

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	Keysight	N5182B	TEV	2021-04-27	2024-04-27
Block - DC	Fairview Microwave	SD3379	AMM	2021-09-14	2022-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

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 RF conducted emission 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 the "Output Power - All Ports" report section) 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 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 metres. 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 metres with a corresponding reduction in e.i.r.p. according to the following table:

FCC Requirements: Part 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 for the AWS Band are provided in RSS-139 Section 6.5/SRSP-513 Section 5.1.1 and RSS-170 Section 5.3.1/SRSP-519 Section 5.1



								TbtTx 2021.12.14.1	XMit 2022.02.07.0
EUT:	AHFII Remote Radio Hea	ad					Work Order:	NOKI0038	
Serial Number:	YK214000035						Date:	18-Mar-22	
Customer:	Mitchell Hill	ration					Temperature: Humidity:	22.7 °C 25% RH	
Project:	None						Barometric Pres.:	1024 mbar	
Tested by:	Brandon Hobbs			Power: 54 VDC			Job Site:	TX06	
TEST SPECIFICAT	IONS			Test Method					
FCC 24E:2022				ANSI C63.26:2015					
RSS-133 Issue 6:20	013+A1:2018			RSS-133 Issue 6:20	013+A1:2018				
All mossurement n	ath lossos woro account	d for in the reference level	offect including an	wattonuators filtors and DC block	e Band n25 carrio	re are enabled at n	aavimum nowor (90 w	atte/carrier) The BSD was	mossured while
transmitting one ca 10 Log(2)]. The tota	arrier on Port 1. The total al PSD for four port opera	PSD for multiport (2x2 MIN tion is single port PSD +6d	NO, 4x4 MIMO) oper B [i.e. 10 Log(4)].	ation was determinded based upo	on ANSI 63.26 claus	se 6.4.3.2.4 (10 Log	Nout). The total PSD	for two port operation is s	ingle port PSD +3dB [i.e.
DEVIATIONS FROM	M TEST STANDARD								
None		1		1.					
Configuration #	2	Signature	1	and Jan					
					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
Band n25, 1930 MH	lz - 1995 MHz, 5G NR					(
	Port 1 5 MHz Band	width							
	o IIII IZ Dano	QPSK Modulation							
		Low Channel,	1932.5 MHz		42.930	0	42.9	45.9	48.9
		Mid Channel,	1962.5 MHz		42.816	0	42.8	45.8	48.8
		16-QAM Modulation	1552.3 WITH		42.110	U	42.0	40.0	40.0
		Low Channel,	1932.5 MHz		42.917	0	42.9	45.9	48.9
		Mid Channel,	1962.5 MHz		42.802	0	42.8	45.8	48.8
		High Channel,	1992.5 MHz		42.764	0	42.8	45.8	48.8
		64-QAM Modulation	1932 5 MHz		42 965	0	43.0	46.0	49.0
		Mid Channel,	1962.5 MHz		42.816	Ő	42.8	45.8	48.8
		High Channel,	1992.5 MHz		42.807	0	42.8	45.8	48.8
		256-QAM Modulation	1000 5 1 11		10.001		40.0	40.0	40.0
		Low Channel, Mid Channel	1932.5 MHZ 1962 5 MHz		42.981	0	43.0	40.0	49.0
		High Channel,	1992.5 MHz		42.820	0	42.8	45.8	48.8
	10 MHz Bar	dwidth							
		QPSK Modulation	1000 5 1411		00.054		00.7	40.7	45.7
		16-OAM Modulation	1962.5 MHZ		39.651	0	39.7	42.7	45.7
		Mid Channel,	1962.5 MHz		40.307	0	40.3	43.3	46.3
		64-QAM Modulation							
		Mid Channel,	1962.5 MHz		39.658	0	39.7	42.7	45.7
		Zoo-QAIM Modulation Mid Channel	1962 5 MHz		39.667	0	39.7	42.7	45.7
	15 MHz Ban	idwidth	1302.0 10112		00.001	0	00.1	42.1	40.1
		QPSK Modulation							
		Mid Channel,	1962.5 MHz		37.852	0	37.9	40.9	43.9
		Mid Channel	1962.5 MHz		39.383	0	39.4	42.4	45.4
		64-QAM Modulation			00.000			· · · · ·	
		Mid Channel,	1962.5 MHz		37.893	0	37.9	40.9	43.9
		256-QAM Modulation	1062 E MU-		27.990	0	27.0	40.0	42.0
	20 MHz Bar	idwidth	1902.5 MHZ		37.880	0	37.9	40.9	43.9
	20 11112 201	QPSK Modulation							
		Mid Channel,	1962.5 MHz		36.668	0	36.7	39.7	42.7
		16-QAM Modulation	1062 E MU-		20.224	0	20.2	41.2	44.2
		64-QAM Modulation	1902.3 MHZ		30.324	0	30.3	41.5	44.5
		Mid Channel,	1962.5 MHz		36.691	0	36.7	39.7	42.7
		256-QAM Modulation					-		
	20 MU- D	Mid Channel,	1962.5 MHz		36.734	0	36.7	39.7	42.7
	30 MHZ Bar	QPSK Modulation							
		Mid Channel,	1962.5 MHz		34.888	0	34.9	37.9	40.9
		16-QAM Modulation							
		Mid Channel,	1962.5 MHz		36.586	0	36.6	39.6	42.6
		04-QAINI MODULATION Mid Channel	1962 5 MHz		34 970	0	35.0	38.0	41.0
		256-QAM Modulation	1002.0 WII IZ		54.570	0	55.0		-1.U
		Mid Channel,	1962.5 MHz		34.922	0	34.9	37.9	40.9









