

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	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2022-09-13	2023-09-13

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) and RSS 133 6.5.1 (i). 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) and RSS 133 6.5.1 (i). 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 (AHFIB) as the original certification test. The AHFIB 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 4 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.

Report No. NOKI0056.0



					TbtTx 2022.05.02.0	XMit 2023.02
FIIT:	Airecalo Raso Transcoiv	er Station Remote Radio Head Model AHFIE	3	Work Order:		AMII 2023.02
Serial Number:		Ci Otation (Cinote Itaaio Ficad Model Airi I	,		03/17/23	
	Nokia of America Corpo	ration		Temperature:		
	David Le, Mitchel Hill			Humidity:		
Project:				Barometric Pres.:		
	Brandon Hobbs		Power: 54 VDC	Job Site:		
ST SPECIFICATI			Test Method	000 01101	17101	
C 24E:2023			ANSI C63.26:2015			
SS-133 Issue 6:20	013+A1·2018		ANSI C63.26:2015			
OMMENTS	710-741.2010		711401 000:20:2010			
	ath losses were account	ed for in the reference level offest including	any attenuators, filters and DC blocks. Band	d n25 carriers are enabled at maximum nowe	r (40 watts/carrier)	
ii iiieasureiiieiit p	atii iosses were accounte	ed for in the reference level offest including	any attenuators, inters and DC blocks. Dane	a 1125 carriers are enabled at maximum power	(40 Watts/Carrier)	•
EVIATIONS FROM	M TEST STANDARD					
one						
onfiguration #	NOKI0056-2	/-1	11			
		Signature				
		-	Frequency	Value	Limit	
			Range	(dBm)	(dBm)	Result
nd n25 1930 MHz	z - 1995 MHz, 5G NR					
	Port 4					
	25 MHz Ban	ndwidth				
		QPSK Modulation				
		Low Channel 1942.5 MHz	1	-20.46	-19	Pass
		Low Channel 1942.5 MHz	2	-27.23	-19	Pass
		Low Channel 1942.5 MHz	3	-26.99	-19	Pass
		High Channel 1982.5 MHz	1	-26.78	-19	Pass
		High Channel 1982.5 MHz	2	-23.94	-19	Pass
		High Channel 1982.5 MHz	3	-24.35	-19	Pass
		16-QAM Modulation				
		Low Channel 1942.5 MHz	1	-22.5	-19	Pass
		Low Channel 1942.5 MHz	2	-27.16	-19	Pass
		Low Channel 1942.5 MHz	3	-27.79	-19	Pass
		High Channel 1982.5 MHz	1	-26.96	-19	Pass
		High Channel 1982.5 MHz	2	-24.23	-19	Pass
		High Channel 1982.5 MHz	3	-23.92	-19	Pass
		64-QAM Modulation				
		Low Channel 1942.5 MHz	1	-20.5	-19	Pass
		Low Channel 1942.5 MHz	2	-27.05	-19	Pass
		Low Channel 1942.5 MHz	3	-27.45	-19	Pass
		High Channel 1982.5 MHz	1	-20.41	-19	Pass
		High Channel 1982.5 MHz	2	-24.78	-19	Pass
		High Channel 1982.5 MHz	3	-19.95	-19	Pass
		256-QAM Modulation				_
		Low Channel 1942.5 MHz	1	-21.95	-19	Pass
		Low Channel 1942.5 MHz	2	-27.03	-19	Pass
		Low Channel 1942.5 MHz	3	-27.18	-19	Pass
		High Channel 1982.5 MHz	1	-20.36	-19	Pass
			1 2 3	-20.36 -24.21 -24.5	-19 -19 -19	Pass Pass Pass

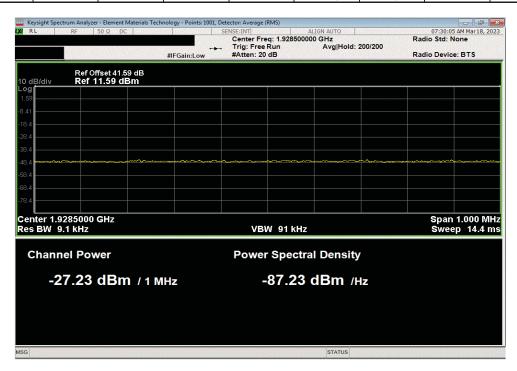
Report No. NOKI0056.0 54/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, QPSK Modulation, Low Channel 1942.5 MHz
Frequency Value Limit
Range (dBm) (dBm) Result
1 -20.46 -19 Pass



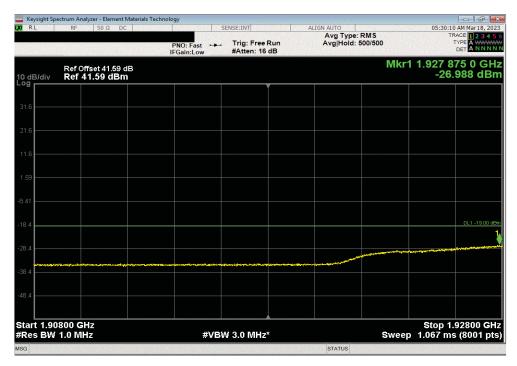
	Band n25 1930) MHz - 1995 MH:	z, 5G NR , Port 4,	25 MHz Bandwi	dth, QPSK Modul	lation, Low Chanı	nel 1942.5 MHz	
		Frequency			Value	Limit		
		Range			(dBm)	(dBm)	Result	
,	2				-27.23	-19	Pass	



Report No. NOKI0056.0 55/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, QPSK Modulation, Low Channel 1942.5 MHz
Frequency Value Limit
Range (dBm) (dBm) Result
3 -26.99 -19 Pass



Band n25 1930	MHz - 1995 MHz	z, 5G NR , Port 4,	25 MHz Bandwi	dth, QPSK Modul	ation, High Chan	nel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-26.78	-19	Pass	



Report No. NOKI0056.0 56/105

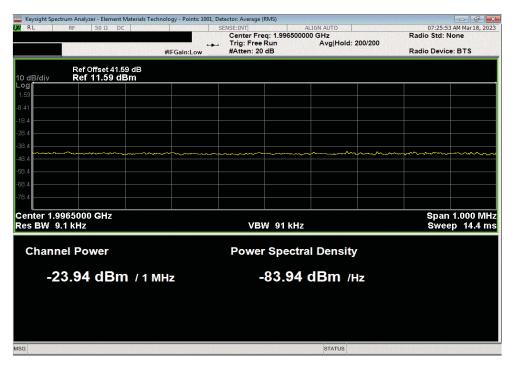


 Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, QPSK Modulation, High Channel 1982.5 MHz

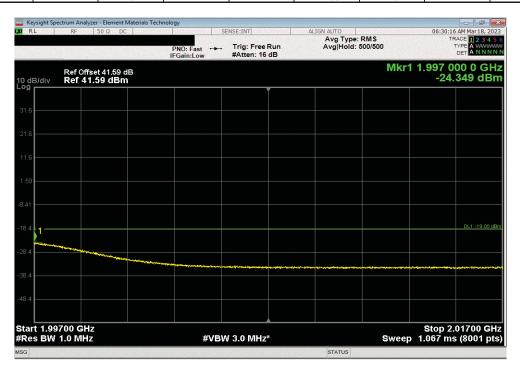
 Frequency
 Value
 Limit

 Range
 (dBm)
 (dBm)
 Result

 2
 -23.94
 -19
 Pass



Band n25 1930	MHz - 1995 MHz	z, 5G NR , Port 4,	25 MHz Bandwi	dth, QPSK Modul	ation, High Chan	nel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
3				-24.35	-19	Pass	



Report No. NOKI0056.0 57/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, Low Channel 1942.5 MHz

Frequency

Range

(dBm)

(dBm)

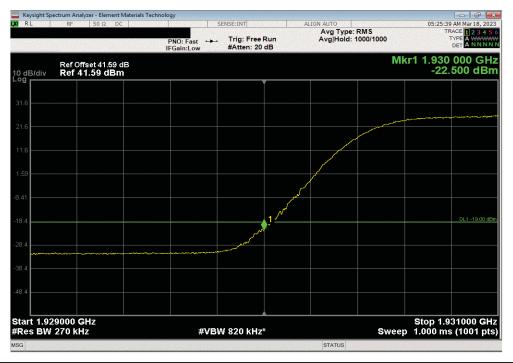
Result

1

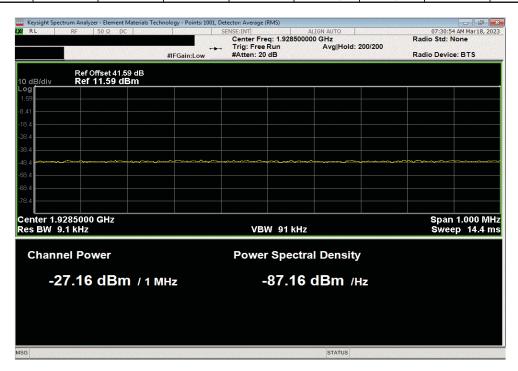
-22.5

-19

Pass



Band n25 1930	MHz - 1995 MHz	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	ulation, Low Char	nnel 1942.5 MHz
	Frequency			Value	Limit	
	Range			(dBm)	(dBm)	Result
	2			-2.72E+01	-19	Pass

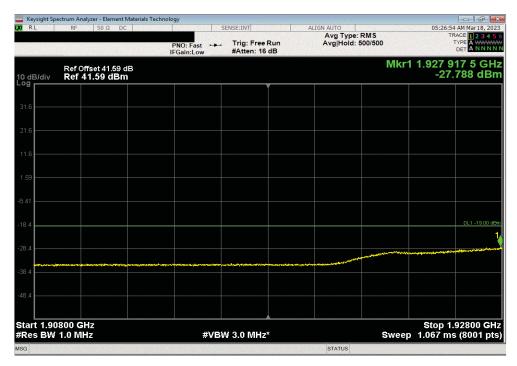


Report No. NOKI0056.0 58/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, Low Channel 1942.5 MHz

Frequency
Range
(dBm)
(dBm)
Result
-27.79
-19
Pass



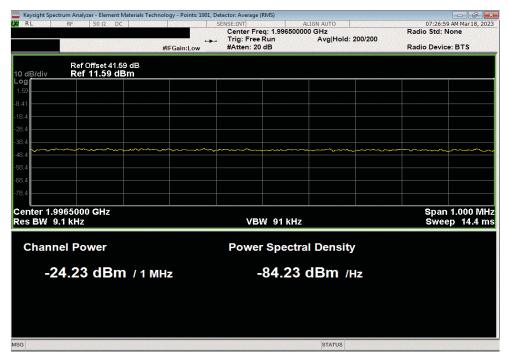
Band n25 1930	MHz - 1995 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	ılation, High Char	nnel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-26.96	-19	Pass	



Report No. NOKI0056.0 59/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, High Channel 1982.5 MHz
Frequency
Value Limit
Range (dBm) (dBm) Result
2 -24.23 -19 Pass



