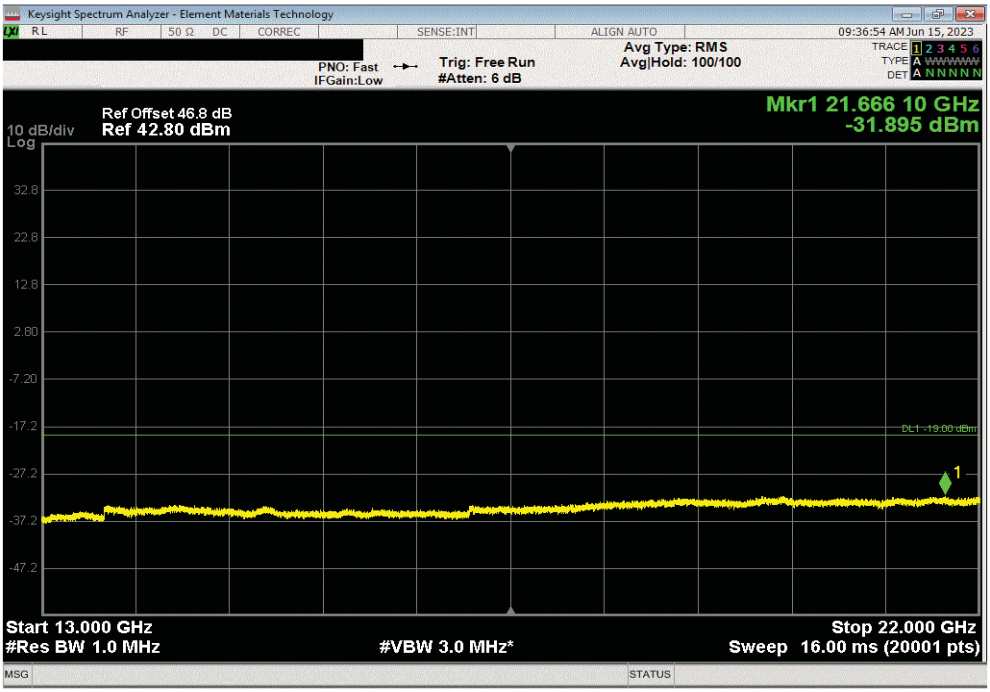
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2201.7	-27.65	-19	Pass



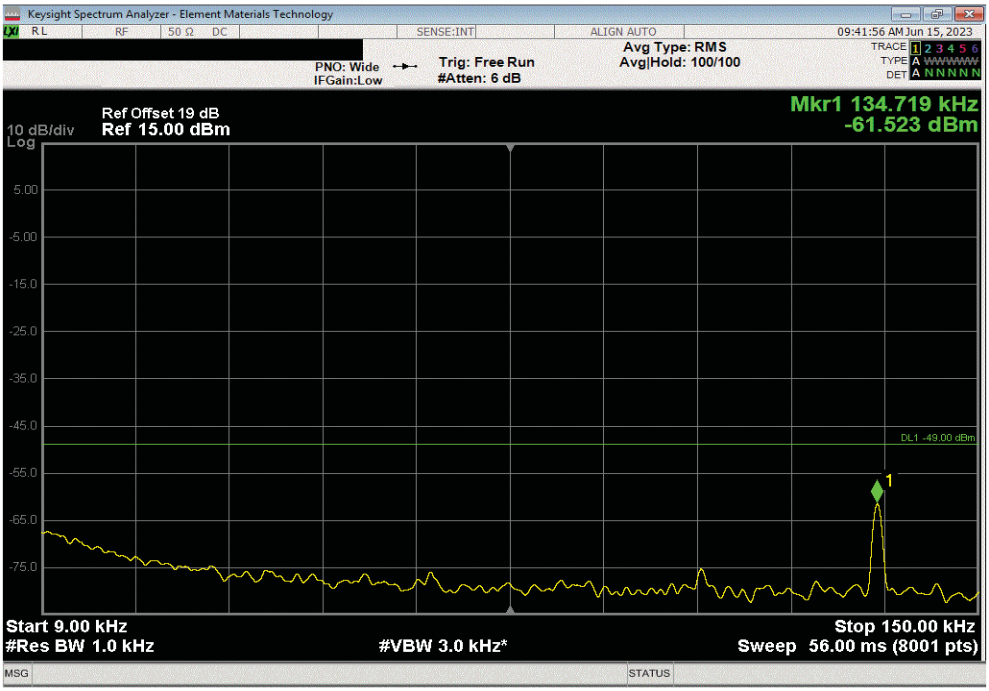
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	4037.23	-49.12	-19	Pass



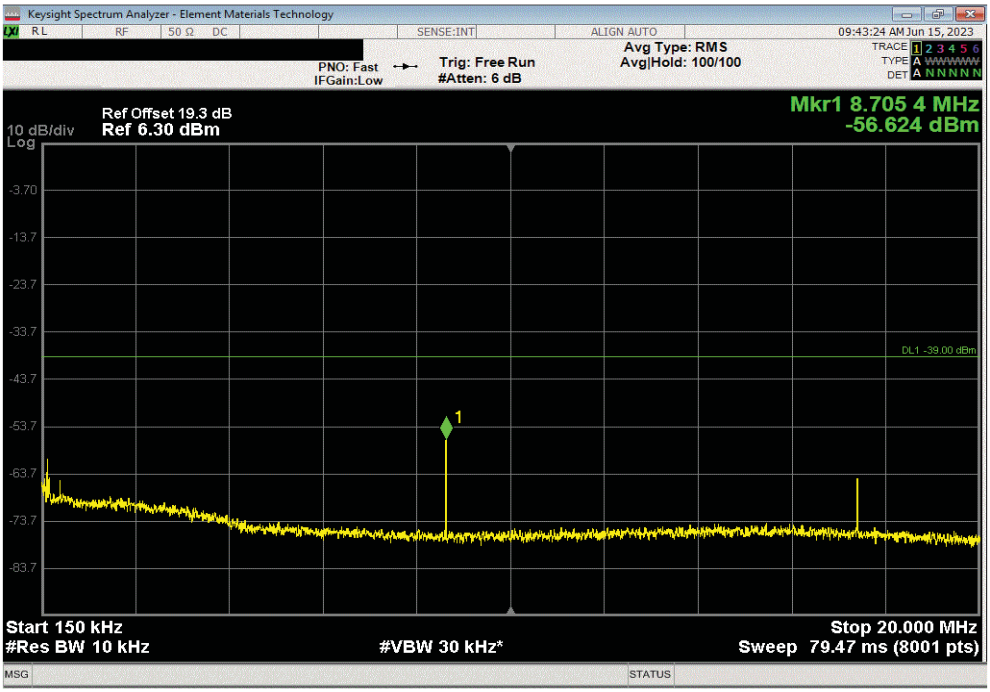
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 1				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21666.1	-31.9	-19	Pass



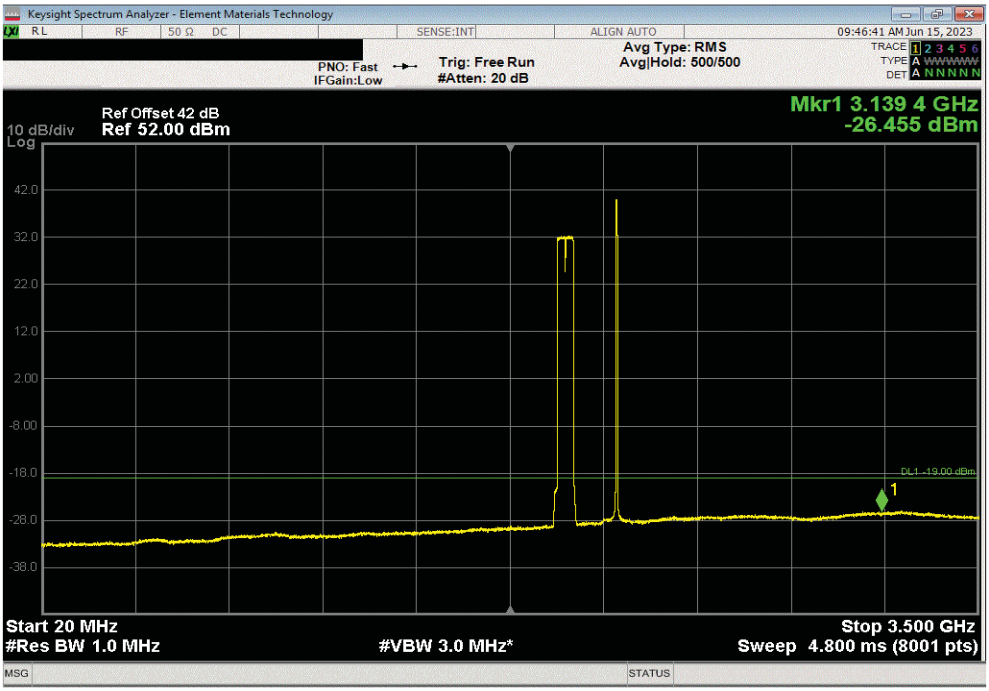
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	9 kHz - 150 kHz	0.13	-61.52	-49	Pass



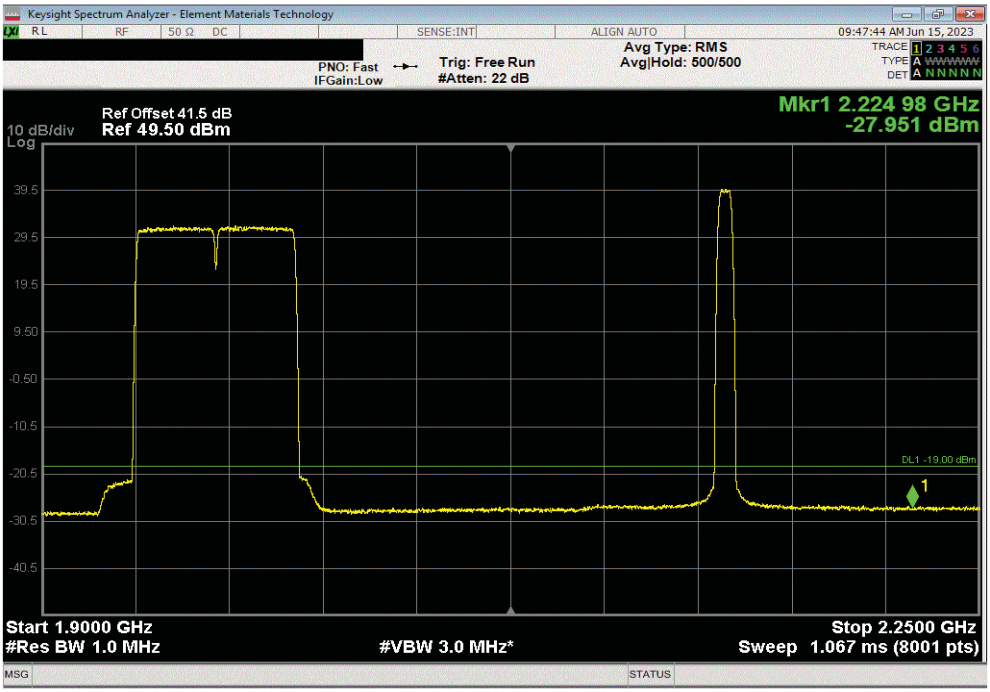
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	150 kHz - 20 MHz	8.71	-56.62	-39	Pass