element











element







element

























		dBm/MHz 34.97	Factor (dB)	dBm/MHz == PSE 34.97	dBm/MHz == 1 37.97	PSD dBm/MHz	== PSD
		1					
Keysight Spectrun	n Analyzer - Element Materia RF 75 Ω DC	als Technology	SENSE:INT	ALIGN AUTO	03:57	:57 AM Mar 18, 2022	
		PNO: Fast ++ IFGain:Low	. Trig: Free Run #Atten: 30 dB	Avg Hold: 100	/100		
Re 10 dBidiy R	ef Offset 42 dB				Mkr1 1.9 3	75 17 GHz 4.970 dBm	
			ľ				
52.0							
42.0					1		
32.0	<i>(</i>						
22.0							
12.0					l,		
12.0							
2.00							
-8.00							
-18.0						<u> </u>	
-28.0							
Center 1.962	50 GHz		^		Sna	n 50.00 MHz	
Center 1.962 #Res BW 1.0	50 GHz MHz	#VB	W 3.0 MHz*	STATUS	Spa #Sweep 601.0	an 50.00 MHz ms (601 pts)	
Center 1.962 #Res BW 1.0	50 GHz MHz	#VB	W 3.0 MHz*	STATUS	Spa #Sweep 601.0	an 50.00 MHz ms (601 pts)	
Center 1.962 #Res BW 1.0	50 GHz MHz Band n25, 1930 N	#VB MHz - 1995 MHz, 5G Initial Value	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle	STATUS Bandwidth, 256-Q/ Single Port	Spa #Sweep 601.0 M Modulation, Mid Two Port (2x2 M	n 50.00 MHz ms (601 pts) Channel, 1962.5 MH: IIMO) Four Port (4 Dec) Hourgent	z 4x4 MIMO)
Center 1.962 #Res BW 1.0	50 GHz MHz Band n25, 1930 M	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0	status Bandwidth, 256-QA Single Port dBm/MHz == PSL 34.922	Spa #Sweep 601.0 M Modulation, Mid Two Port (2x2 M dBm/MHz == 1 37.922	in 50.00 MHz ms (601 pts) Channel, 1962.5 MH; IIMO) Four Port (4 PSD dBm/MHz 40.9	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum	50 GHz MHz Band n25, 1930 N	#VB /Hz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 als Technology	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0	E Bandwidth, 256-QA Single Port dBm/MHz == PSL 34.922	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 N dBm/MHz == 1 37.922	n 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (4 PSD dBm/MHz 40.9	z 4x4 MIMO) : == PSD 22
Center 1.962 #Res BW 1.0 MSG	50 GHz MHz Band n25, 1930 N	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 als Technology	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Tria: Free Run	E Bandwidth, 256-QA Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI AvgIHold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (PSD dBm/MHz 40.9	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum	50 GHz MHz Band n25, 1930 N n Analyzer - Element Materia	#VB AHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 N dBm/MHz == 1 37.922 04:03 WS /100 Mkr1 1.9	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (4 2SD dBm/MHz 226 AM Maria, 2022 TYPE & AAAAA PT 5 58 GHz	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG	50 GHz MHz Band n25, 1930 N n Analyzer - Element Materi RE 75 Ω DC ef Offset 42 dB ef 62.00 dBm	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 sts Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSE 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:02 04 04:02 04:02 04:02 04 04:02 04:02 04 04:02 04 04:02 04 04 04 04 04 04 04 04 04 04 04 04 04	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (PSD dBm/MHz 40.9 IIMO 40.9 IIMO 40.9 IIMO 5022 TRACE 234 5 6 TYPE A A A A A IIMO 558 GHz 4.922 dBm	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum R L 10 dB/div R 52.0	50 GHz MHz Band n25, 1930 M n Analyzer - Element Materia RF 25 Ω DC offset 42 dB ef 62.00 dBm	#VB MHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 sense:Int[Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 (M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:02 MS 04:02 MKr1 1.9 3	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (4 2SD dBm/MHz 40.9 26 Adm Marils, 2022 TRACE 12 3 4 5 0 TYPE & AAAAAA 75 58 GHz 4.922 dBm	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG	Band n25, 1930 N Analyzer - Element Materi RF 75 Ω DC ef Offset 42 dB ef 62.00 dBm	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* WR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSE 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 04:04 04 04:04 04:04 04:04 04 