	Band n25 1930	MHz - 1995 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	llation, High Char	nnel 1982.5 MHz	
		Frequency			Value	Limit		
_		Range			(dBm)	(dBm)	Result	
		3			-23.92	-19	Pass	

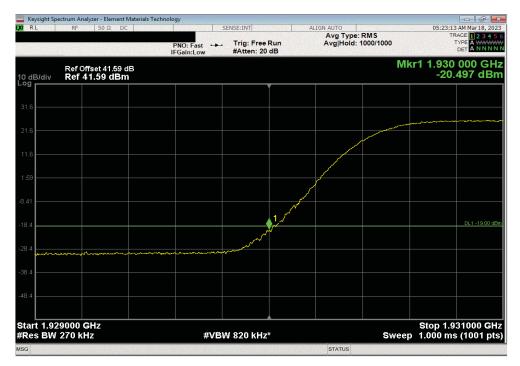


Report No. NOKI0056.0 60/105

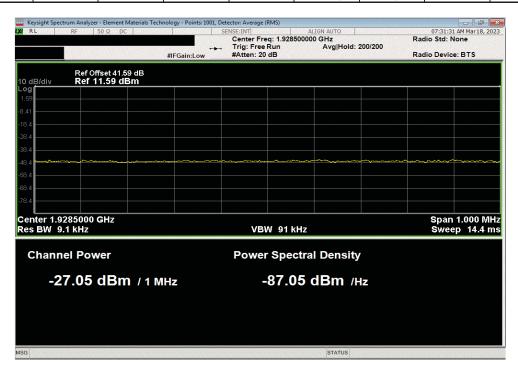


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, Low Channel 1942.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
1
-20.5
-19
Pass



	Band n25 1930	MHz - 1995 MHz	5G NR , Port 4, :	25 MHz Bandwid	th, 64-QAM Modu	ulation, Low Char	nel 1942.5 MHz	
		Frequency			Value	Limit		
_		Range			(dBm)	(dBm)	Result	
ſ		2			-2.71E+01	-19	Pass	



Report No. NOKI0056.0 61/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, Low Channel 1942.5 MHz

Frequency

Range

(dBm)

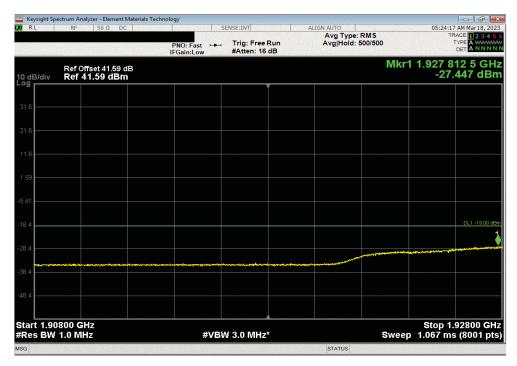
(dBm)

Result

-27.45

-19

Pass



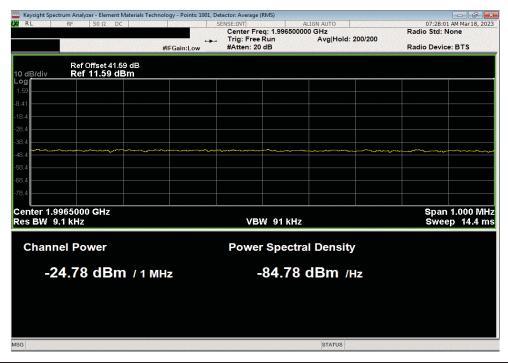
Band n25 1930	MHz - 1995 MHz,	5G NR , Port 1, 2	25 MHz Bandwid	th, 64-QAM Modu	ılation, High Char	nel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-20.41	-19	Pass	



Report No. NOKI0056.0 62/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, High Channel 1982.5 MHz
Frequency
Range
(dBm)
(dBm)
Result
2
-24.78
-19
Pass



Band n25 1930	MHz - 1995 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 64-QAM Modu	ulation, High Cha	nnel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	3			-19.95	-19	Pass	



Report No. NOKI0056.0 63/105



 Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz

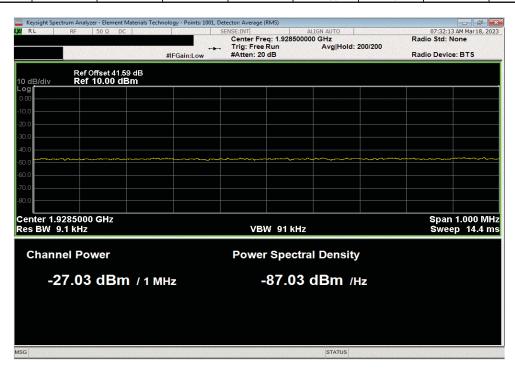
 Frequency
 Value
 Limit

 Range
 (dBm)
 (dBm)
 Result

 1
 -21.95
 -19
 Pass



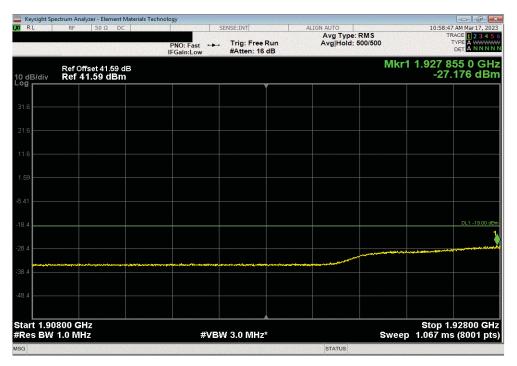
Band n25 1930 N	MHz - 1995 MHz,	5G NR, Port 4, 2	25 MHz Bandwidt	h, 256-QAM Mod	ulation, Low Cha	nnel 1942.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	2			-27.03	-19	Pass	



Report No. NOKI0056.0 64/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz
Frequency Value Limit
Range (dBm) (dBm) Result
3 -27.18 -19 Pass



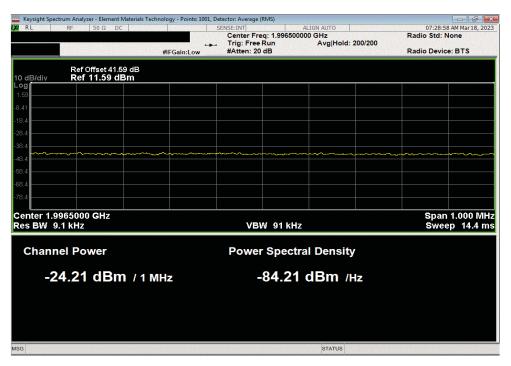
Band n25 1930 N	ИНz - 1995 МНz,	5G NR , Port 4, 2	5 MHz Bandwidt	h, 256-QAM Mod	ulation, High Cha	nnel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-20.36	-19	Pass	



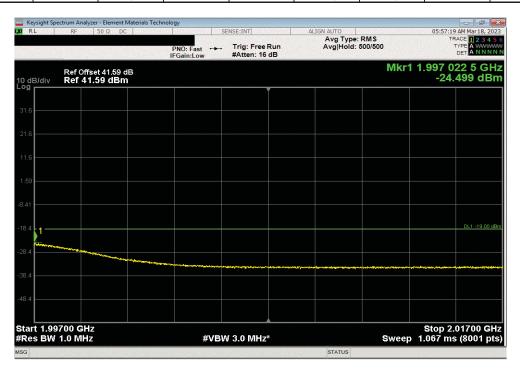
Report No. NOKI0056.0 65/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz
Frequency Value Limit
Range (dBm) (dBm) Result
2 -24.21 -19 Pass



Band n25 1930 N	MHz - 1995 MHz,	5G NR, Port 4, 2	25 MHz Bandwidt	h, 256-QAM Mod	ulation, High Cha	nnel 1982.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	3			-24.5	-19	Pass	



Report No. NOKI0056.0 66/105



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	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2022-09-13	2023-09-13

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 27.53(h) and RSS-139 6.6 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 27.53(h) and RSS-139 6.6 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 (AHFIB) as the original certification test. The AHFIB 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 4 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.

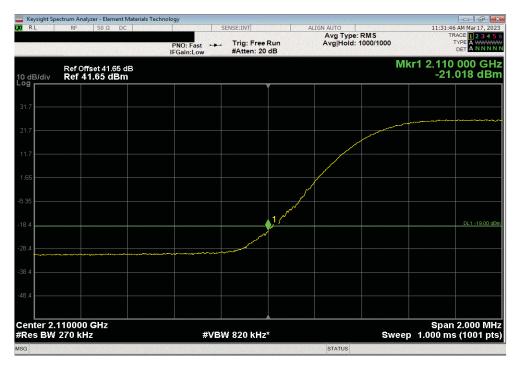
Report No. NOKI0056.0



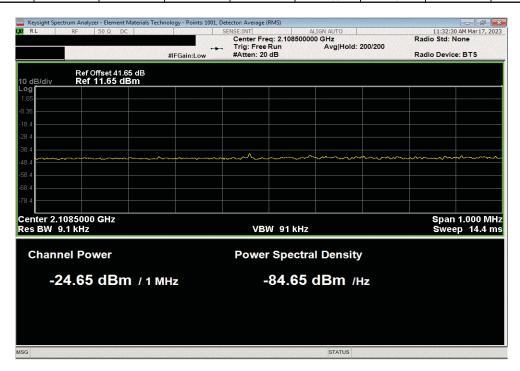
EUT: Airscale Base Transceiver Station Remote Radio Head Model AHFIB
Serial Number: K9181401111
Customer: Nokia of America Corporation
Attendees: David Le, Mitchel Hill
Penetry Noke Work Order: NOKI0056 Date: 03/17/23 Temperature: 23.5°C Humidity: 27%
Barometric Pres.: 991.1 mbar Project: None
Tested by: Brandon Hobbs
TEST SPECIFICATIONS Power: 54 VDC
Test Method Job Site: TX07 FCC 27:2023 RSS-139 Issue 4:2022 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 as maximum power (40 watts/carrier). DEVIATIONS FROM TEST STANDARD Configuration # NOKI0056-2 Limit (dBm) Result Range (dBm) Band n66 2110 MHz - 2200 MHz, 5G NR Port 4 25 MHz Bandwidth **QPSK Modulation** Low Channel 2122.5 MHz -21.02 -19 Pass Low Channel 2122.5 MHz Low Channel 2122.5 MHz 2 -19 -19 Pass Pass -24.65 -27.01 High Channel 2187.5 MHz High Channel 2187.5 MHz -24.03 -20.06 -19 -19 Pass Pass High Channel 2187.5 MHz 16-QAM Modulation -20.24 -19 Pass Low Channel 2122.5 MHz Low Channel 2122.5 MHz -19 -19 -20.01 Pass -26.49 Pass Low Channel 2122.5 MHz -25 93 -19 Pass High Channel 2187.5 MHz -24.45 -19 Pass High Channel 2187.5 MHz High Channel 2187.5 MHz -19.95 -19 Pass -19 -20.36 Pass 64-QAM Modulation Low Channel 2122.5 MHz -20.52 -19 Pass Low Channel 2122.5 MHz Low Channel 2122.5 MHz Pass Pass -26.31 -19 -27.24 -19 High Channel 2187.5 MHz High Channel 2187.5 MHz -24.47 -19 Pass -20.03 -19 Pass High Channel 2187.5 MHz -20 66 -19 Pass 256-QAM Modulation Low Channel 2122.5 MHz Low Channel 2122.5 MHz -20.43 -19 Pass -26.21 -19 Pass Low Channel 2122.5 MHz High Channel 2187.5 MHz -24.15 -24.17 -19 -19 Pass Pass High Channel 2187.5 MHz High Channel 2187.5 MHz -10 -19 -20.20 Pass Pass