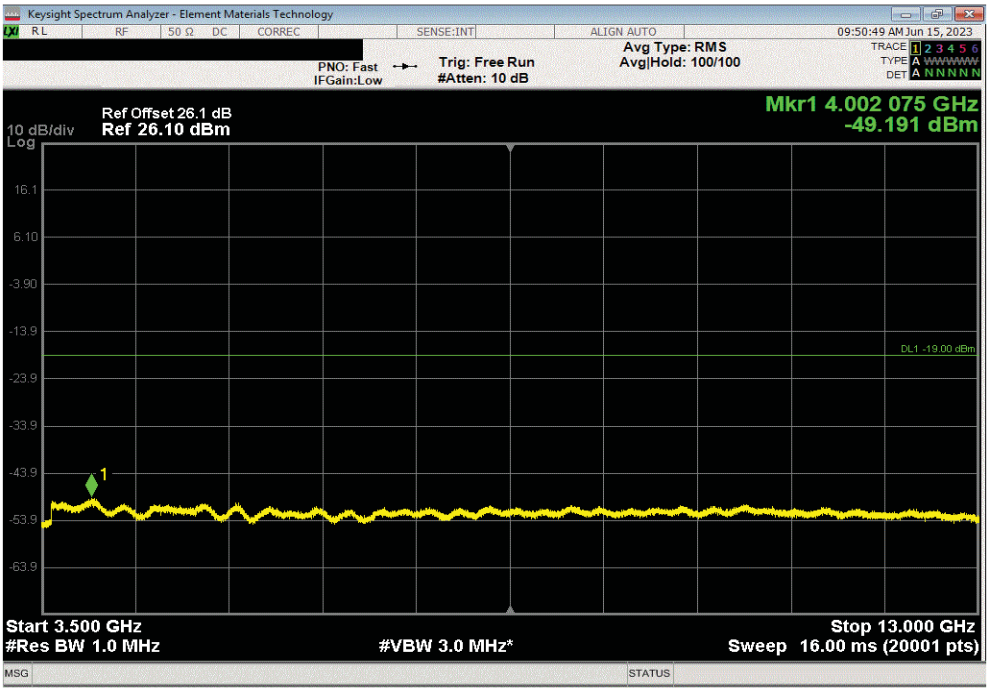
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3139.39	-26.46	-19	Pass



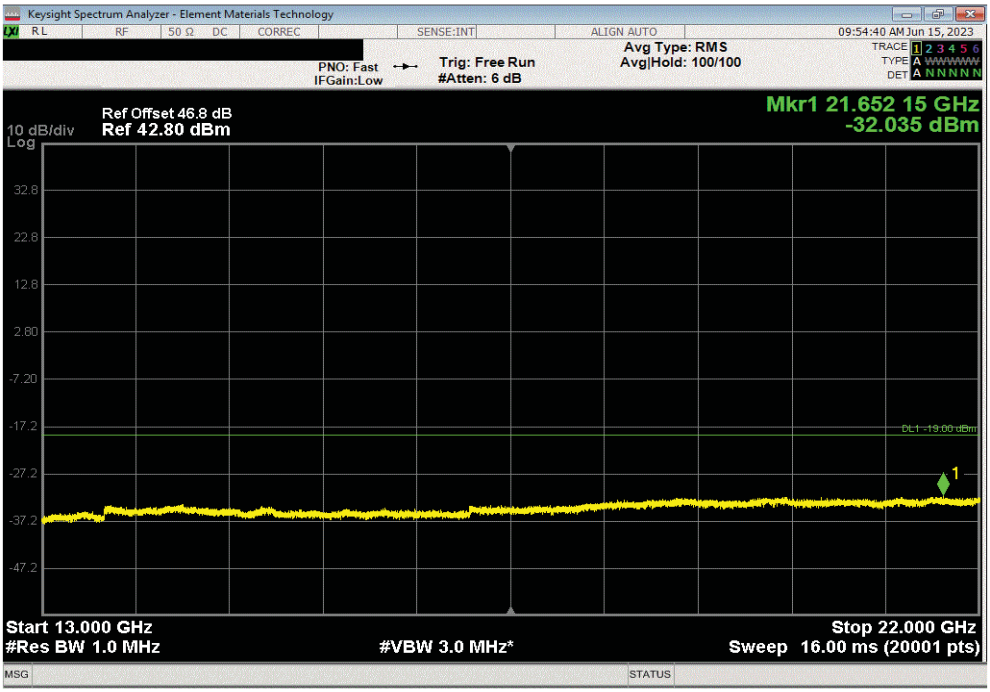
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2224.98	-27.95	-19	Pass



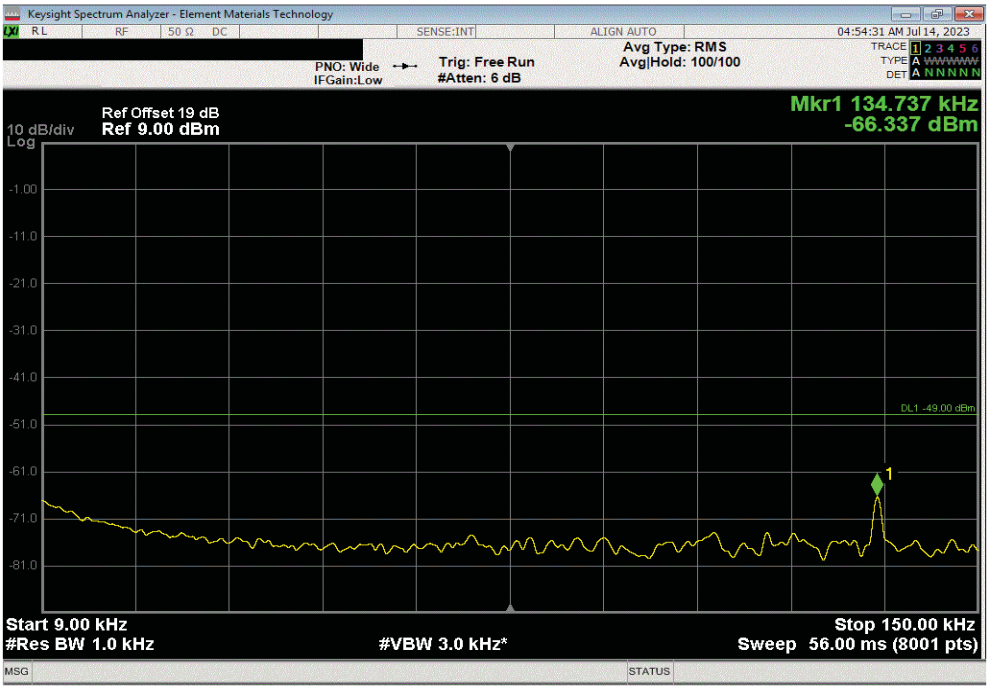
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	4002.08	-49.19	-19	Pass



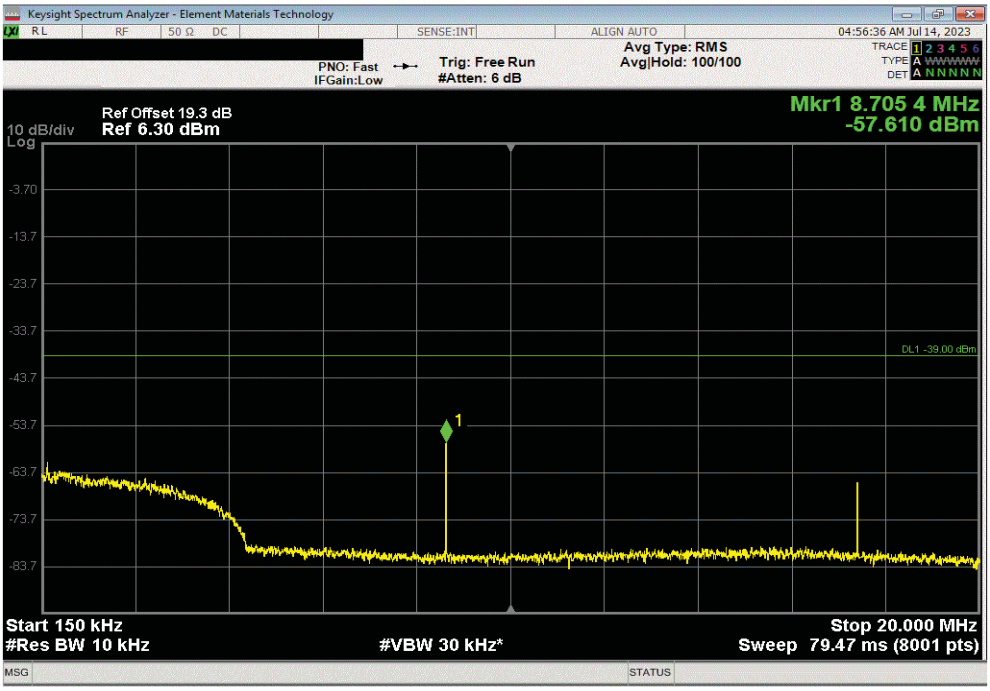
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 2				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21652.15	-32.04	-19	Pass



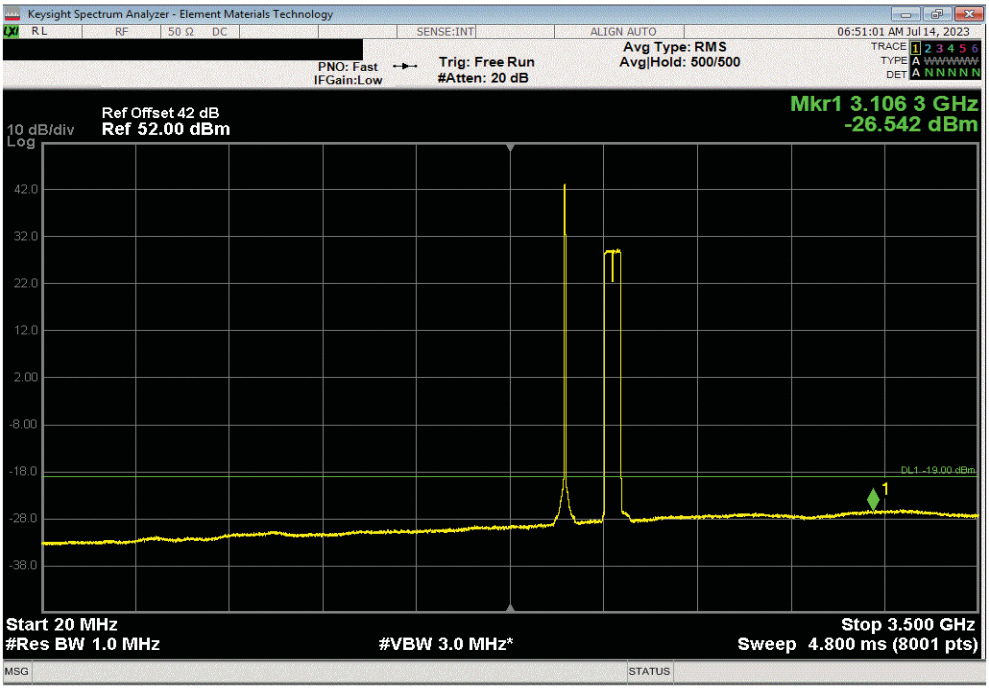
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	9 kHz - 150 kHz	0.1347	-66.34	-49	Pass