04:04 04:04 04 04:04 04 04:04 04 04 04:04 04 04 04 04 04 04 04 04 04 04 04 04 0	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum R L G C dB/div R C dB/div R	50 GHz MHz Band n25, 1930 M hanlyzer - Element Materia F 75 Ω DC ef Offset 42 dB ef 62.00 dBm	#VB AHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 Sense:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 (M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 04:03 Mkr1 1.9 3	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IIMO) Four Port (4 2SD dBm/MHz 40.9 264 AM AT18, 2022 TRACE 12.3 4.5 6 TYPE & AMAAAA 75 58 GHz 4.922 dBm	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum X RL 1 10 dB/div R 52.0 42.0	Band n25, 1930 N Analyzer - Element Materia RF 75 Ω DC ef Offset 42 dB ef 62.00 dBm	#VB IHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-QA Single Port dBm/MHz == PSE 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 04:03 04:03 04:03 04:03 04:03 04:03 04:03 04:03 04:03	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum R L 10 52.0 42.0 32.0	50 GHz MHz Band n25, 1930 M Analyzer - Element Materia RF 75 Ω DC offset 42 dB ef 62.00 dBm	#VB MHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 Sense:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 (M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 (MS 04:03 (100) Mkr1 1.9 3	In 50.00 MHz ms (601 pts) Channel, 1962.5 MHz IMO) Four Port (4 2SD dBm/MHz 40.9 Channel, 23 4 5 Trace 12 3 4 5 Trace 23 4 5 Trace 23 4 5 Trace 12 3 4 5 Tra	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG RL 10 dB/div R 10 dB/div R 12 d 22 0 12.0	Band n25, 1930 N	#VB IHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-QA Single Port dBm/MHz == PSE 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 MS 04:03 04:03 04:03 04:03 04:03 04:03 04:03 04:03	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum I d dB/div Re 52.0 42.0 32.0 22.0	50 GHz MHz Band n25, 1930 M Analyzer - Element Materia RF 25 Ω DC ef Offset 42 dB ef 62.00 dBm	#VB IHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* WR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 04:03 04:03 04:03 04:03 04:03	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) :== PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum R L 1 10 dB/div R 42.0 32.0 22.0 12.0 -8.00	50 GHz MHz Band n25, 1930 M hashed a state of the state	#VB IHZ - 1995 MHZ, 5G Initial Value dBm/MHZ 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* NR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT 1 . Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-QA Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04:03 MS 04:03 04:0400000000	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 Msg RL 10 dB/div 22.0 22.0 22.0 -8.00	50 GHz MHz Band n25, 1930 M Analyzer - Element Materii RF 25 Ω DC of Offset 42 dB ef 62.00 dBm Analyzer - Element Materii Analyzer -	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 els Technology PNO: Fast IFGain:Low	W 3.0 MHz* WR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04.03 MKr1 1.9 3	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG Keysight Spectrum R L C C C C C C C C C C C C C C C C C C C	50 GHz MHz Band n25, 1930 M hashed for the second	#VB //Hz - 1995 MHz, 5G Initial Value dBm///Hz 34.922 als Technology PNO: Fast →	W 3.0 MHz*	STATUS E Bandwidth, 256-QA Single Port dBm/MHz == PSL 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22
Center 1.962 #Res BW 1.0 MSG RL 10 dB/div R 10 dB/div	Band n25, 1930 N Band n25, 1930 N I n Analyzer - Element Materia F 75 Ω DC Pf Offset 42 dB ef 62,00 dBm	#VB MHz - 1995 MHz, 5G Initial Value dBm/MHz 34.922 als Technology PNO: Fast IFGain:Low	W 3.0 MHz* WR, Port 1, 30 MHz Duty Cycle Factor (dB) 0 SENSE:INT Trig: Free Run #Atten: 30 dB	STATUS E Bandwidth, 256-Q/ Single Port dBm/MHz == PSE 34.922 ALIGN AUTO #Avg Type: RI Avg Hold: 100	Spa #Sweep 601.0 M Modulation, Mid (Two Port (2x2 M dBm/MHz == 1 37.922 04.03 Mkr1 1.9 3 4	In 50.00 MHz ms (601 pts)	z 4x4 MIMO) == PSD 22