Report No. NOKI0056.0 68/105



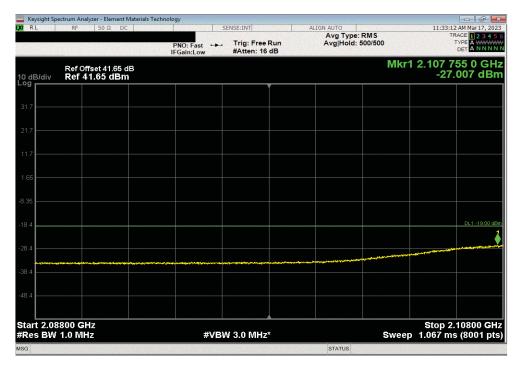


	Band n66 2110) MHz - 2200 MH:	z, 5G NR , Port 4	, 25 MHz Bandwi	dth, QPSK Modul	lation, Low Chanı	nel 2122.5 MHz	
		Frequency			Value	Limit		
_		Range			(dBm)	(dBm)	Result	
ſ		2			-24.65	-19	Pass	



Report No. NOKI0056.0 69/105



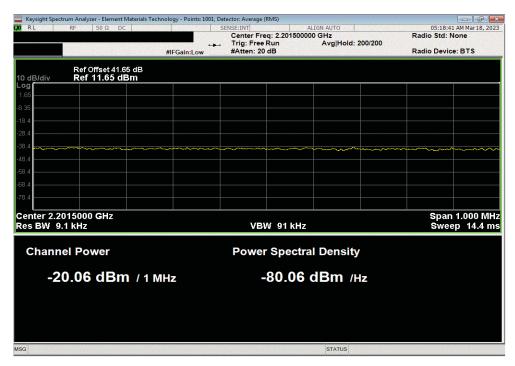


Band n66 2110	MHz - 2200 MHz	z, 5G NR , Port 4,	25 MHz Bandwi	dth, QPSK Modul	ation, High Chan	nel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-24.03	-19	Pass	

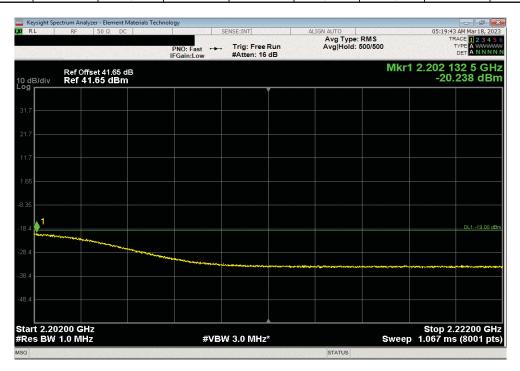


Report No. NOKI0056.0 70/105





Band n66 2110	MHz - 2200 MHz	z, 5G NR , Port 4,	25 MHz Bandwid	dth, QPSK Modul	ation, High Chani	nel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	3			-20.24	-19	Pass	

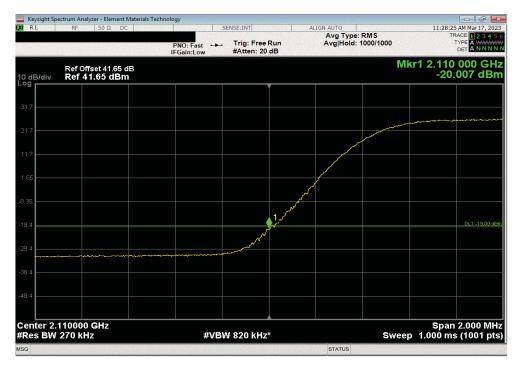


Report No. NOKI0056.0 71/105

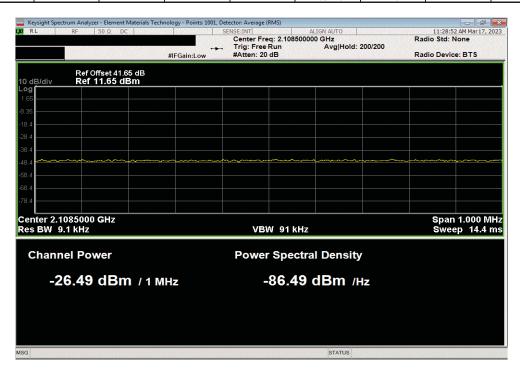


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, Low Channel 2122.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
-20.01
-19
Pass



	Band n66 2110	MHz - 2200 MHz	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	ulation, Low Char	nel 2122.5 MHz
		Frequency			Value	Limit	
_		Range			(dBm)	(dBm)	Result
l [2			-2.65E+01	-19	Pass



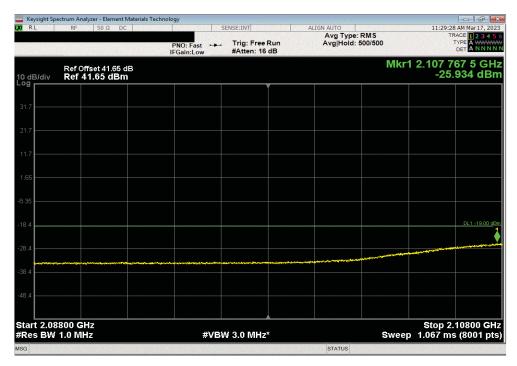
Report No. NOKI0056.0 72/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, Low Channel 2122.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result

3
-25.93
-19
Pass



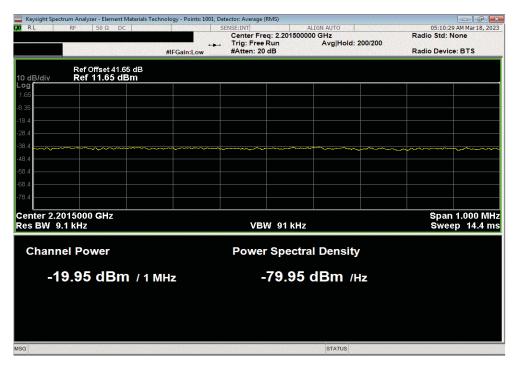
	Band n66 2110	MHz - 2200 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	ılation, High Chai	nnel 2187.5 MHz	
		Frequency			Value	Limit		
		Range			(dBm)	(dBm)	Result	
,		1			-24.45	-19	Pass	



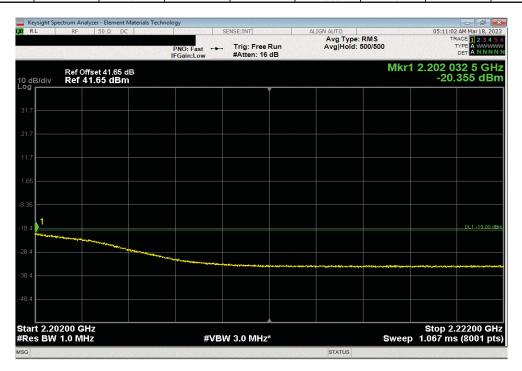
Report No. NOKI0056.0 73/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, High Channel 2187.5 MHz
Frequency
Range
(dBm)
(dBm)
Result
2
-19.95
-19
Pass



	Band n66 2110	MHz - 2200 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 16-QAM Modu	ılation, High Chaı	nnel 2187.5 MHz	
		Frequency			Value	Limit		
l .		Range			(dBm)	(dBm)	Result	
		3			-20.36	-19	Pass	

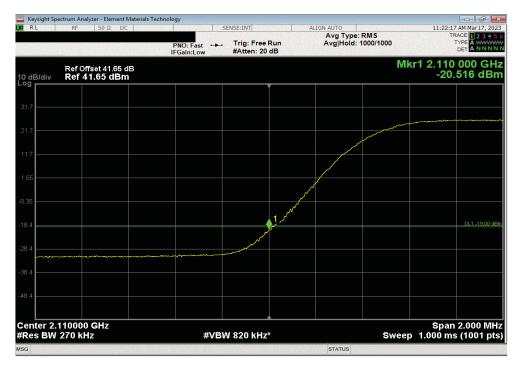


Report No. NOKI0056.0 74/105

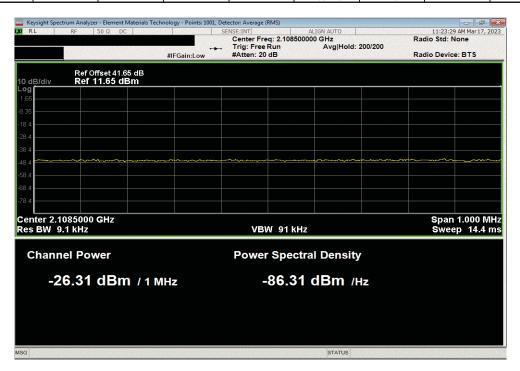


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, Low Channel 2122.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
1
-20.52
-19
Pass



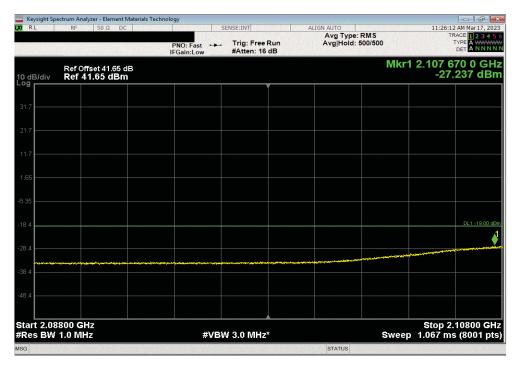
	Band n66 2110	MHz - 2200 MHz	5G NR , Port 4, :	25 MHz Bandwid	th, 64-QAM Modu	ulation, Low Char	nel 2122.5 MHz	
		Frequency			Value	Limit		
_		Range			(dBm)	(dBm)	Result	
I	·	2			-2.63E+01	-19	Pass	



Report No. NOKI0056.0 75/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, Low Channel 2122.5 MHz
Frequency
Range
(dBm)
(dBm)
Result
3
-27.24
-19
Pass



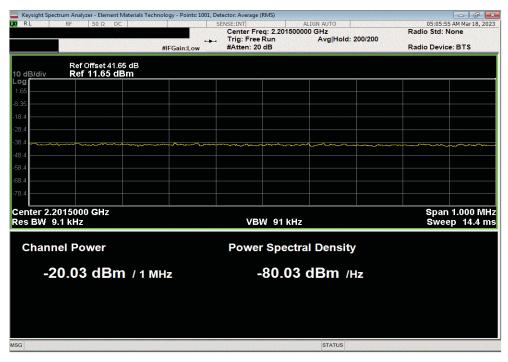
Band n66 2110	MHz - 2200 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 64-QAM Modu	ılation, High Char	nnel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-24.47	-19	Pass	