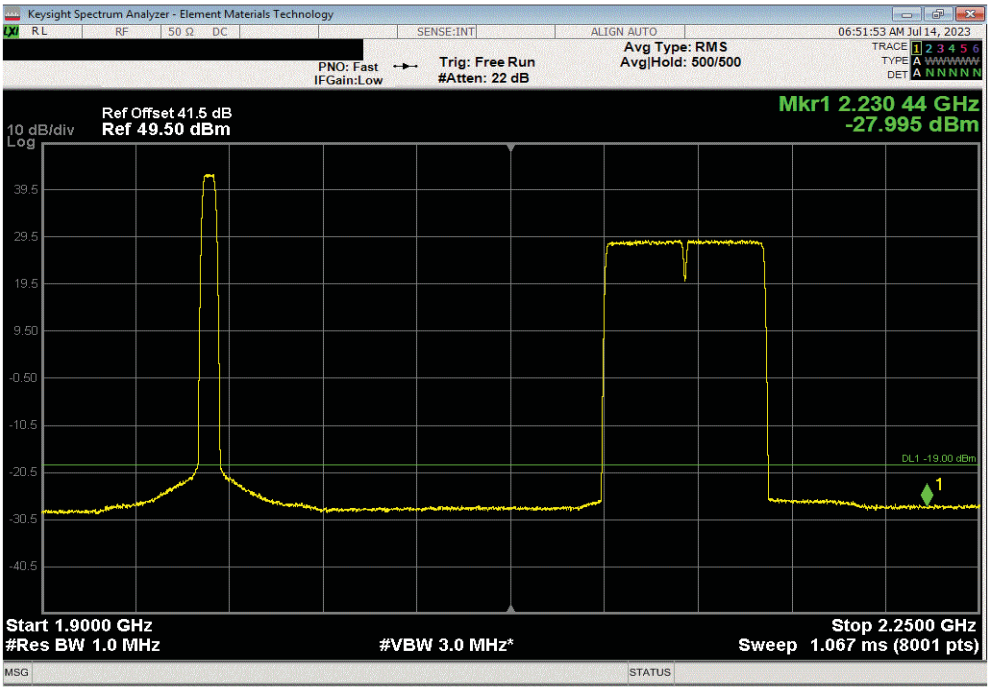
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	150 kHz - 20 MHz	8.71	-56.61	-39	Pass



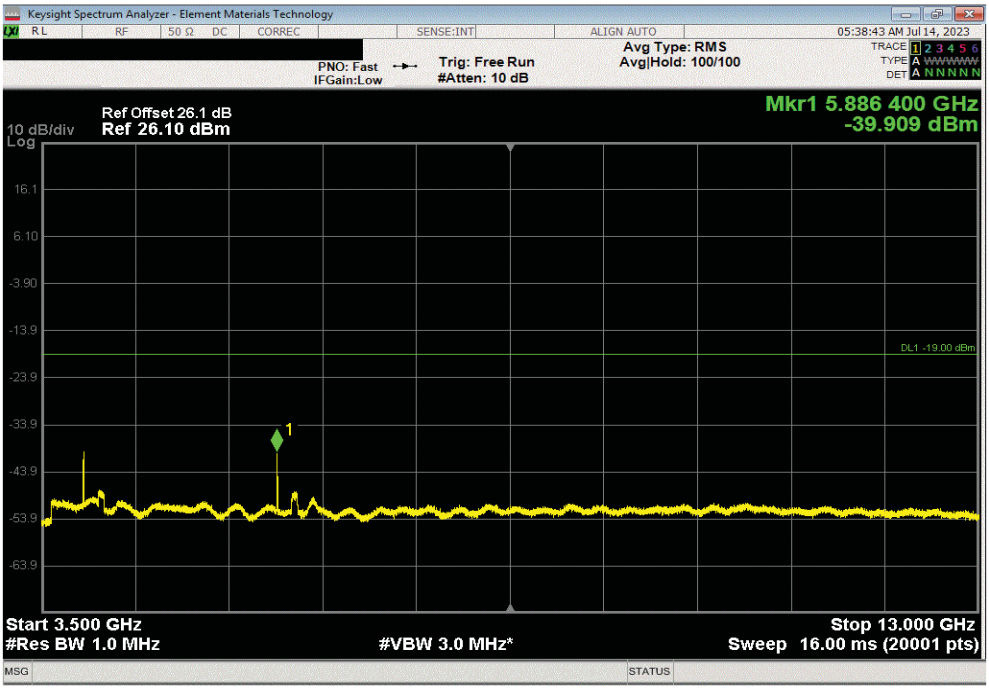
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3106.3	-26.54	-19	Pass



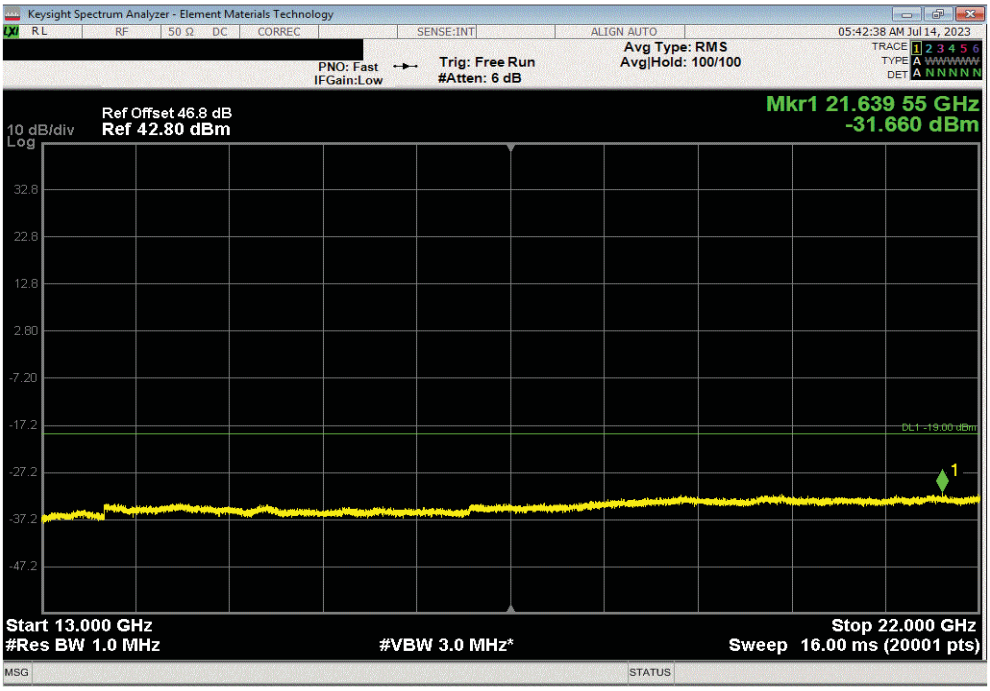
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2230.44	-28	-19	Pass



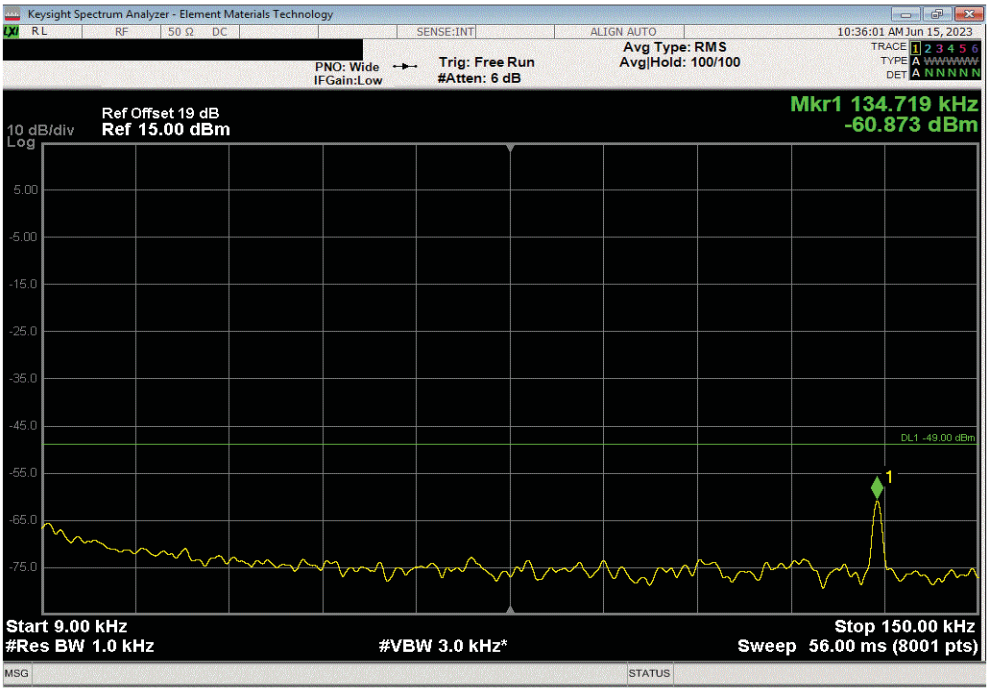
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	5886.4	-39.91	-19	Pass



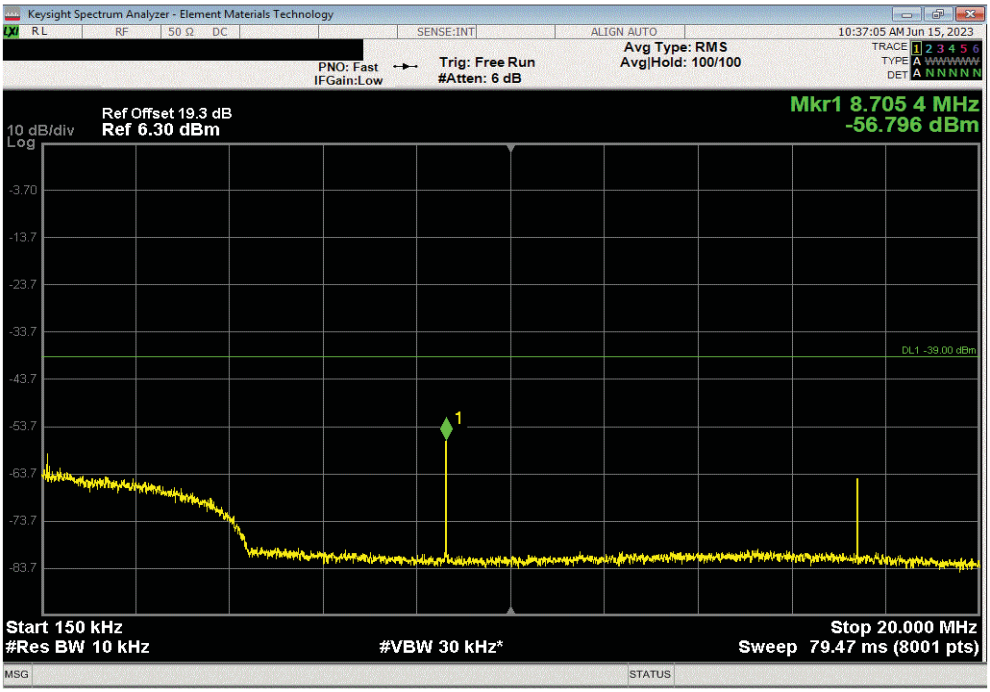
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 3				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21639.55	-31.66	-19	Pass