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 a nennas 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.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for four port MIMO) from the results of power measurements (highest measured PSD for each channel bandwidth type). The total worst case PSD for four port MIMO is calculated as the worst case PSD for a single port + 6dB [10log (4)] based upon ANSI C63.26 clause 6.4.3.2.4 (10 Log N_{out}). 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	5 MHz	10 MHz	15 MHz	20 MHz	30 MHz
Farameter	Ch BW	Ch BW	Ch BW	Ch BW	Ch BW
Worst Case BSD (Antenna Bart	42.0 dBm/MHz	40.2 dBm/MHz	39.4	38.3	36.6
worst case PSD/Antenna Port	45.0 UBITI/ WIHZ	40.5 UBIT/WHZ	dBm/MHz	dBm/MHz	dBm/MHz
Total PSD for Four Port MIMO	40.0 dBm/MHz	46.2 dBm/MHz	45.4	44.3	42.6
10Log 4 = + 6dB	49.0 UBITI/ WIHZ	40.5 UBITI/WIFIZ	dBm/MHz	dBm/MHz	dBm/MHz
Cable Loss (site dependent)	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum Antenna Gain	17.9 dBi	17.9 dBi	17.9 dBi	17.9 dBi	17.9 dBi
Worst Case Four Port MIMO	66.9 dBm/MHz	64.2 dBm/MHz	63.3 dBm/MHz	62.2 dBm/MHz	60.5 dBm/MHz

Calculation Summary

The worst case AHFII four port MIMO Band n25 EIRP levels using antenna assembly model "80011867" are:

(1) Less than the FCC and ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 10, 15, 20 & 30MHz channel bandwidths.

(2)Over the FCC/ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits by 1.74 dB (66.9dBm/MHz - 65.16dBm/MHz) for the 5MHz channel bandwidth. EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements as noted above.

(3)Less than the FCC and ISED (1640 W/MHz or 62.15 dBm/MHz) EIRP Regulatory Limits for 30MHz channel bandwidths.