Report No. NOKI0056.0 76/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 64-QAM Modulation, High Channel 2187.5 MHz
Frequency
Range
(dBm)
(dBm)
Result
2
-20.03
-19
Pass



Band n66 2110	MHz - 2200 MHz,	5G NR , Port 4, 2	25 MHz Bandwid	th, 64-QAM Modu	ılation, High Char	nnel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	3			-20.66	-19	Pass	

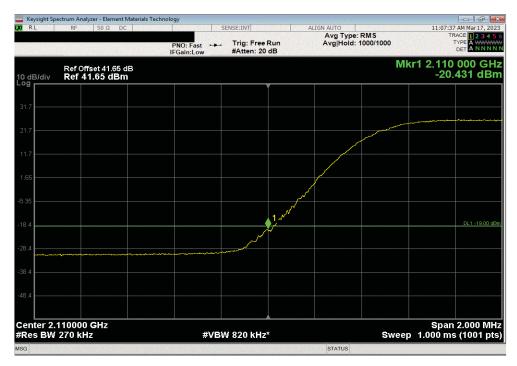


Report No. NOKI0056.0 77/105

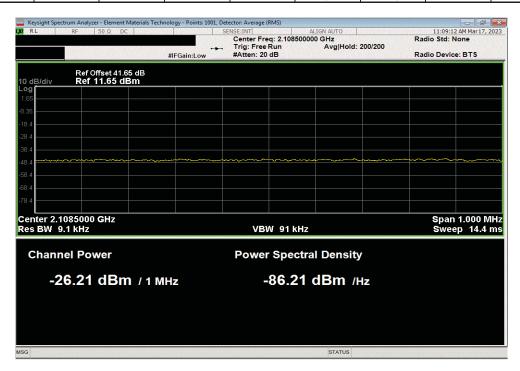


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
1
-20.43
-19
Pass



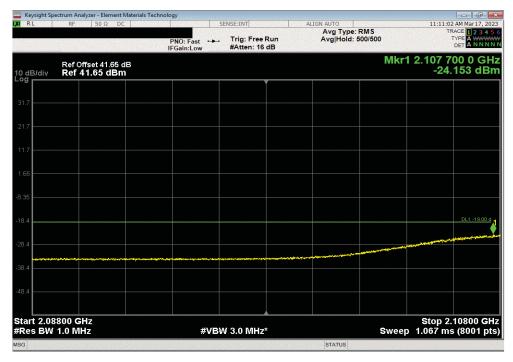
Band n66 2110 N	MHz - 2200 MHz,	5G NR, Port 4, 2	25 MHz Bandwidt	h, 256-QAM Mod	lulation, Low Cha	nnel 2122.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	2			-26.21	-19	Pass	



Report No. NOKI0056.0 78/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 2122.5 MHz
Frequency Value Limit
Range (dBm) (dBm) Result
3 -24.15 -19 Pass



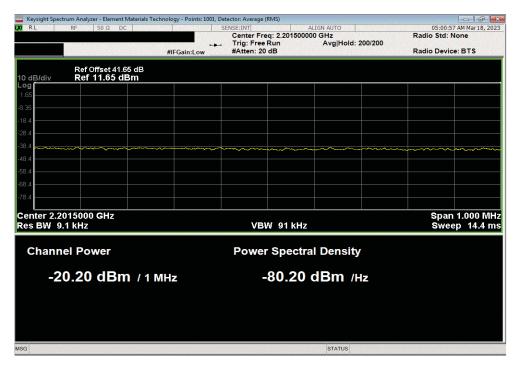
Band n66 2110 N	//Hz - 2200 MHz,	5G NR , Port 4, 2	5 MHz Bandwidt	h, 256-QAM Mod	ulation, High Cha	nnel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	1			-24.17	-19	Pass	



Report No. NOKI0056.0 79/105



Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 2187.5 MHz
Frequency
Range
(dBm)
(dBm)
Result
2
-20.20
-10
Pass



Band n66 2110 N	//Hz - 2200 MHz,	5G NR , Port 4, 2	5 MHz Bandwidt	h, 256-QAM Mod	ulation, High Cha	nnel 2187.5 MHz	
	Frequency			Value	Limit		
	Range			(dBm)	(dBm)	Result	
	3			-20.67	-19	Pass	



Report No. NOKI0056.0 80/105



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	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2022-09-13	2023-09-13

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission power spectral density was measured using the channels and modes as called out on the following data sheets.

The method of ANSI C63.26-2015 section 5.2.4.5 was used to make this measurement.

The total PSD for all antenna ports (at the radio output) were determined per ANSI C63.26-2015 paragraph 6.4.3.2.4. The EIRP calculations are based upon ANSI C63.26-2015 paragraphs 6.4 for a four port MIMO base station.

EIRP Requirements:

FCC Requirements: Part 24.232 Power and antenna height limits.

(a)(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below. (a)(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; see Tables 1 and 2 of this section.

(b)(2) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

ISED Requirements RSS-133 Section 6.4/SRSP-510 section 5.1.1: SRSP-510 section 5.1 Radiated power and antenna height limits for base stations

For base stations with a channel bandwidth greater than 1 MHz, the maximum e.i.r.p. is limited to 3280 watts/MHz e.i.r.p. (i.e., no more than 3280 watts e.i.r.p. in any 1 MHz band segment) with an antenna height above average terrain (HAAT) up to 300 meters. Fixed or base stations operating in urban areas are limited to a maximum allowable e.i.r.p. of 1640 watts/MHz e.i.r.p. Base station antenna heights above average terrain may exceed 300 meters with a corresponding reduction in e.i.r.p. according to the following table.

RF conducted emissions testing was performed on one port. The testing was performed on the same version of hardware (AHFIB) as the original certification test. The AHFIB 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 4 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.

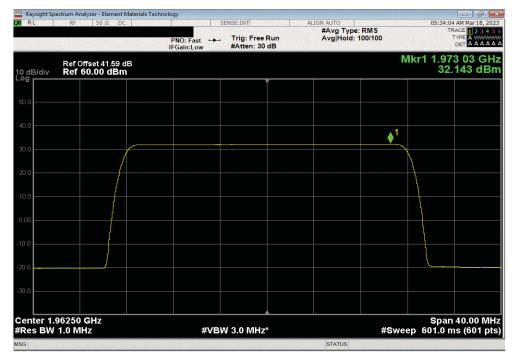


								XMit 2023.02.14	
EUI:	Airscale Base Transceiv	er Station Remote Radio Head Model A	HFIB			Work Order:			
Serial Number:	K9181401111					Date:	03/17/2023		
Customer:	Nokia of America Corpo	ration				Temperature:	22.8°C		
Attendees:	David Le, Mitchel Hill				Humidity: 49.2%				
Project:					Barometric Pres.: 990.3 mbar				
	Brandon Hobbs		Power: 54 VDC			Job Site:	TX07		
TEST SPECIFICATI	IONS		Test Method						
CC 24E:2023			ANSI C63.26:2015						
RSS-133 Issue 6:20)13+A1:2018		ANSI C63.26:2015						
COMMENTS			<u> </u>						
Il measurement pa	ath losses were account	ed for in the reference level offest include	ding any attenuators, filters and DC	blocks. Band n	25 carriers are enal	oled at maximum power	(40 watts/carrier). Power \$	Spectral	
		ting one carrier on Port 4. The PSD for							
		ver +3 dB [i.e. 10*log(2)]. The total powe							
	TEST STANDARD	[,	_ [
None	I IESI SIANDARD								
ione	1	1							
Configuration #	NOKI0056-2		2 /1 1						
		Signature							
		Signature	Initial Value	Duty Cycle	Singel Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
		Signature	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Singel Port dBm/MHz==PSD	Two Port (2x2 MIMO) dBm/MHz==PSD	Four Port (4x4 MIMO) dBm/MHz==PSD		
and n25 1930 MHz	: - 1995 MHz, 5G NR	Signature							
	: - 1995 MHz, 5G NR Port 4	Signature							
	Port 4								
	Port 4	dwidth							
	Port 4	dwidth QPSK Modulation	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz 16-QAM Modulation	dBm/MHz 32.143	Factor (dB)	32.143	dBm/MHz==PSD 32.143	dBm/MHz==PSD		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz 16-QAM Modulation Mid Channel 1962.5 MHz	dBm/MHz 32.143	Factor (dB)	32.143	dBm/MHz==PSD 32.143	dBm/MHz==PSD		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz 16-QAM Modulation Mid Channel 1962.5 MHz 64-QAM Modulation	dBm/MHz 32.143 33.532	Pactor (dB)	32.143 33.532	32.143 33.532	dBm/MHz==PSD 32.143 33.532		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz 16-QAM Modulation Mid Channel 1962.5 MHz 64-QAM Modulation Mid Channel 1962.5 MHz	dBm/MHz 32.143 33.532	Pactor (dB)	32.143 33.532	32.143 33.532	dBm/MHz==PSD 32.143 33.532		
	Port 4	dwidth QPSK Modulation Mid Channel 1962.5 MHz 16-QAM Modulation Mid Channel 1962.5 MHz 64-QAM Modulation Mid Channel 1962.5 MHz 256-QAM Modulation	32.143 33.532 32.126	0 0	32.143 33.532 32.126	32.143 33.532 32.126	32.143 33.532 32.126		

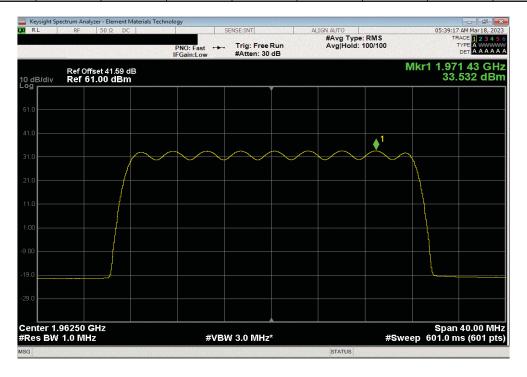
Report No. NOKI0056.0 82/105



ı	Band n25 19	30 MHz - 1995 MH	lz, 5G NR, Port 4	, 25 MHz Bandw	idth, QPSK Modu	lation, Mid Chanr	nel 1962.5 MHz	
ı		Initial Value	Duty Cycle	Singel Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
ı		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
١		32.143	0	32.143	32.143	32.143		