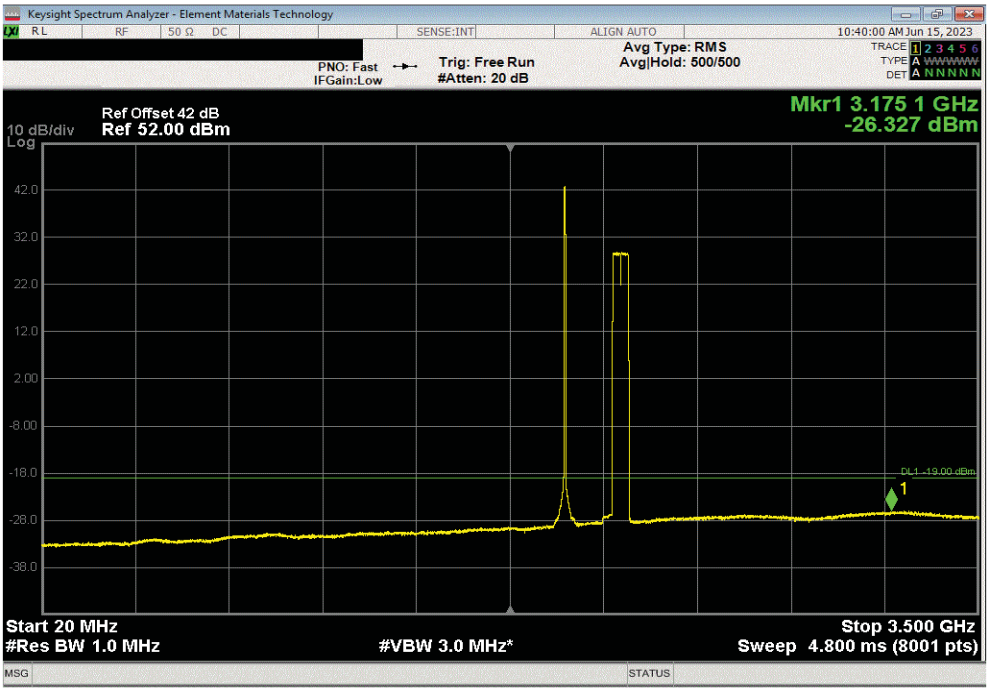
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	9 kHz - 150 kHz	0.13	-60.87	-49	Pass



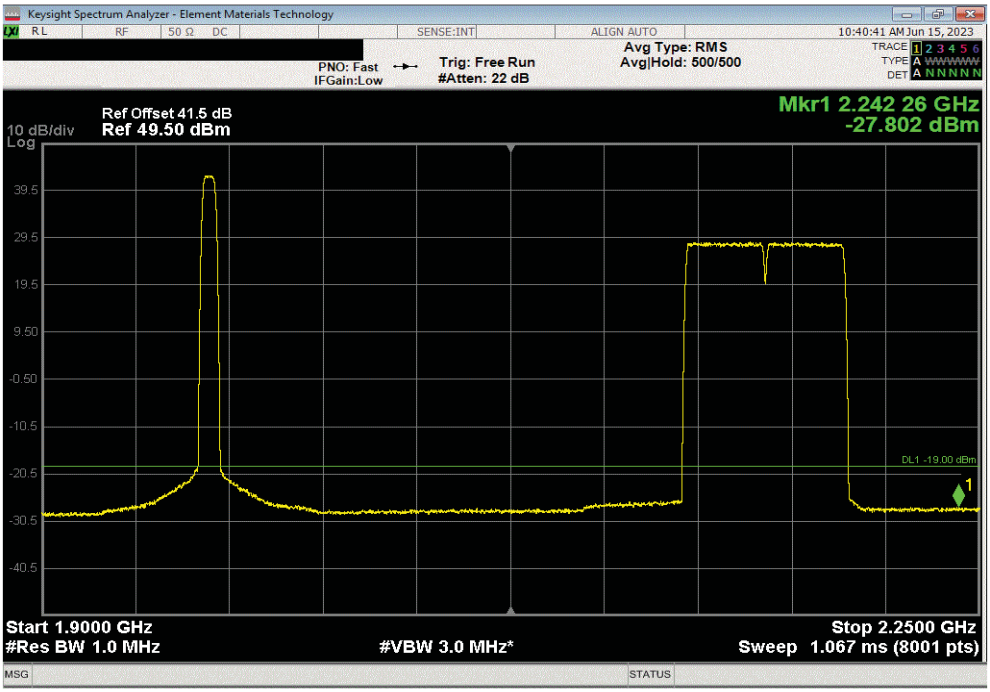
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	150 kHz - 20 MHz	8.71	-56.8	-39	Pass



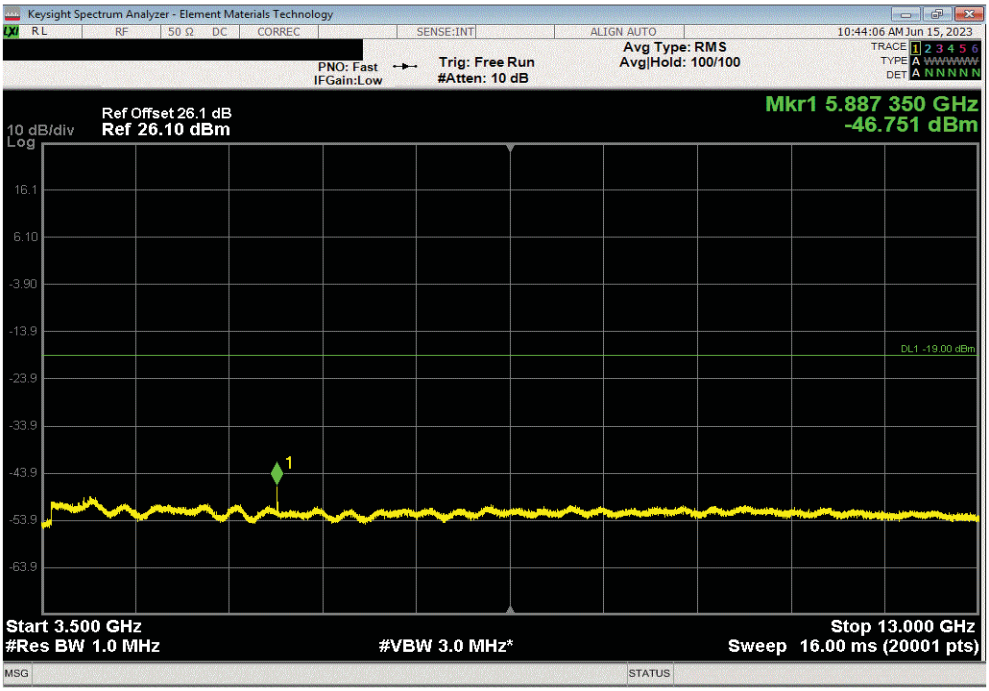
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3175.06	-26.33	-19	Pass



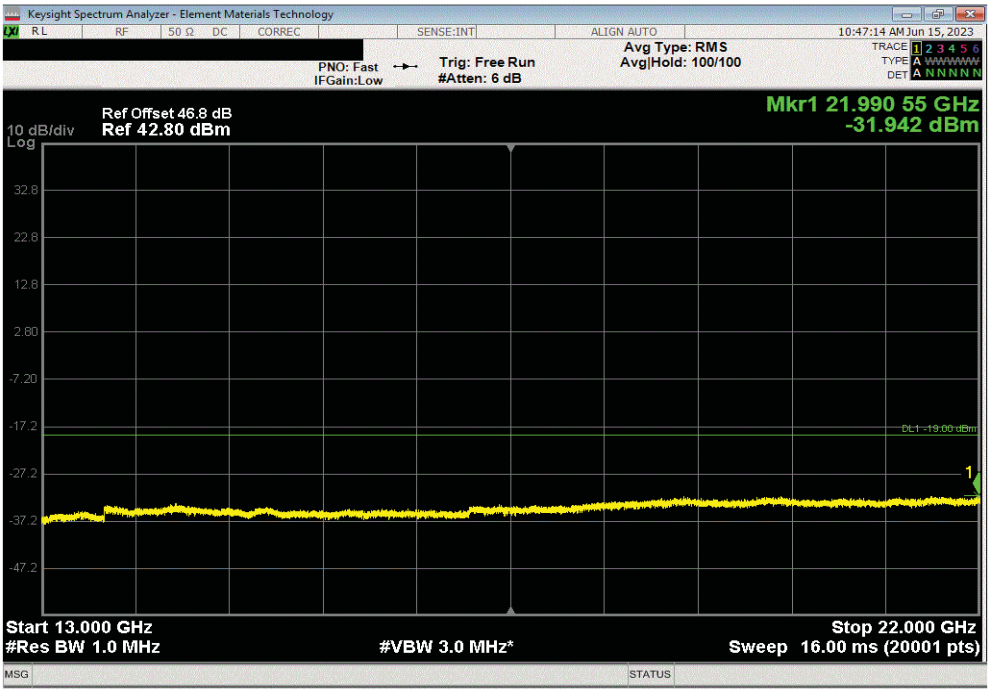
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2242.26	-27.8	-19	Pass



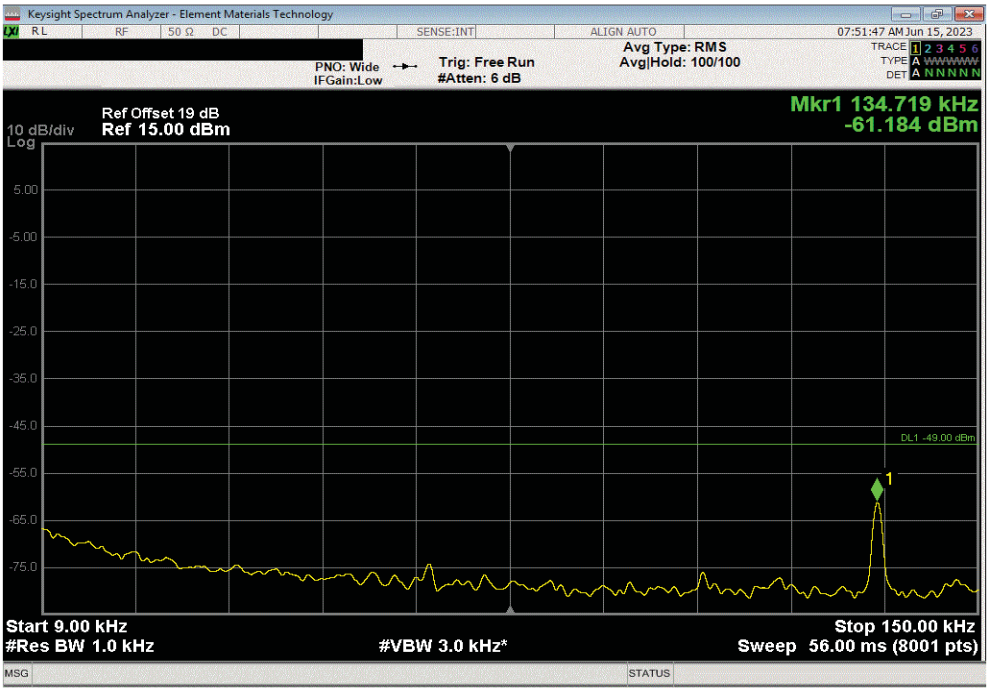
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	5887.35	-46.75	-19	Pass