(4)Over the FCC/ISED (1640 W/MHz or 62.15 dBm/MHz) EIRP Regulatory Limits by 4.75 dB (66.9dBm/MHz - 62.15dBm/MHz) for the 5MHz channel bandwidth, by 2.05 dB (64.2dBm/MHz - 62.15dBm/MHz) for the 10MHz channel bandwidth, by 1.15 dB (63.3dBm/MHz - 62.15dBm/MHz) for the 15MHz channel bandwidth and by 0.05 dB (62.2dBm/MHz - 62.15dBm/MHz) for the 20MHz channel bandwidth. EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements as noted above. (5) See "Output Power - Lowered Power" and the Power Spectral Density - Lowered Power" sections of this report for details of compliance verification by changing BTS configuration file power output parameters.



CICILICII

							TbtTx 2022.03.14.0	XMit 2022.02.07.0
EUT:	AHFII Remote Radio He	ad				Work Order:	NOKI0038	
Serial Number:	YK214000035					Date:	19-Mar-22	
Customer:	Nokia of America Corpo	bration				I emperature:	22.3 °C	
Project:	None					Barometric Pres :	42.0% KH 1019 mbar	
Tested by:	Brandon Hobbs		Power: 54 VDC			Job Site:	TX09	
TEST SPECIFICAT	IONS		Test Method					
FCC 27:2022			ANSI C63.26:201	i				
RSS-139 Issue 3:20	015, RSS-170 Issue 3:201	15	RSS-139 Issue 3:	015, RSS-170 Issu	e 3:2015			
COMMENTS								
All measurement p while transmitting single port PSD +3	oath losses were accoun one carrier on Port 1. T 3dB [i.e. 10 Log(2)]. The f	ted for in the reference level offest including an he total PSD for multiport (2x2 MIMO and 4x4 I total PSD for four port operation is single port	ny attenuators, filters and DC I MIMO) operation was determin PSD +6dB [i.e. 10 Log(4)].	locks. Band n66 d led based upon A	arriers are enabled a NSI 63.26 clause 6.4.3	t maximum power (80 v 3.2.4 (10 Log Nout). The	vatts/carrier).The PSD was total PSD for two port op	measured eration is
DEVIATIONS FROM	M TEST STANDARD							
None								
Configuration #	2	Signature	and Jak	Duty Cyclo	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
			dBm/MHz	Factor (dB)	dBm/MHz == PSD	dBm/MHz == PSD	dBm/MHz == PSD	
Band n66, 2110 MH	lz - 2200 MHz, 5G NR Port 1 5 MHz Band	dwidth QPSK Modulation						
		Low Channel, 2112.5 MHz	42.787	0	42.8	45.8	48.8	
		Mid Channel, 2155 MHz	42.618	0	42.6	45.6	48.6	
		High Channel, 2197.5 MHz	42.690	0	42.7	45.7	48.7	
		16-QAM Modulation	42 714	0	42.7	45.7	49.7	
		Mid Channel 2155 MHz	42.714	0	42.7	45.7	48.5	
		High Channel, 2197.5 MHz	42.615	0 0	42.6	45.6	48.6	
		64-QAM Modulation						
		Low Channel, 2112.5 MHz	42.770	0	42.8	45.8	48.8	
		Mid Channel, 2155 MHz	42.517	0	42.5	45.5	48.5	
		High Channel, 2197.5 MHz	42.631	0	42.6	45.6	48.6	
		200-QAM Modulation	42 744	0	42.7	45.7	48.7	
		Mid Channel, 2155 MHz	42.744	0	42.7	45.7	40.7	
		High Channel, 2197.5 MHz	42.614	0 0	42.6	45.6	48.6	
	10 MHz Bar	ndwidth						
		QPSK Modulation						
		Mid Channel, 2155 MHz	39.254	0	39.3	42.3	45.3	
		16-QAM Modulation				10.0	18.0	
		Mid Channel, 2155 MHz	39.931	0	39.9	42.9	45.9	
		Mid Channel 2155 MHz	39 255	0	30.3	42.3	45.3	
		256-QAM Modulation	00.200	0	00.0	42.0	40.0	
		Mid Channel, 2155 MHz	39.266	0	39.3	42.3	45.3	
	15 MHz Bar	ndwidth						
		QPSK Modulation						
		Mid Channel, 2155 MHz	37.551	0	37.6	40.6	43.6	
		16-QAM Modulation Mid Chappel 2155 MHz	30.036	0	30.0	42.0	45.0	
		64-QAM Modulation	39.000	0	33.0	42.0	45.0	
		Mid Channel, 2155 MHz	37,590	0	37.6	40.6	43.6	
		256-QAM Modulation						
		Mid Channel, 2155 MHz	37.566	0	37.6	40.6	43.6	
	20 MHz Bar	ndwidth						
		QPSK Modulation	26 404	0	26.4	20.4	40.4	
		16 OAM Modulation	36.401	0	36.4	39.4	42.4	
		Mid Channel 2155 MHz	37 940	0	37.9	40.9	43.9	
		64-QAM Modulation	01.010		01.0	10.0	10.0	
		Mid Channel, 2155 MHz	36.360	0	36.4	39.4	42.4	
		256-QAM Modulation						
	00.1411-0	Mid Channel, 2155 MHz	36.329	0	36.3	39.3	42.3	
	30 MHż Bai	OPSK Modulation						
		Mid Channel 2155 MHz	34 589	0	34.6	37.6	40.6	
		16-QAM Modulation	04.000	·	51.0	01.0		
		Mid Channel, 2155 MHz	36.325	0	36.3	39.3	42.3	
		64-QAM Modulation						
		Mid Channel, 2155 MHz	34.652	0	34.7	37.7	40.7	
		256-QAM Modulation	A.4.5				10.0	
		Mid Channel, 2155 MHz	34.629	0	34.6	37.6	40.6	