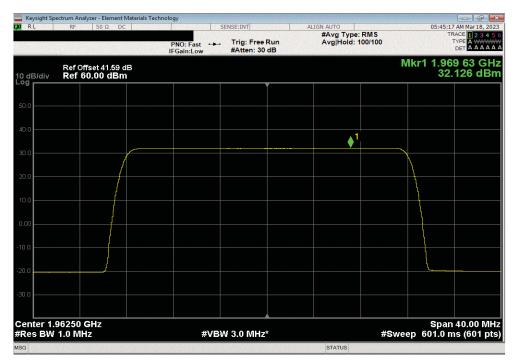
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1962.5 MHz							
	Initial Value	Duty Cycle	Singel Port	o Port (2x2 MIM	ur Port (4x4 MIN		
	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
	33.532	0	33.532	33.532	33.532		



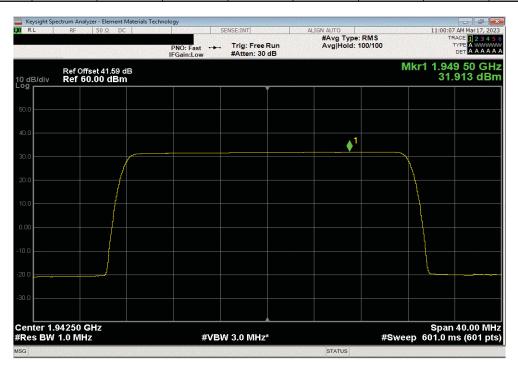
Report No. NOKI0056.0 83/105



ı	Band n25 1930	MHz - 1995 MHz	, 5G NR , Port 4,	25 MHz Bandwid	dth, 64-QAM Mod	ulation, Mid Char	nel 1962.5 MHz	
I		Initial Value	Duty Cycle	Singel Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
ı		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
ı		32.126	0	32.126	32.126	32.126		



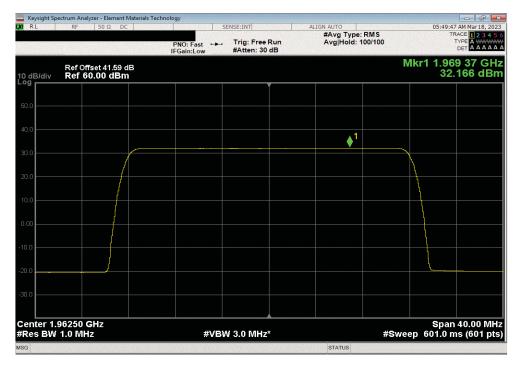
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Low Channel 1942.5 MHz							
	Initial Value	Duty Cycle	Singel Port	o Port (2x2 MIM	ur Port (4x4 MIN		
	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSC	dBm/MHz==PSD		_
	31.913	0	31.913	31.913	31.913		



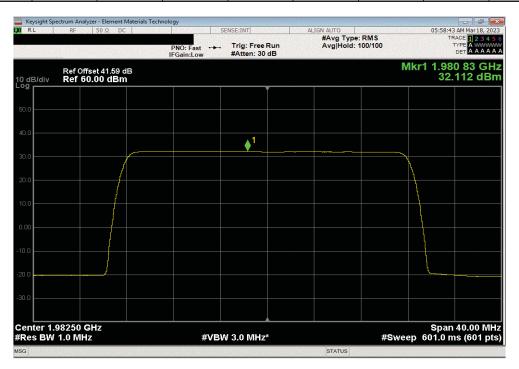
Report No. NOKI0056.0 84/105



_								
ı	Band n25 19	30 MHz - 1995 MHz,	5G NR , Port 4, 1	25 MHz Bandwid	Ith, 256-QAM Mod	lulation, Mid Chan	nel 1962.5 MHz	
ı		Initial Value	Duty Cycle	Singel Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
ı		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
L		32.166	0	32.166	32.166	32.166		



	Band n25 1930 MHz - 1995 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, High Channel 1982.5 MHz							
		Initial Value	Duty Cycle	Singel Port	o Port (2x2 MIM	ur Port (4x4 MIN		
1		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
1		32.112	0	32.112	32.112	32.112		



Report No. NOKI0056.0 85/105



TbtTx 2022.05.02.0 XMit 2023.0

EIRP Calculations for Four Port MIMO Operations for Band n25 Single NR Carriers

EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon Kathrein antenna assembly model "80011867". The maximum Band n25 gain (17.9dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n25. The four antenna RF inputs (used for Band n25) on the antenna assembly are as follows: Y1+ L5 (+45°), Y1- L6 (-45°), Y2+ R7 (+45°) and Y2- R8 (-45°). Four AHFII transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent (will not be 0 dB) but for this worst case EIRP calculation 0 dB was used. Calculations of worst-case EIRP for four port MIMO are as follows:

Parameter	25 MHz Ch BW
Worst Case PSD/Antenna Port	33.5dBm/MHz
Number of Ant Ports per Polarization	2
Total PSD per Polarization 10*Log (2) = +3	36.5
Cable Loss (site dependent)	0 dB
Dir Gain = Maximum Antenna Gain (GAnt) See Note 1	17.9 dBi
EIRP per Polarization	54.4dBm/MHz or 275.4 Watts/MHz
Number of Polarizations	2
EIRP Total = Y1 ± 45°and Y2 ± 45° See Note 2	54.4dBm/MHz or 275.4 Watts/MHz
Passing FCC and ISED EIRP Limits	62.15 & 65.16 dBm/MHz

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.

Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

EIRP Calculation Summary

The worst case AHFIB four port MIMO Band n25 EIRP levels using antenna assembly model "80011867" are: Less than the FCC and ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 25MHz channel bandwidths. Less than the FCC and ISED (1640 W/MHz or 62.15 dBm/MHz) EIRP Regulatory Limits for 25MHz channel bandwidths.



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	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1648	TZW	2022-09-13	2023-09-13

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission power spectral density was measured using the channels and modes as called out on the following data sheets.

The method of ANSI C63.26-2015 section 5.2.4.5 was used to make this measurement.

RF conducted emissions testing was performed on one port. The testing was performed on the same version of hardware (AHFIB) as the original certification test. The AHFIB 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 4 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 total PSD for all antenna ports (at the radio output) were determined per ANSI C63.26-2015 paragraph 6.4.3.2.4. The EIRP calculations are based upon ANSI C63.26-2015 paragraphs 6.4 for a four port MIMO base station.

EIRP Requirements:

FCC Requirements:

27.50(d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:

- (1) The power of each fixed or base station transmitting in the 1995-2000 MHz, 2110-2155 MHz, 2155-2180 MHz or 2180-2200 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to:
- (ii) An EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
- (2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
- (ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

ISED Requirements:

RSS-139 Issue 4 September 29, 2022. Section 5.5 SRSP-513 Issue 4 September 29, 2022. Section 6.1. E.i.r.p. limits and antenna height limits for non-AAS systems Sub-section 6.1.3. paragraph 21 and 22. 21. For fixed and base stations operating in the band 2110-2180 MHz with a channel bandwidth greater than 1 MHz, the maximum permissible e.i.r.p. is 62 dBm/MHz (i.e. no more than 62 dBm e.i.r.p. in any 1 MHz band segment), with an antenna HAAT of up to 300 m. 22. Fixed and base stations operating in the band 2110-2180 MHz and located in geographic areas at a distance greater than 26 km from large or medium population centers may increase their e.i.r.p. to a maximum of 65 dBm/MHz (i.e. no more than 65 dBm e.i.r.p. in any 1 MHz band segment), with an antenna HAAT of up to 300 m.

SRSP 519 Issue 4 September 29, 2022. Section 6.1 Radiated power and antenna height limits for base stations using non-AAS systems. Sub-section 6.1.3. paragraph 22 and 23. 22. For base stations operating in the bands 2000-2020 MHz and 2180-2200 MHz with an antenna HAAT of up to 300 m, the e.i.r.p. shall not exceed 62 dBm/MHz when transmitting with an emission bandwidth greater than 1 MHz. 23. Base stations located in geographic areas at a distance greater than 26 km from large or medium population centers may increase their e.i.r.p. to a maximum of 65 dBm when transmitting with an emission bandwidth of 1 MHz or less, and 65 dBm/MHz when transmitting with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

Report No. NOKI0056.0



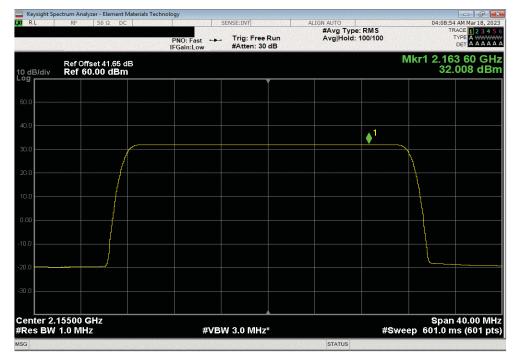
		er Station Remote Radio Head Model	AHFIB				Work Order:	
Serial Number:								03/17/2023
	Nokia of America Corpo	ration					Temperature:	
	David Le, Mitchel Hill						Humidity:	
Project:							Barometric Pres.:	
	Brandon Hobbs		Power:				Job Site:	TX07
EST SPECIFICATI	IONS			Test Method				
CC 27:2023				ANSI C63.26:2015				
SS-139 Issue 4:20	022			ANSI C63.26:2015				
OMMENTS								
ensity (PSD) was	measured while transmit	ed for in the reference level offest incluting one carrier on Port 4. The PSD for	r multiport (2x2 MIN	MO, 4x4 MIMO) op	eration was de	termined based upo		
	• 1 1	ver +3 dB [i.e. 10*log(2)]. The total pow	er for four port ope	erations is single p	ort power +6 d	B [i.e. 10*log(4)].		
	M TEST STANDARD							
lone								
Configuration #	NOKI0056-2	Signature	7-7	Jan				
	NOKI0056-2	Signature	7-4	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/MHz==PSD	Two Port (2x2 MIMO) dBm/MHz==PSD	Four Port (4x4 MIMO) dBm/MHz==PSD
onfiguration #	NOKI0056-2 z - 2200 MHz, 5G NR	Signature	7-7					
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4							
onfiguration #	z - 2200 MHz, 5G NR							
onfiguration #	z - 2200 MHz, 5G NR Port 4	dwidth						
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation		32.008	Factor (dB)	32.008	dBm/MHz==PSD	dBm/MHz==PSD
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation Mid Channel 2155 MHz		32.008	Factor (dB)	32.008	dBm/MHz==PSD	dBm/MHz==PSD
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation Mid Channel 2155 MHz 64-QAM Modulation		32.008 33.426	O 0	32.008 33.426	32.008 33.426	dBm/MHz==PSD 32.008 33.426
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation Mid Channel 2155 MHz 64-QAM Modulation Mid Channel 2155 MHz		32.008 33.426	O 0	32.008 33.426	32.008 33.426	dBm/MHz==PSD 32.008 33.426
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation Mid Channel 2155 MHz 64-QAM Modulation Mid Channel 2155 MHz 256-QAM Modulation		32.008 33.426 32.181	0 0 0	32.008 33.426 32.181	32.008 33.426 32.181	32.008 33.426 32.181
onfiguration # and n66 2110 MHz	z - 2200 MHz, 5G NR Port 4	dwidth QPSK Modulation Mid Channel 2155 MHz 16-QAM Modulation Mid Channel 2155 MHz 64-QAM Modulation Mid Channel 2155 MHz 256-QAM Modulation Low Channel 2122.5 MHz		32.008 33.426 32.181 32.120	0 0 0	32.008 33.426 32.181 32.120	32.008 32.181 32.120	32.008 33.426 32.181 32.120