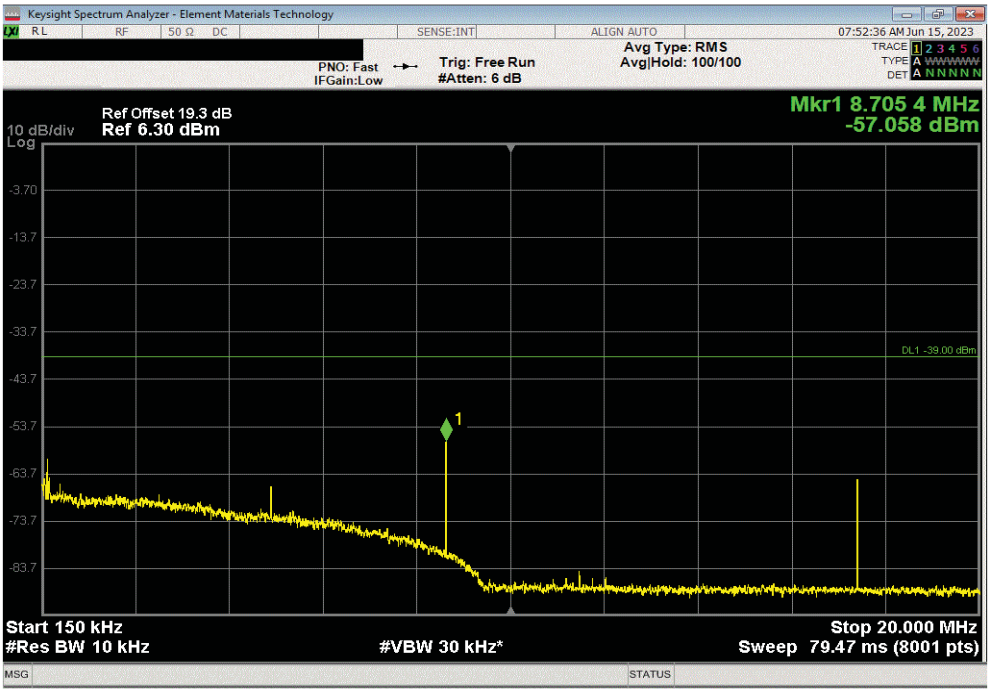
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 4				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21990.55	-31.94	-19	Pass



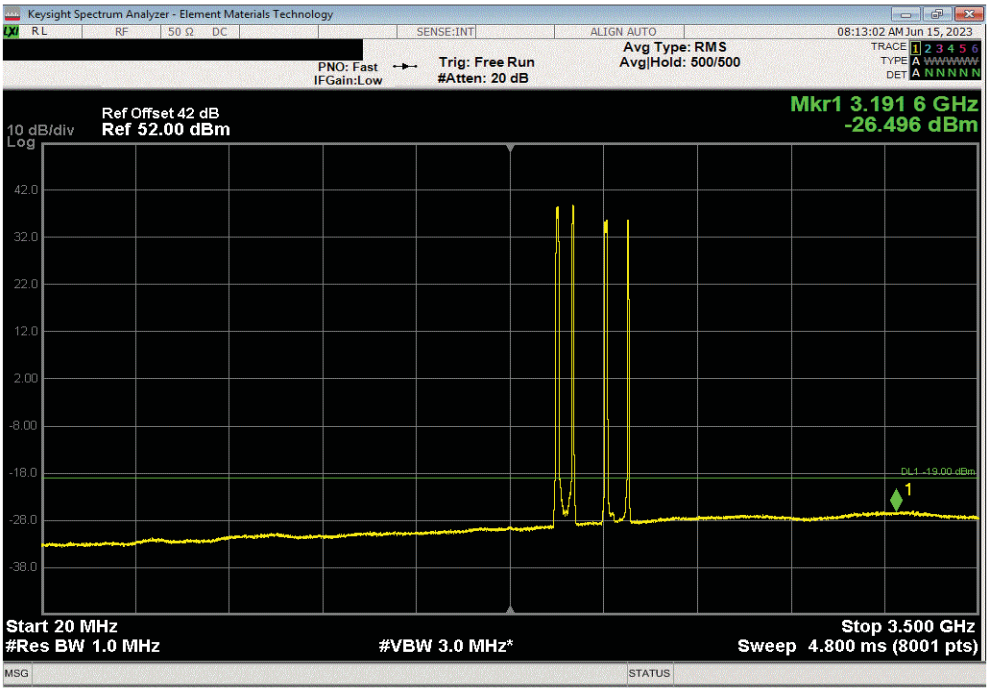
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	9 kHz - 150 kHz	0.13	-61.18	-49	Pass



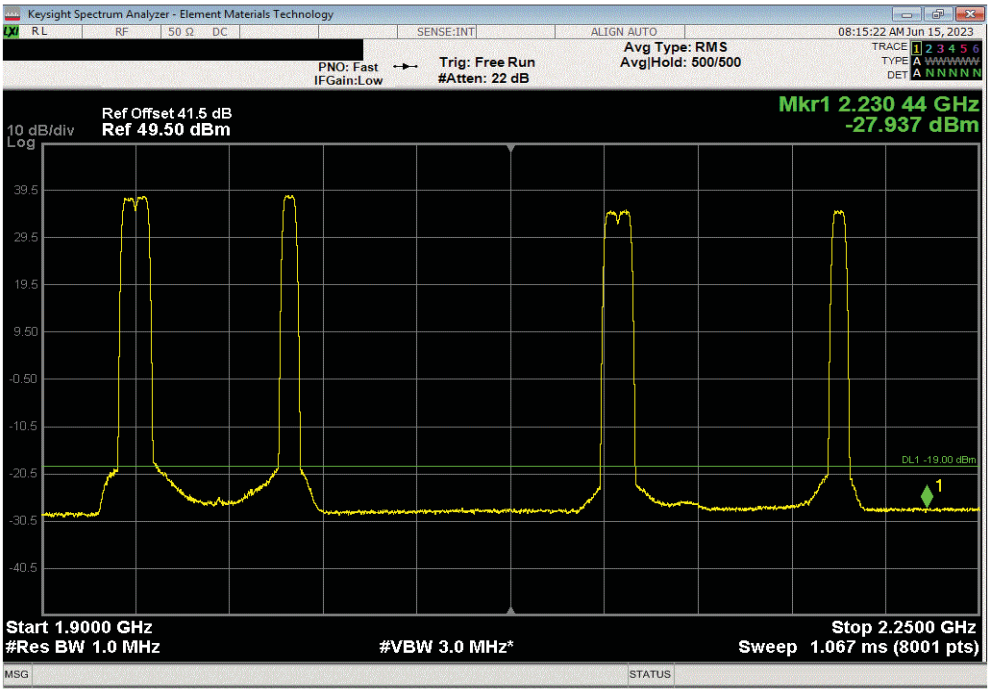
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5					
	Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
	150 kHz - 20 MHz	8.71	-57.06	-39	Pass



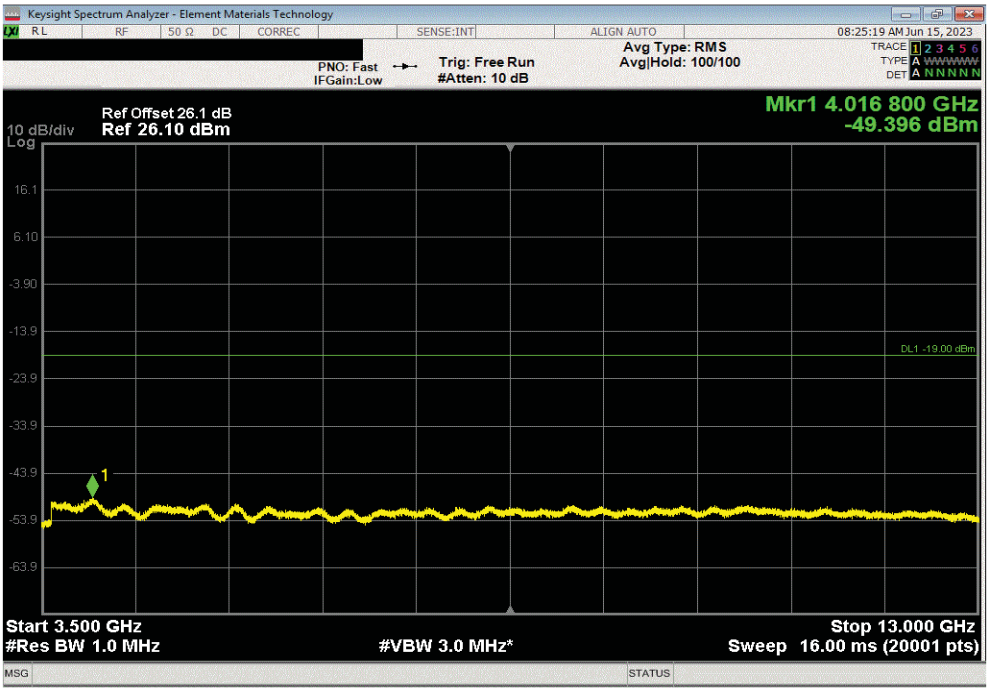
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3191.59	-26.5	-19	Pass



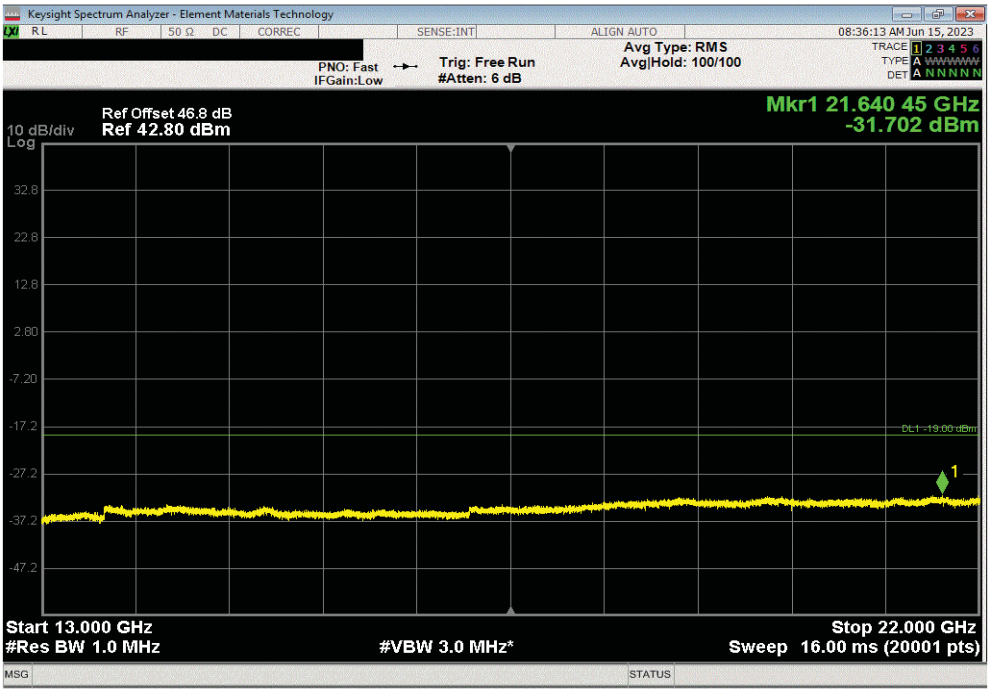
Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2230.44	-27.94	-19	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	4016.8	-49.4	-19	Pass



Port 1, NR, PCS Band and AWS Band, MultiCarrier, QPSK, Mid, MultiCarrier Test Case 5				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21640.45	-31.7	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - 25MHz

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMM	2022-09-09	2023-09-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 4 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 22 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for frequency band after the first 1.0 MHz bands immediately outside and adjacent to the frequency block.