#VBW 3.0 MHz*

STATUS

Span 10.00 MHz #Sweep 601.0 ms (601 pts)

Center 2.197500 GHz #Res BW 1.0 MHz









STATUS





















element







STATUS





#VBW 3.0 MHz*

STATUS







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 bandw idth, 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.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for four port MIMO) from the results of power measurements (highest measured PSD for each channel bandwidth type). The total worst case PSD for four port MIMO is calculated as the worst case PSD for a single port + 6dB [10l og (4)] based upon ANSI C63.26 clause 6.4.3.2.4 (10 Log N_{nin}). 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) b ut for this worst case EIRP calculation 0 dB was used. Calculations of worst case EIRP for four port MIMO are as follows:

Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW	30 MHz Ch BW
Worst Case PSD/Antenna Port	42.8 dBm/MHz	39.9 dBm/MHz	39 dBm/MHz	37.9 dBm/MHz	36.3 dBm/MHz
Total PSD for Four Port MIMO 10Log 4 = + 6dB	48.8 dBm/MHz	45.9 dBm/MHz	45 dBm/MHz	43.9 dBm/MHz	42.3 dBm/MHz
Cable Loss (site dependent)	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum Antenna Gain	18.2 dBi	18.2 dBi	18.2 dBi	18.2 dBi	18.2 dBi
Worst Case Four Port MIMO EIRP Total	67.0 dBm/MHz	64.1 dBm/MHz	63.2 dBm/MHz	62.1 dBm/MHz	60.5 dBm/MHz

Calculation Summary

The worst case AHFII four port MIMO Band n66 EIRP levels using antenna assembly model "80011867" are: (1) Less than the FCC and ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 10, 15, 20 & 30MHz channel bandwidths

(2)Over the FCC/ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits by 1.84 dB (67.0dBm/MHz - 65.16dBm/MHz) for the 5MHz channel bandwidth. EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements as noted above.