Report No. NOKI0056.0 88/105

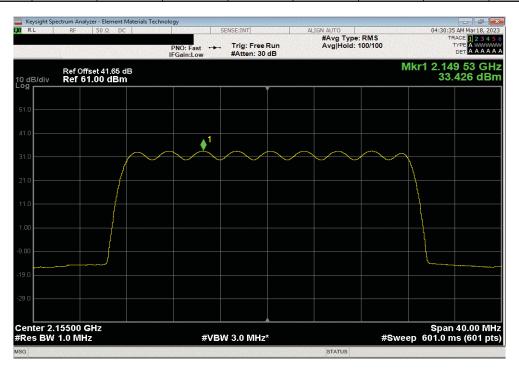
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS - BAND n66 5G



n	D===d==CC 044	10 MI I= 2200 MI	I- COND D-+	4 OF MUE Dand	WHAT ODGE MAN	ulation Mid Cham	0455 MU-	
ш	Band nob 211	10 MHZ - 2200 MB	12, 5G NR , POIL	4, 25 MHZ Band\	vidth, QPSK Mod	ulation, Mid Chan	nei 2155 MHZ	
ı		Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
ı		dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		_
L		32.008	0	32.008	32.008	32.008		



Band n66 2110) MHz - 2200 MH:	z, 5G NR , Port 4	, 25 MHz Bandwi	idth, 16-QAM Mod	dulation, Mid Cha	nnel 2155 MHz	
	Initial Value	Duty Cycle	Single Port	o Port (2x2 MIM	ur Port (4x4 MIN		
	dBm/MHz	Factor (dB)	dBm/MHz==PSE	dBm/MHz==PSD	dBm/MHz==PSD		
	33.426	0	33.426	33.426	33.426		

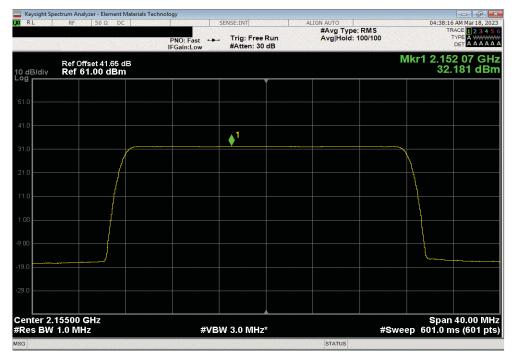


Report No. NOKI0056.0 89/105

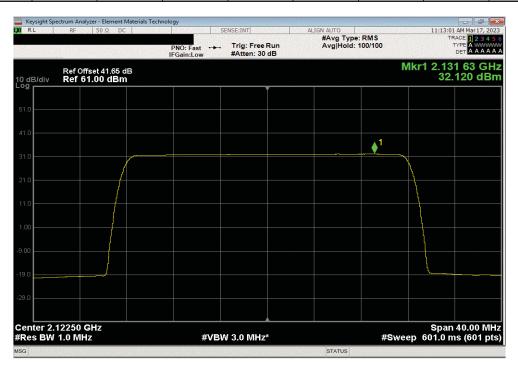
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS - BAND n66 5G



Band n66 2110	MHz - 2200 MH	z, 5G NR, Port 4	, 25 MHz Bandw	idth, 64-QAM Mod	dulation, Mid Cha	nnel 2155 MHz	
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)		
	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		
	32.181	0	32.181	32.181	32.181		



Band n66 2110 N	MHz - 2200 MHz,	5G NR , Port 4, 2	25 MHz Bandwidt	th, 256-QAM Mod	ulation, Low Cha	nnel 2122.5 MHz	
	Initial Value	Duty Cycle	Single Port	o Port (2x2 MIM	ur Port (4x4 MIN		
	dBm/MHz	Factor (dB)	dBm/MHz==PSD	dBm/MHz==PSD	dBm/MHz==PSD		_
	32.12	0	32.12	32.12	32.12		



Report No. NOKI0056.0 90/105

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS - BAND n66 5G

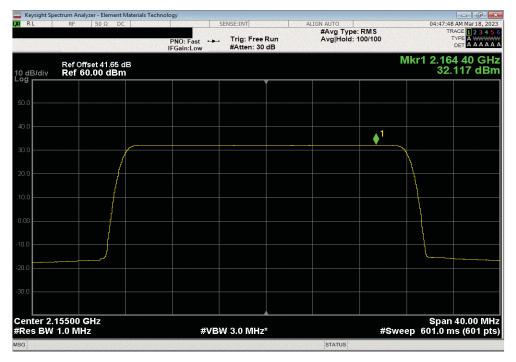


Band n66 2110 MHz - 2200 MHz, 5G NR , Port 4, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz

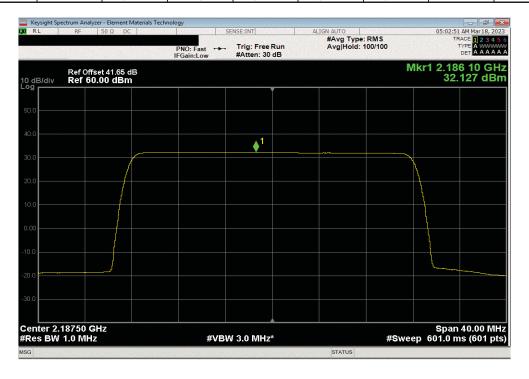
Initial Value Duty Cycle Single Port Two Port (2x2 MIMO) Four Port (4x4 MIMO)

dBm/MHz Factor (dB) dBm/MHz==PSD dBm/MHz==PSD

32.117 0 32.117 32.117







Report No. NOKI0056.0 91/105

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS - BAND n66 5G



TbtTx 2022.05.02.0 XMit 2023.02.1

EIRP Calculations for Four Port MIMO Operations for Band n66 Single NR Carriers

EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon Kathrein antenna assembly model "80011867". The maximum Band n66 gain (18.2dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n66. The four antenna RF inputs (used for Band n66) on the antenna assembly are as follows: Y1+ L5 (+45°), Y1- L6 (-45°), Y2+ R7 (+45°) and Y2- R8 (-45°). Four AHFII transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent (will not be 0 dB) but for this worst case EIRP calculation 0 dB was used. EIRP was calculated as described in SRSP 513 clause 6.1.2 and SRSP 519 clause 6.1.2 "EIRP for non-AAS uncorrelated transmission". Calculations of worst-case EIRP for four port MIMO are as follows:

Parameter	25 MHz Ch BW
Worst Case PSD/Antenna Port	33.4dBm/MHz
Number of Ant Ports per Polarization	2
Total PSD per Polarization 10*log(2) = +3	36.4
Cable Loss (site dependent)	0 dB
Dir Gain = Maximum Antenna Gain (GAnt) See Note 1	18.2 dBi
EIRP per Polarization	54.6 dBm/MHz or 288.4 Watts/MHz
Number of Polarizations	2
EIRP Total = Y1 ±45° and Y2 ±45° See Note 2	54.6 dBm/MHz or 288.4 Watts/MHz
Passing FCC EIRP Limits	62.15 & 65.16 dBm/MHz
Passing ISED EIRP Limits	62 & 65 dBm/MHz

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.

Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

EIRP Calculation Summary

- (1) The worst case AHFIB four port MIMO Band n66 EIRP levels using antenna assembly model "80011867" are:
- (2) Less than the FCC (65.16 dBm/MHz) EIRP Regulatory Limits for 25 MHz channel bandwidths.
- (3) Less than the FCC (62.15 dBm/MHz) EIRP Regulatory Limits for 25 MHz channel bandwidths.
- (4) Less than the ISED (65 dBm/MHz) EIRP Regulatory Limits for 25 MHz channel bandwidths.
- (5) Less than the ISED (62 dBm/MHz) EIRP Regulatory Limits for 25 MHz channel bandwidths.



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	AMT	2022-09-09	2023-09-09
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA18E 1913	TZV	2022-09-13	2023-09-13
Attenuator	Fairview Microwave	SA18E 1648	TZW	2022-09-13	2023-09-13

TEST DESCRIPTION

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

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) and RSS Gen 6.13, 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 27.53(h)(1), FCC 24.238a, RSS-133 6.5(ii) and RSS-139 6.6, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm for a 1 MHz measurement bandwidth. 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. RF conducted emissions testing was performed on one port. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification report) and port 4 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.