Per section FCC 24.238(a) and FCC 27.53 (h) (1), the power of any emission outside of the authorized operating frequency range cannot exceed -13sBm for a 1 MHz measurement bandwidth. The limit is adjusted To -19dBm [-13 dBm -10log (4)] per FCC KDB 662911D01v02r01 because the BTS may operate as a 4 port MIMO.

RF conducted emissions testing was performed on one port. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification report) and port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The limit for the 9kHz to 150kHz frequency range was adjusted to –49dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -49dBm = -19dBm -10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to –39dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 1MHz [i.e.: -39dBm = -19dBm -10log(1MHz/10kHz)]. The required limit of -19dBm with a RBW of > 1MHz was used for all other frequency ranges.

The spurious emission testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there is significant passing margin. (See ANSI C63.26. clause 5.7.2e).

SPURIOUS CONDUCTED EMISSIONS - 25MHz

element

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.7°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	61.4%
Project:	None			Barometric Pres.:	1006 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015
FCC 27:2023	ANSI C63.26:2015

COMMENTS

NoneAll measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. The Band n25 carrier was enabled at maximum power (80 watts/carrier). The Band n66 carrier was enabled on the middle channel (2155MHz) at 40 watts with the same channel bandwidth and modulation type as the Band n25 carrier. The port power was set at the maximum level of 120 Watts [Band n25 carrier (80W) and Band n66 carrier (40W)].

DEVIATIONS FROM TEST STANDARD

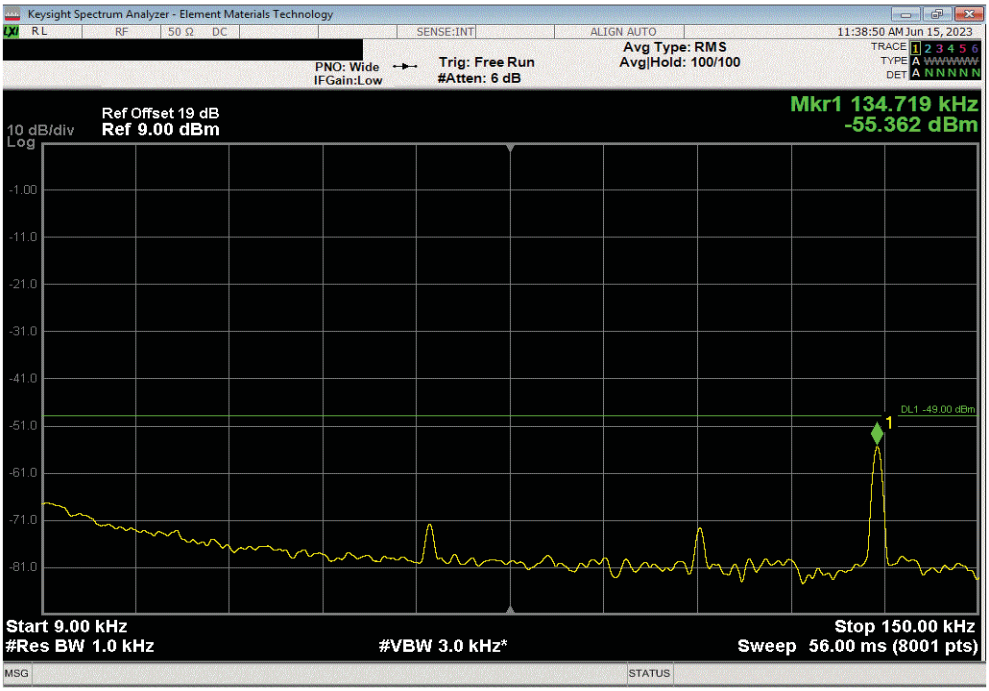
None

Configuration #	NOKI0053-1 NOKI0053-2 NOKI0053-3 NOKI0053-4	Signature

		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR						
Port 1						
25 MHz Bandwidth						
256-QAM Modulation						
	Mid Channels, 1962.5 MHz and 2155 MHz	9 kHz - 150 kHz	0.13	-55.4	-49	Pass
	Mid Channels, 1962.5 MHz and 2155 MHz	150 kHz - 20 MHz	0.27	-54.7	-39	Pass
	Mid Channels, 1962.5 MHz and 2155 MHz	20 MHz - 3.5 GHz	3157.66	-26.6	-19	Pass
	Mid Channels, 1962.5 MHz and 2155 MHz	1900 MHz - 2500 GHz	2224.36	-27.9	-19	Pass
	Mid Channels, 1962.5 MHz and 2155 MHz	3.5 GHz - 13 GHz	4020.60	-49.1	-19	Pass
	Mid Channels, 1962.5 MHz and 2155 MHz	13 GHz - 22 GHz	21497.80	-31.7	-19	Pass

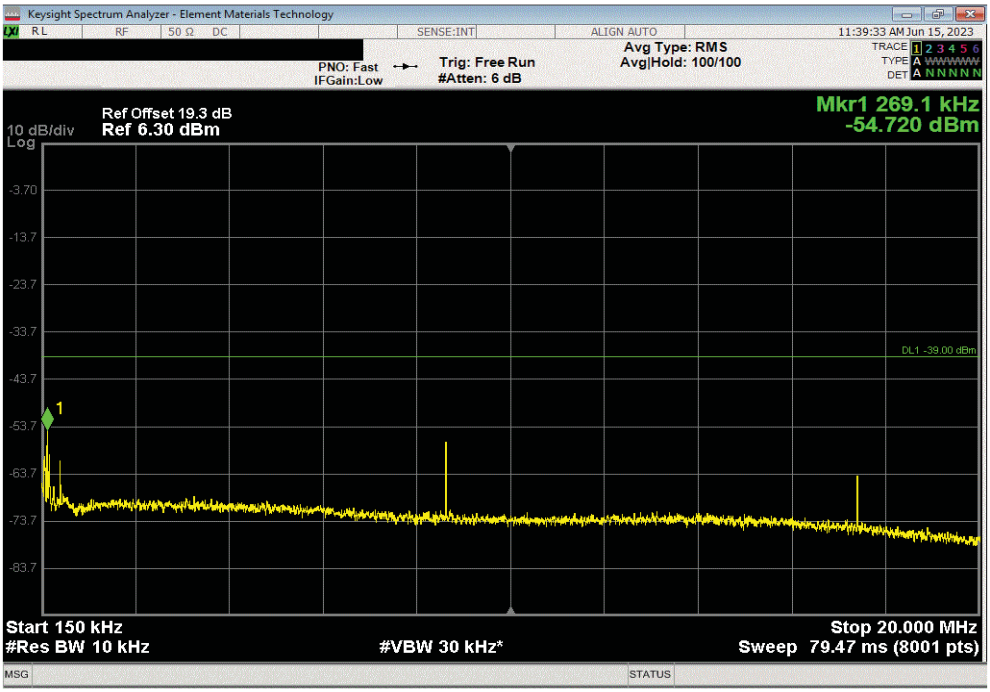
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
9 kHz - 150 kHz	0.13	-55.36	-49	Pass

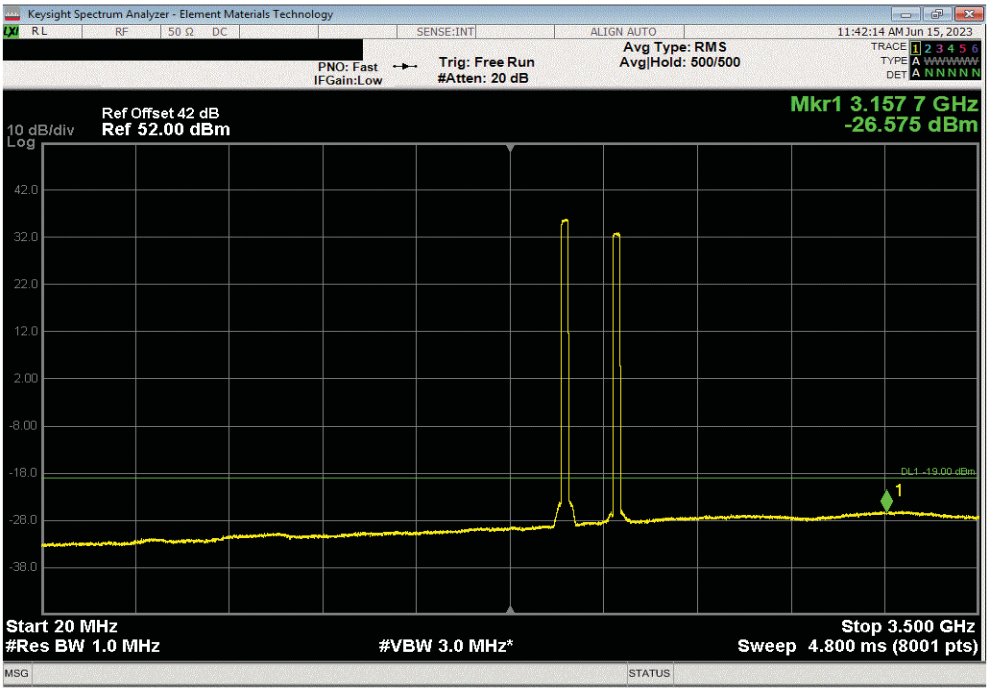


Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

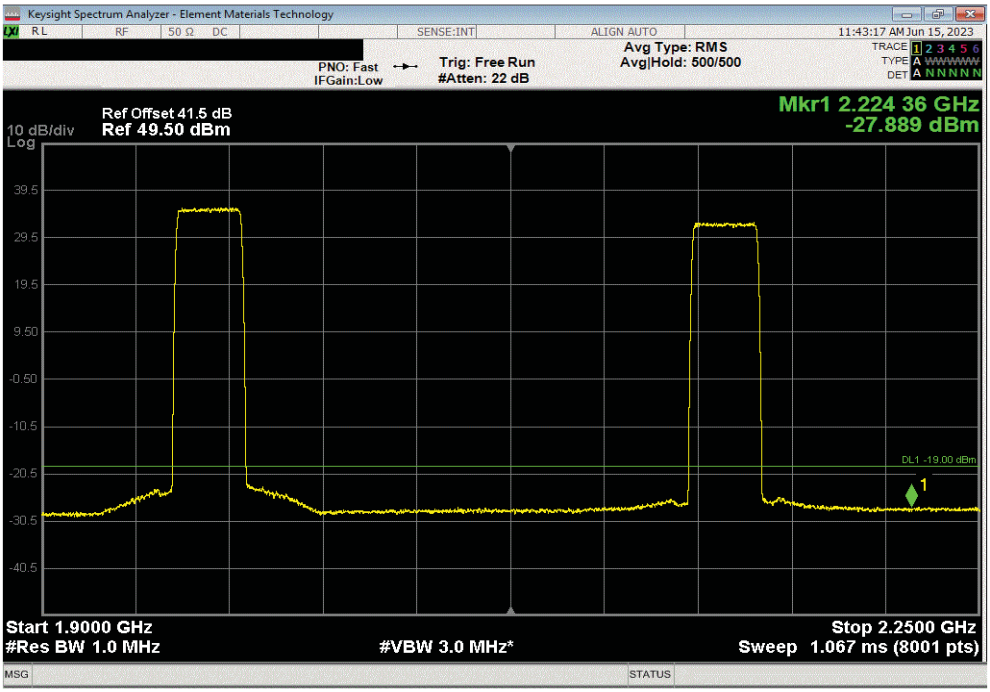
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
150 kHz - 20 MHz	0.27	-54.72	-39	Pass



Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3157.66	-26.58	-19	Pass

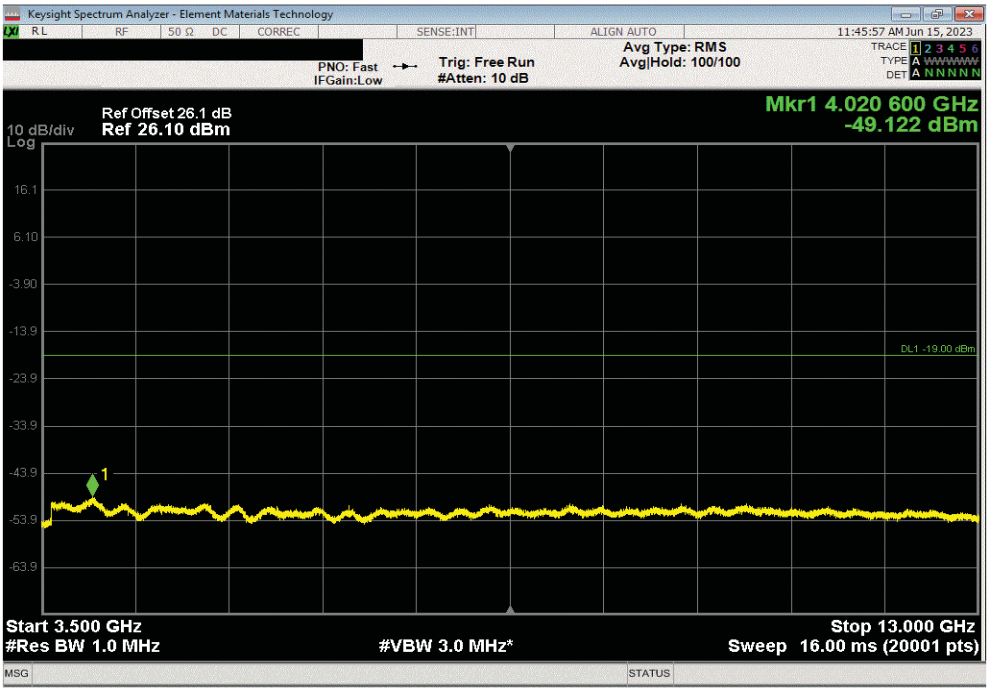


Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2224.36	-27.89	-19	Pass



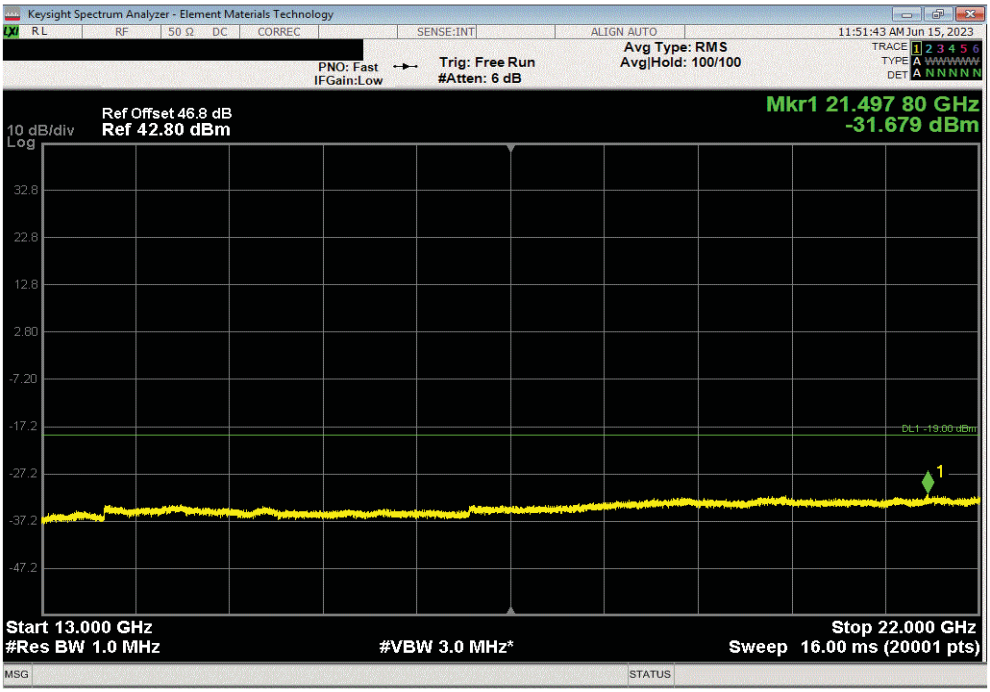
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	4020.6	-49.12	-19	Pass



Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21497.8	-31.68	-19	Pass



SPURIOUS CONDUCTED EMISSIONS - 30MHz

XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2023-02-09	2024-02-09
Block - DC	Fairview Microwave	SD3235-2148	ANF	2023-05-24	2024-05-24
Block - DC	Fairview Microwave	SD3379	AMM	2022-09-09	2023-09-09

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT through 4 different attenuation configurations which continues through to the RF input of the spectrum analyzer. Analyzer plots utilizing a resolution bandwidth called out by the client's test plan were made for each modulation type from 9 KHz to 22 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than the limits also called out by the client's test plan shown below.

The measurement methods are detailed in KDB971168 D01v03 section 6 and ANSI C63.26-2015.

Per FCC 2.1057(a)(1), the upper level of measurement is the 10th harmonic of the highest fundamental frequency.

These measurements are for frequency band after the first 1.0 MHz bands immediately outside and adjacent to the frequency block.

Per section FCC 24.238(a) and FCC 27.53 (h) (1), the power of any emission outside of the authorized operating frequency range cannot exceed -13sBm for a 1 MHz measurement bandwidth. The limit is adjusted To -19dBm [-13 dBm -10log (4)] per FCC KDB 662911D01v02r01 because the BTS may operate as a 4 port MIMO.

RF conducted emissions testing was performed on one port. The AHFIG antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in original certification report) and port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The limit for the 9kHz to 150kHz frequency range was adjusted to –49dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -49dBm = -19dBm -10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to –39dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 1MHz [i.e.: -39dBm = -19dBm -10log(1MHz/10kHz)]. The required limit of -19dBm with a RBW of > 1MHz was used for all other frequency ranges.

The spurious emission testing was performed using only one modulation type because the Occupied Bandwidth variation between modulation types is small, the average output power variation between modulation types is small, and there is significant passing. (See ANSI C63.26. clause 5.7.2e).

SPURIOUS CONDUCTED EMISSIONS - 30MHz

TbtTx 2022.05.02.0 XMit 2023.02.14.0

EUT:	AHFIG (FCC C2PC)			Work Order:	NOKI0053
Serial Number:	See Configuration			Date:	06/14/2023
Customer:	Nokia Solutions and Networks			Temperature:	21.7°C
Attendees:	John Rattanavong, Mitchell Hill			Humidity:	61.5%
Project:	None			Barometric Pres.:	1006 mbar
Tested by:	Brandon Hobbs	Power:	54 VDC	Job Site:	TX07

TEST SPECIFICATIONS	Test Method
FCC 24E:2023	ANSI C63.26:2015
FCC 27:2023	ANSI C63.26:2015

COMMENTS

NoneAll measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. The Band n25 carrier was enabled at maximum power (80 watts/carrier). The Band n66 carrier was enabled on the middle channel (2155MHz) at 40 watts with the same channel bandwidth and modulation type as the Band n25 carrier. The port power was set at the maximum level of 120 Watts [Band n25 carrier (80W) and Band n66 carrier (40W)].

DEVIATIONS FROM TEST STANDARD

None

Configuration #	
	NOKI0053-1
	NOKI0053-2
	NOKI0053-3
	NOKI0053-4

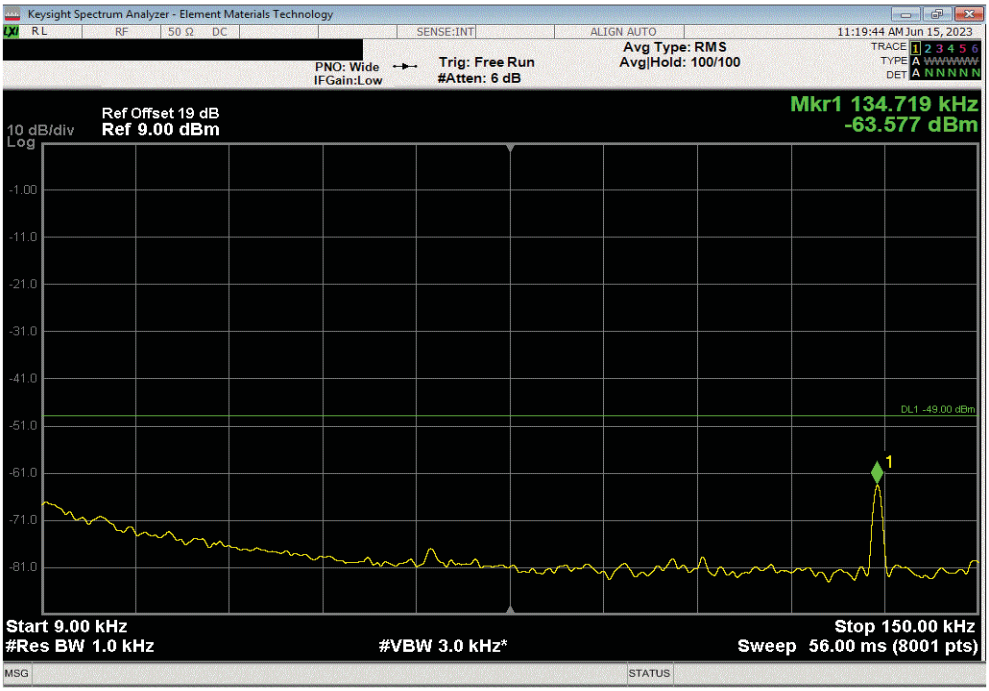
Signature

		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR						
Port 1						
30 MHz Bandwidth						
256-QAM Modulation						
	Mid Channels, 1962.5 MHz and 2155	9 kHz - 150 kHz	0.13	-63.6	-49	Pass
	Mid Channels, 1962.5 MHz and 2155	150 kHz - 20 MHz	8.70	-56.5	-39	Pass
	Mid Channels, 1962.5 MHz and 2155	20 MHz - 3.5 GHz	3168.10	-26.7	-19	Pass
	Mid Channels, 1962.5 MHz and 2155	1900 MHz - 2500 GHz	2228.13	-28.1	-19	Pass
	Mid Channels, 1962.5 MHz and 2155	3.5 GHz - 13 GHz	4033.43	-49.1	-19	Pass
	Mid Channels, 1962.5 MHz and 2155	13 GHz - 22 GHz	21581.05	-31.9	-19	Pass