(3)Less than the FCC and ISED [1640 W/MHz or 62.15 dBm/MHz] EIRP Regulatory Limits for 20 & 30MHz channel bandwidths. (4)Over the FCC/ISED (1640 W/MHz or 62.15 dBm/MHz) EIRP Regulatory Limits by 4.85 dB (67.0dBm/MHz - 62.15dBm/MHz) for the 5MHz channel bandwidth, by 1.95 dB (64.1dBm/MHz - 62.15dBm/MHz) for the 10MHz channel bandwidth, and by 1.05 dB (63.2dBm/MHz - 62.15dBm/MHz) for the 15MHz channel bandwidth. EIRP calculations are needed at each transmitter l ocation to optimize base station operational performance while meeting regulatory requirements as noted

above. (5) See "Output Power - Lowered Power" and the Power Spectral Density - Lowered Power" sections of this report for details of compliance verification by changing BTS configuration file power output parameters.



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	Keysight	N5182B	TEV	2021-04-27	2024-04-27
Block - DC	Fairview Microwave	SD3379	AMM	2021-09-14	2022-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

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 transmit power was set to levels seen in the datasheet.

The method of section 5.2.4.5 of ANSI C63.26 was used to make the measurement. The method uses trace averaging across ON and OFF times of EUT transmissions using the spectrum analyzer's RMS detector. Following the measurement a duty cycle correction was applied by adding [10log(1/D)], where D is the duty cycle, to the measured power to compute the PSD during the transmit times.

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) 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 total PSD of all antenna ports (at the radio output) was determined per ANSI C63.26-2015 paragraph 6.4.3.2.4.

The EIRP calculations were based upon ANSI C63.26-2015 sections 6.4.3.2.4, section 6.4.5.3 and section 6.4.5.2 for a four port MIMO base station.

Compliance check for EIRP Limit of 3280W/MHz or 65.16dBm/MHz:

As shown in the EIRP calculation tables in the "PSD and EIRP Calculations" report sections, the highest AHFII antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 41.2dBm/MHz for Band n25 and 40.9dBm/MHz for Band n66. The maximum carrier power levels were reduced by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit.

Compliance check for EIRP Limit of 1640W/MHz or 62.15dBm/MHz:

As shown in the EIRP calculation tables in the "PSD and EIRP Calculations" report sections, the highest AHFII antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 38.2dBm/MHz for Band n25 and 37.9dBm/MHz for Band n66. The maximum carrier power levels were reduced by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit.