Report No. NOKI0056.0

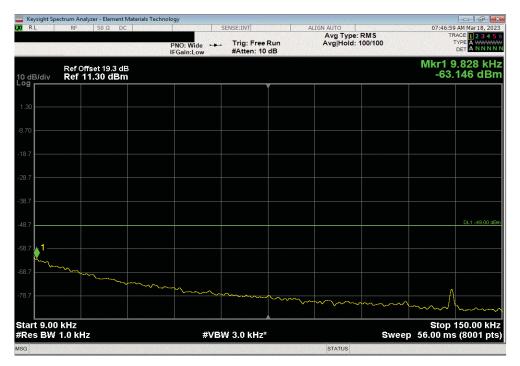


FIIT: Air					TbtTx 2022.05.02.0	XMit 20
	rscale Base TransceAirscale	Base Transceiver Station Remote Radio Head Mode	I AHFIB	Work Order: N	IOKI0056	
Serial Number: K9	9181401111			Date: 0	3/18/2023	
Customer: No	okia of America Corporation			Temperature: 2	2.4°C	
Attendees: Da	avid Le, Mitchel Hill			Humidity: 5	4.8%	
Project: No	one			Barometric Pres.: 9	91.5 mbar	
Tested by: Bra			Power: 54 VDC	Job Site: T	X07	
ST SPECIFICATION	NS .		Test Method			
C 24E:2023			ANSI C63.26:2015			
C 27:2023			ANSI C63.26:2015			
S-133 Issue 6:2013-	R+∆1·2018		ANSI C63.26:2015			
SS-139 Issue 4:2022			ANSI C63.26:2015			
MMENTS	-		74101 000.20.2010			
	looped were apparented for	in the reference level offest including any attenuator	a filters and DC blocks. Band n25 carrier and	led on middle channel (1062 F MU=) at may	imum namer (40	watta/aarris
		5.0 MHz) ar 40 watts with the same channel bandwidt				
W and Band n66 car		5.0 MHZ) at 40 walls with the Same Chainlei bandwidt	ii and modulation type as band 1125 carrier. Th	e port power was set at the maximum lever	OI OU WALLS [DAI	iu iizə carri
	•					
VIATIONS FROM TE	EST STANDARD					
ne						
	OKI0056-1 NOKI0056-		4			
nfiguration #	2 NOKI0056-3	1121	1_1			
	NOKI0056-4	Signature /) — [
			Frequency	Value	Limit	
			Range	(dBm)	(dBm)	Resu
	25 MHz Bandwidth					
		Modulation				
		Modulation Mid Channel 1962.5 MHz & 2155 MHz	9 kHz - 150 kHz	-63.15	-49	Pass
		K Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz	-63.14	-39	Pas
		K Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84	-39 -19	Pass Pass
		K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz	-63.14 -25.84 -39.64	-39 -19 -19	Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84	-39 -19	Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58	-39 -19 -19 -19	Pasi Pasi Pasi Pasi
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz	-63.14 -25.84 -39.64 -27.58	-39 -19 -19 -19 -49	Pass Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 2555 MHz Mid Channel 1962.5 MHz & 2555 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86	-39 -19 -19 -19 -19 -49 -39	Pass Pass Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & MIZ &	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94	-39 -19 -19 -19 -49 -39 -19	Pass Pass Pass Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 5155 MHz Mid Channel 1962.5 MHz & 5155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17	-39 -19 -19 -19 -49 -39 -19	Pass Pass Pass Pass Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94	-39 -19 -19 -19 -49 -39 -19	Pas Pas Pas Pas Pas Pas Pas
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75	-39 -19 -19 -19 -49 -39 -19 -19	Pass Pass Pass Pass Pass Pass Pass Pass
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75	-39 -19 -19 -19 -19 -49 -39 -19 -19 -19	Pas Pas Pas Pas Pas Pas Pas Pas Pas
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1	-39 -19 -19 -19 -19 -49 -39 -19 -19 -19 -49 -39	Pas Pas Pas Pas Pas Pas Pas Pas Pas Pas
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31	-39 -19 -19 -19 -49 -39 -19 -19 -19	Pas Pas Pas Pas Pas Pas Pas Pas Pas Pas
	QPSI	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 8155 MHz Mid Channel 1962.5 MHz & 8155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09	-39 -19 -19 -19 -19 -49 -39 -19 -19 -49 -39 -19 -19	Pas Pas Pas Pas Pas Pas Pas Pas Pas Pas
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31	-39 -19 -19 -19 -49 -39 -19 -19 -19	Pas Pas Pas Pas Pas Pas Pas Pas Pas Pas
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz AM Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 15 GHz 13 GHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 3.5 GHz 3.5 GHz - 3 GHz 3.5 GHz - 3 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09 -27.74	-39 -19 -19 -19 -19 -49 -39 -19 -19 -49 -39 -19 -19 -19	Pass Pass Pass Pass Pass Pass Pass Pass
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 12 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 13 GHz - 22 GHz 9 kHz - 13 GHz 21 GHz 22 MHz - 22 GHz 35 GHz - 13 GHz 35 GHz - 13 GHz 35 GHz - 13 GHz 35 GHz - 150 kHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09 -27.74	-39 -19 -19 -19 -19 -49 -39 -19 -19 -19 -19 -19 -49 -49	Passe
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 20 MHz 20 MHz - 3.5 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 22 GHz 9 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09 -27.74 -62.66 -63.24	-39 -19 -19 -19 -49 -39 -19 -19 -19 -19 -19 -49 -39 -19 -19 -39	Passe
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz Mid Channel 1962.5 MHz & 8155 MHz Mid Channel 1962.5 MHz & 8155 MHz Mid Channel 1962.5 MHz & 8155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 20 MHz - 3.5 GHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 20 MHz - 3.5 GHz 20 KHz - 13 GHz 20 KHz - 3.5 GHz 3 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09 -27.74	-39 -19 -19 -19 -49 -39 -19 -19 -49 -39 -19 -19 -19 -19 -19 -19	Passis Pa
	QPSi 16-Q. 64-Q.	K Modulation Mid Channel 1962.5 MHz & 2155 MHz	150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 150 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz 9 kHz - 20 MHz 20 MHz - 3.5 GHz 13 GHz - 22 GHz 9 kHz - 150 kHz 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 3.5 GHz - 22 GHz 9 kHz - 20 MHz 20 MHz - 3.5 GHz 3.5 GHz - 13 GHz 13 GHz - 22 GHz	-63.14 -25.84 -39.64 -27.58 -62.69 -62.86 -25.94 -39.17 -27.75 -63.1 -63.31 -26.32 -39.09 -27.74 -62.66 -63.24	-39 -19 -19 -19 -49 -39 -19 -19 -19 -19 -19 -49 -39 -19 -19 -39	Passe

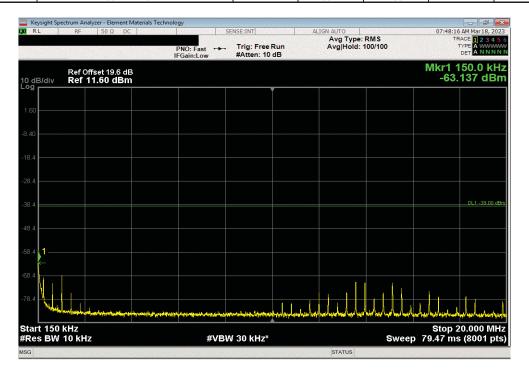
Report No. NOKI0056.0 94/105



| Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, QPSK Modulation, Mid Channel 1962.5 MHz
| Frequency Value Limit | Range (dBm) (dBm) Result |
| 9 kHz - 150 kHz | -63.15 -49 Pass |



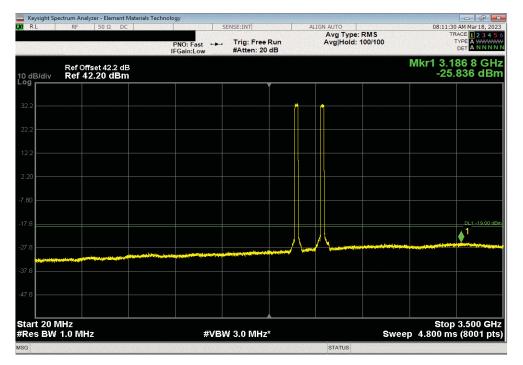
Band n25 1930 MHz - 1995 MHz, 5G NR , F	ort 1, 25 MHz Bandw	idth, QPSK Modu	lation, Mid Chanr	nel 1962.5 MHz
Frequency		Value	Limit	
Range		(dBm)	(dBm)	Result
150 kHz - 20 MHz		-63.14	-39	Pass



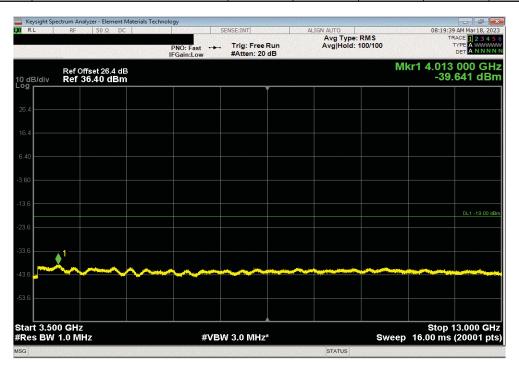
Report No. NOKI0056.0 95/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1,	25 MHz Bandwidth, QPSK Modul	ation, Mid Chanr	nel 1962.5 MHz	
Frequency	Value	Limit		
Range	(dBm)	(dBm)	Result	
20 MHz - 3.5 GHz	-25.84	-19	Pass	



	Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1	, 25 MHz Bandwi	dth, QPSK Modu	lation, Mid Chanr	nel 1962.5 MHz
	Frequency		Value	Limit	
_	Range		(dBm)	(dBm)	Result
l	3.5 GHz - 13 GHz		-39.64	-19	Pass



Report No. NOKI0056.0 96/105

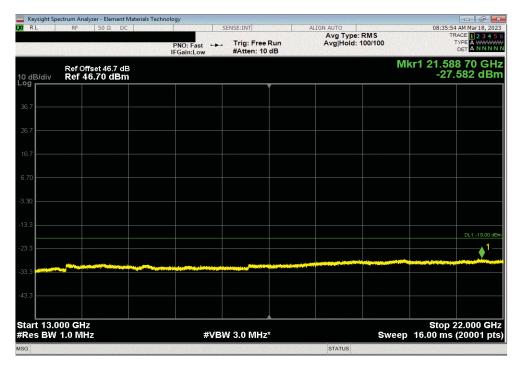


 Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, QPSK Modulation, Mid Channel 1962.5 MHz

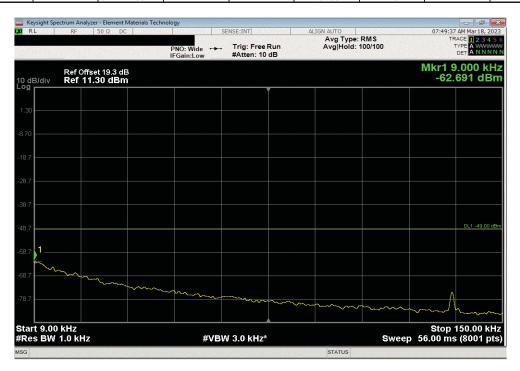
 Frequency
 Value
 Limit

 Range
 (dBm)
 (dBm)
 Result

 13 GHz - 22 GHz
 -27.58
 -19
 Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	25 MHz Bandwidth, 16-QAM Mod	ulation, Mid Chan	nel 1962.5 MHz
Frequency	Value	Limit	
Range	(dBm)	(dBm)	Result
9 kHz - 150 kHz	-62.69	-49	Pass

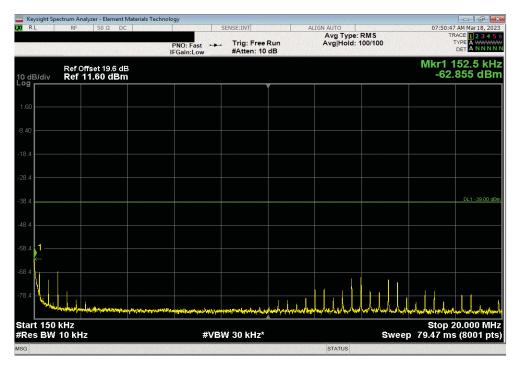


Report No. NOKI0056.0 97/105

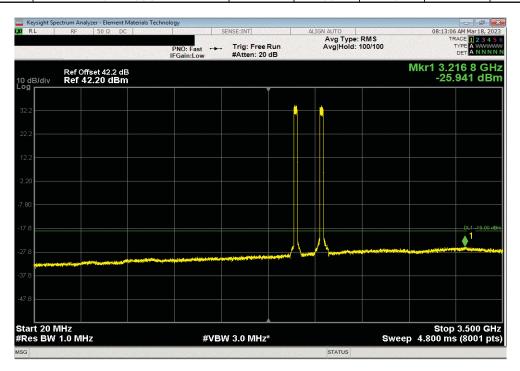


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1962.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
150 kHz - 20 MHz
-62.86
-39
Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	25 MHz Bandwidth, 16-QAM Modi	ulation, Mid Chan	nel 1962.5 MHz
Frequency	Value	Limit	
Range	(dBm)	(dBm)	Result
20 MHz - 3.5 GHz	-25.94	-19	Pass