SPURIOUS CONDUCTED EMISSIONS - 30MHz

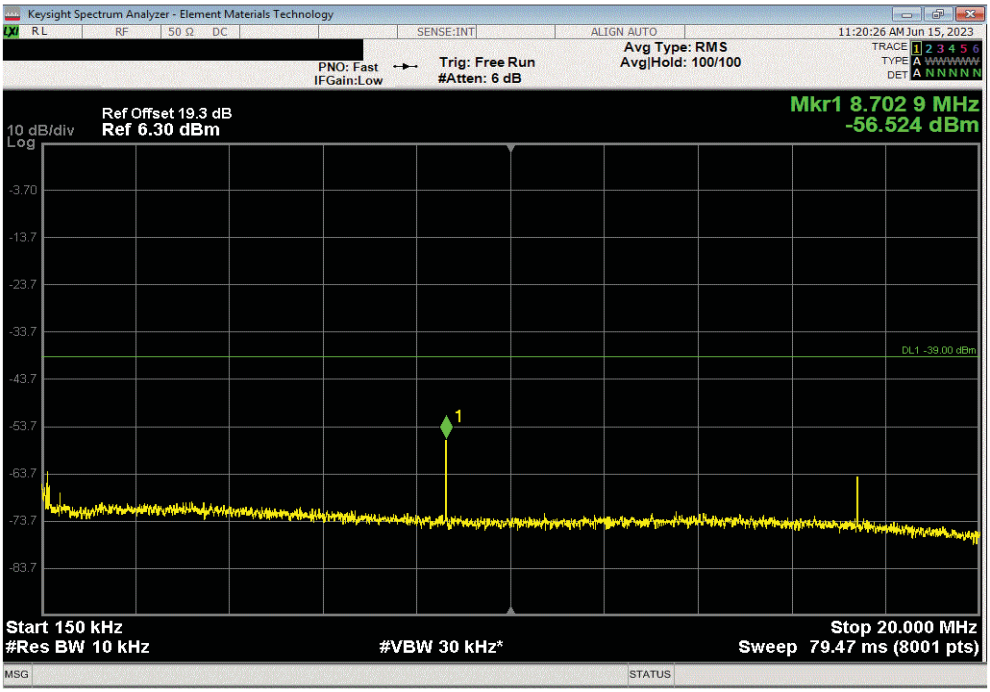
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
9 kHz - 150 kHz	0.13	-63.58	-49	Pass



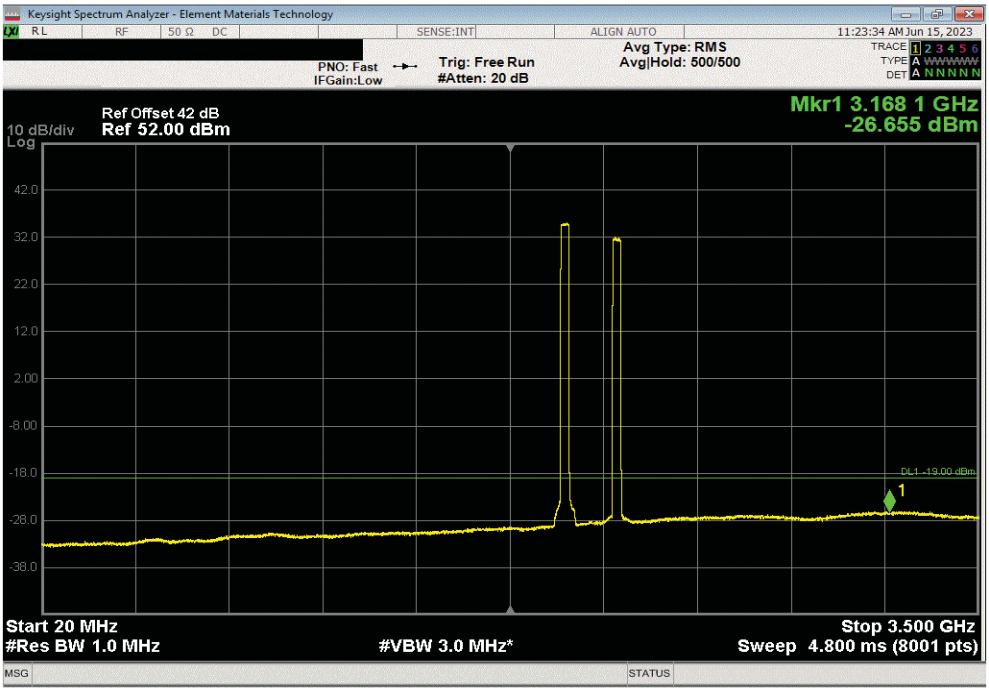
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
150 kHz - 20 MHz	8.7	-56.52	-39	Pass



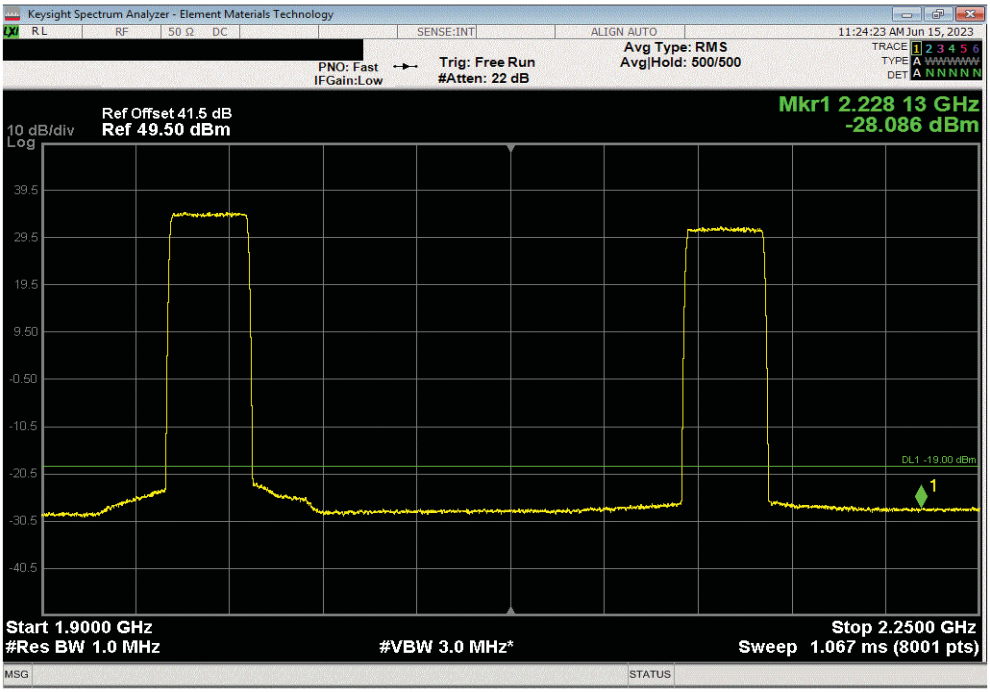
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
20 MHz - 3.5 GHz	3168.1	-26.66	-19	Pass



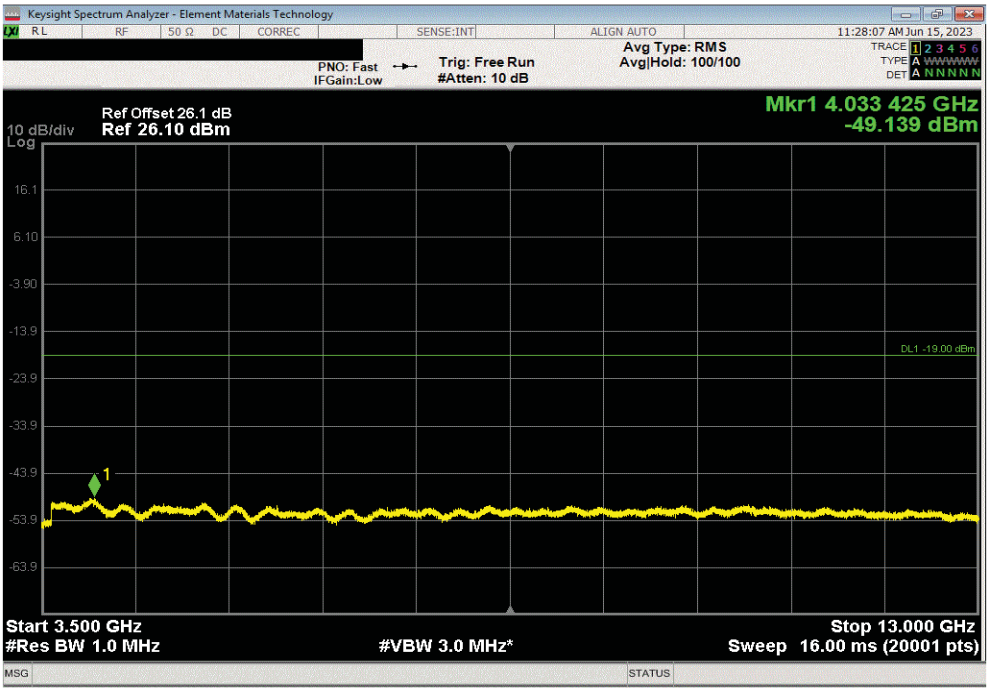
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
1900 MHz - 2500 GHz	2228.13	-28.09	-19	Pass



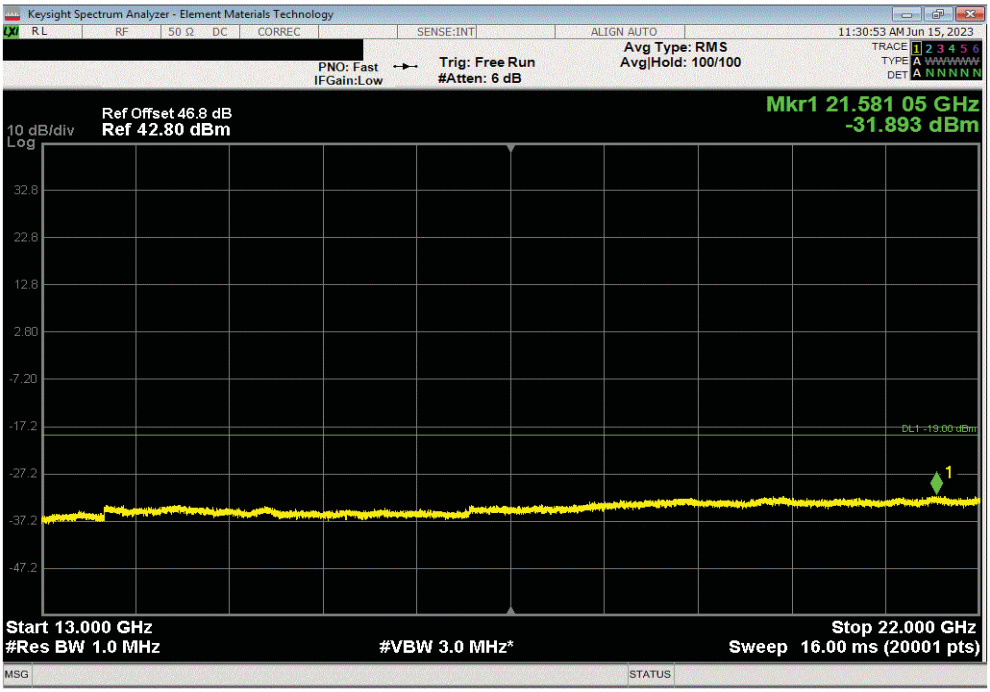
Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
3.5 GHz - 13 GHz	4033.43	-49.14	-19	Pass



Band n25 1930 MHz - 1995 MHz and n66 2110 MHz - 2200 MHz, 5G NR , Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channels, 1962.5 MHz and 2155 MHz

Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
13 GHz - 22 GHz	21581.05	-31.89	-19	Pass



End of Test Report