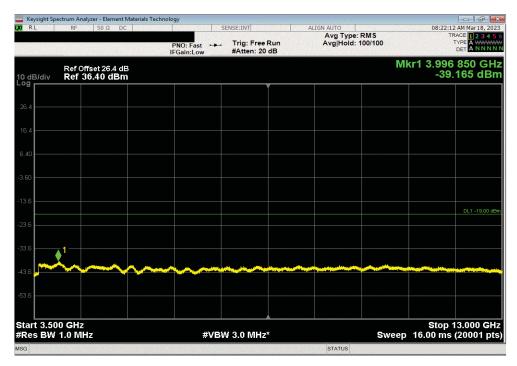


Report No. NOKI0056.0 98/105

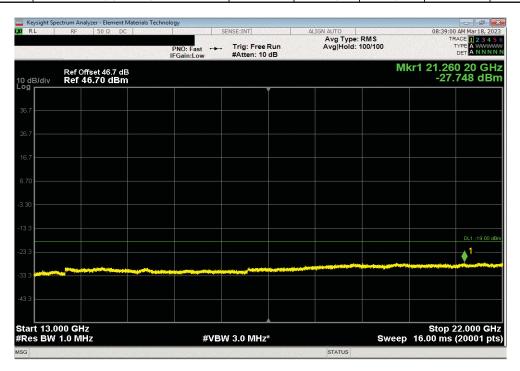


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1962.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
3.5 GHz - 13 GHz
-39.17
-19
Pass



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	25 MHz Bandwidth, 16-0	QAM Mod	ulation, Mid Chan	nel 1962.5 MHz
Frequency	V	'alue	Limit	
Range	(0	dBm)	(dBm)	Result
13 GHz - 22 GHz	-2	27.75	-19	Pass

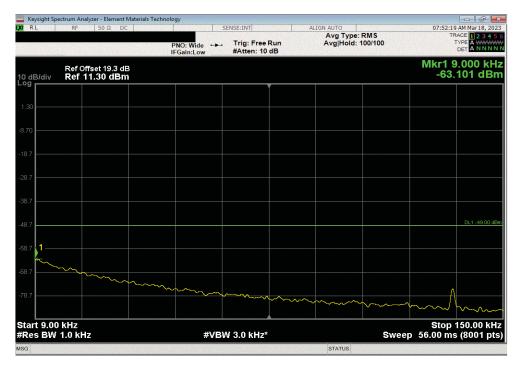


Report No. NOKI0056.0 99/105

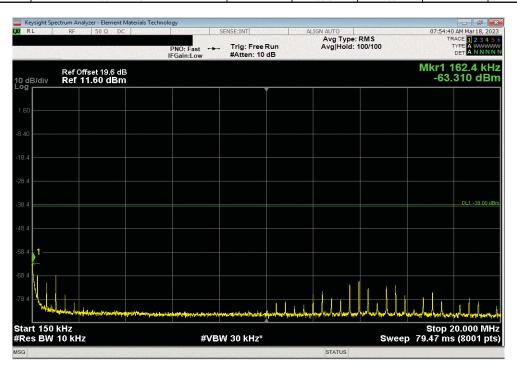


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz

Frequency
Value
Limit
Range
(dBm)
(dBm)
Result
9 kHz - 150 kHz
-63.1
-49
Pass



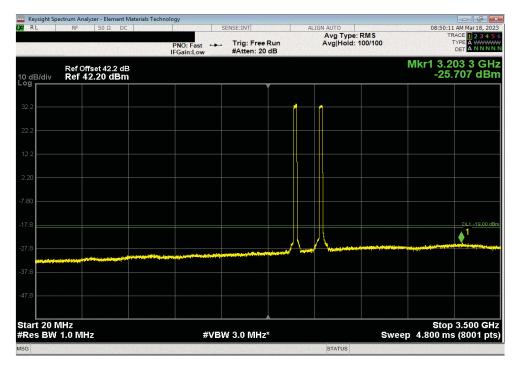
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz					
Frequency	Value	Limit			
Range	(dBm)	(dBm)	Result		
150 kHz - 20 MHz	-63.31	-39	Pass		



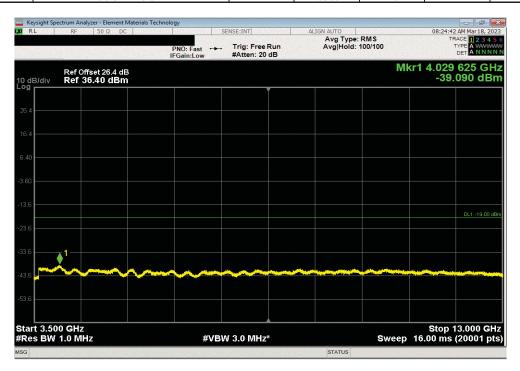
Report No. NOKI0056.0 100/105



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	25 MHz Bandwidth, 64-QAM Modu	ulation, Mid Chan	nel 1962.5 MHz	
Frequency	Value	Limit		
Range	(dBm)	(dBm)	Result	
20 MHz - 3.5 GHz	-26.32	-19	Pass	



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz					
Frequency	Value	Limit			
Range	(dBm)	(dBm)	Result		
3.5 GHz - 13 GHz	-39.09	-19	Pass		

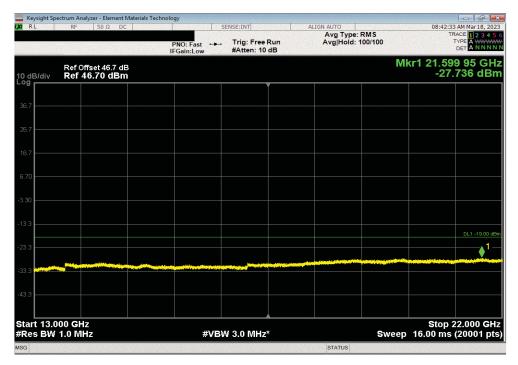


Report No. NOKI0056.0 101/105

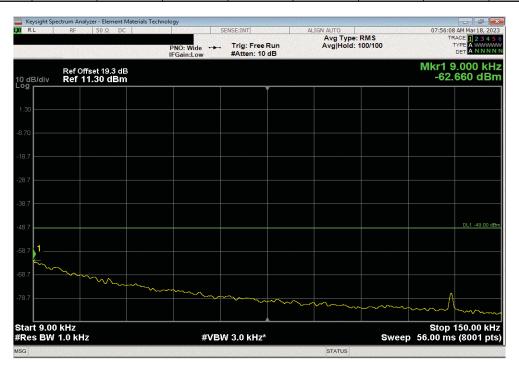


Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1962.5 MHz

Frequency
Range
(dBm)
(dBm)
Result
13 GHz - 22 GHz
-27.74
-19
Pass



	Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1,	25 MHz Bandwid	th, 256-QAM Mod	lulation, Mid Cha	nnel 1962.5 MHz
	Frequency		Value	Limit	
_	Range		(dBm)	(dBm)	Result
l	9 kHz - 150 kHz		-62.66	-49	Pass



Report No. NOKI0056.0 102/105

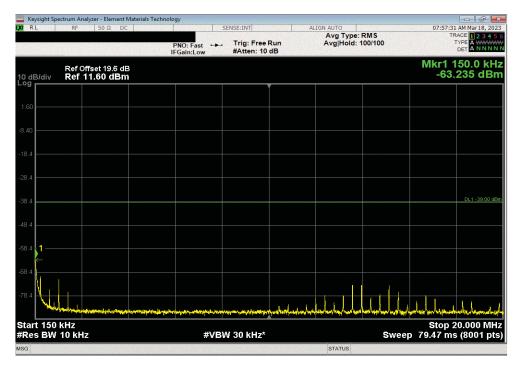


 Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 25 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1962.5 MHz

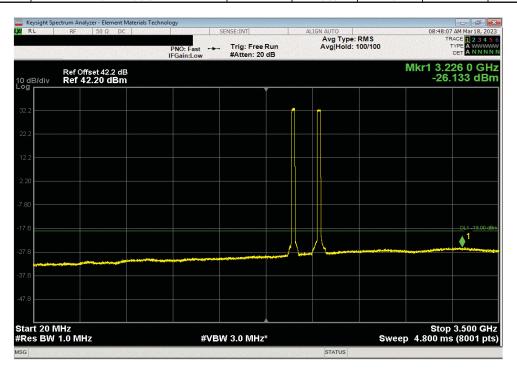
 Frequency
 Value
 Limit

 Range
 (dBm)
 (dBm)
 Result

 150 kHz - 20 MHz
 -63.24
 -39
 Pass



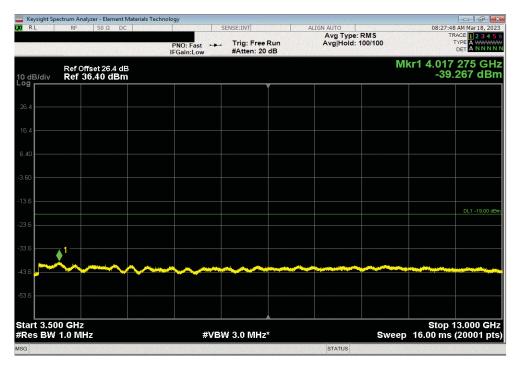
Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	5 MHz Bandwidth, 256-QAM Mod	lulation, Mid Chai	nnel 1962.5 MHz
Frequency	Value	Limit	
Range	(dBm)	(dBm)	Result
20 MHz - 3.5 GHz	-25.96	-19	Pass



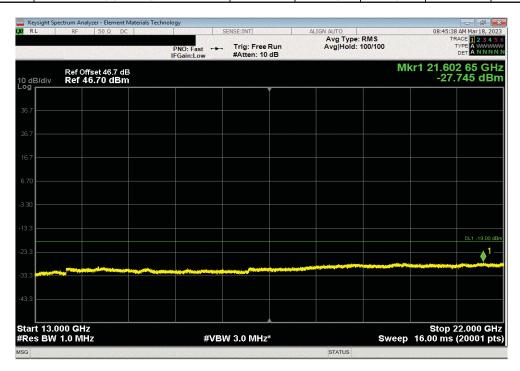
Report No. NOKI0056.0 103/105



Band r	25 1930 MHz - 1995 MHz, 5G NR, Port 1, 2	25 MHz Bandwidt	th, 256-QAM Mod	lulation, Mid Char	nnel 1962.5 MHz	
	Frequency		Value	Limit		
	Range		(dBm)	(dBm)	Result	
	3.5 GHz - 13 GHz		-39.27	-19	Pass	



Band n25 1930 MHz - 1995 MHz, 5G NR , Port 1, 2	5 MHz Bandwidth, 256-QA	M Modulation, Mid Ch	annel 1962.5 MHz
Frequency	Valu	e Limit	
Range	(dBn	n) (dBm)	Result
13 GHz - 22 GHz	-27.7	5 -19	Pass



Report No. NOKI0056.0 104/105



End of Test Report

Report No. NOKI0056.0