							TbtTx 2022.03.14.0	XMit 2022.02.07.0
EUT: AHFII R	emote Radio Hea	ıd				Work Order:	NOKI0038	
Serial Number: YK2140	00035					Date:	22-Mar-22	
Customer: Nokia c	f America Corpor	ration				Temperature:	22.7 °C	
Attendees: Mitchel	Hill					Humidity:	24.4% RH	
Project: None						Barometric Pres.:	1023 mbar	
Tested by: Brando	n Hobbs		Power:	54 VDC		Job Site:	TX06	
TEST SPECIFICATIONS				Test Method				
FCC 24E:2022				ANSI C63.26:2015				
RSS-133 Issue 6:2013+A1:	2018			RSS-133 Issue 6:2013-	-A1:2018			
COMMENTS								
All measurement path loss	es were accounte	ed for in the reference level offest inclu	iding any attenuat	ors, filters and DC bloc	ks. The Band n2	5 NR5, NR10, NR15 and NR20 carrier p	ower levels were	reduced to
demonstrate compliance w	ith EIRP limits. T	he maximum port 1 PSD Lower limit le	vel is 38.2 dBm/M	Hz for the base station	calculated EIRP	level not to exceed the EIRP limit (1640	Watts/MHz). The	maximum port 1
PSD higher limit level is 41	.2 dBm/MHz for t	he base station calculated EIRP level n	ot to exceed the E	EIRP limit (3280 Watts/	1Hz).			
DEVIATIONS EPOM TEST	STANDARD			·	,			
None	STANDARD							
None				/				
Configuration #	2		7-1	1 1				
		Signature	X	Jack				
				Initial Value	Duty Cyclo	Single Port	limit	
						Single Fort	LIIIII	
				dBm/MHz == PSD	Factor (dB)	dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n25, 1930 MHz	- 1995 MHz, 5G N	IR		dBm/MHz == PSD	Factor (dB)	dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation	IR		dBm/MHz == PSD	Factor (dB)	dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation Single Carrie	IR r		dBm/MHz == PSD	Factor (dB)	dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation Single Carrie	IR ir 5 MHz Bandwidth, Low Limit		dBm/MHz == PSD	Factor (dB)	dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation Single Carrie	IR r 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz		dBm/MHz == PSD 37.725	Factor (dB)	dBm/MHz == PSD 37.7	(dBm/MHz) 38.2	Results
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation Single Carrie	IR r 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit		dBm/MHz == PSD 37.725	Factor (dB)	dBm/MHz == PSD 37.7	(dBm/MHz) 38.2	Results Pass
Port 1, Band n25, 1930 MHz 256-QA	- 1995 MHz, 5G N M Modulation Single Carrie	IR 5 MHz Bandwidth, Low Limit 5 MHz Bandwidth, Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz		dBm/MHz == PSD 37.725 40.664	Factor (dB)	dBm/MHz == PSD 37.7 40.7	(dBm/MHz) 38.2 41.2	Results Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N M Modulation Single Carrie	IR r 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz		37.725 40.664	0 0	dBm/MHz == PSD 37.7 40.7	(dBm/MHz) 38.2 41.2	Results Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N M Modulation Single Carrie	IR 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz r		37.725 40.664	0 0	dBm/MHz == PSD 37.7 40.7	(dBm/MHz) 38.2 41.2	Results Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N M Modulation Single Carrie Modulation Single Carrie	IR s MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz r 10 MHz Bandwidth, Low Limit		37.725 40.664	0 0	dBm/MHz == PSD 37.7 40.7	(dBm/MHz) 38.2 41.2	Results Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAM	- 1995 MHz, 5G N M Modulation Single Carrie Modulation Single Carrie	IR 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz In 10 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz		37.725 37.772	0 0 0	dBm/MHz == PSD 37.7 40.7 37.8	(dBm/MHz) 38.2 41.2 38.2	Results Pass Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N Modulation Single Carrie Modulation Single Carrie	IR 5 MHz Bandwidth, Low Limit 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz 10 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz 15 MHz Bandwidth, Low Limit		37.725 40.664 37.772	0 0 0	dBm/MHz == PSD 37.7 40.7 37.8	(dBm/MHz) 38.2 41.2 38.2	Results Pass Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N Modulation Single Carrie Modulation Single Carrie	IR 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz rr 10 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz 15 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz		37.725 40.664 37.772 37.712	0 0 0 0 0	dBm/MHz == PSD 37.7 40.7 37.8 37.8 37.7	(dBm/MHz) 38.2 41.2 38.2 38.2 38.2	Results Pass Pass Pass Pass
Port 1, Band n25, 1930 MHz 256-QA 16-QAN	- 1995 MHz, 5G N Modulation Single Carrie Modulation Single Carrie	IR r 5 MHz Bandwidth, Low Limit Low Channel, 1932.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 1932.5 MHz r 10 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz 15 MHz Bandwidth, Low Limit Mid Channel, 1962.5 MHz 20 MHz Bandwidth, Low Limit		37.725 40.664 37.772 37.712	0 0 0 0 0	dBm/MHz == PSD 37.7 40.7 37.8 37.7	(dBm/MHz) 36.2 41.2 38.2 38.2	Results Pass Pass Pass Pass





#VBW 3.0 MHz*

Center 1.932500 GHz #Res BW 1.0 MHz

Span 10.00 MHz

#Sweep 601.0 ms (601 pts)





#VBW 3.0 MHz*

Center 1.96250 GHz #Res BW 1.0 MHz

Span 25.00 MHz

#Sweep 601.0 ms (601 pts)







								TbtTx 2022.03.14.0	XMit 2022.02.07.0
EUT:	AHFII Remote Radio Hea	d				Work	Corder: N	OKI0038	
Serial Number:	YK214000036						Date: 22	2-Mar-22	
Customer:	Nokia of America Corpor	ation				Tempe	erature: 22	2.6 °C	
Attendees:	Mitchell Hill					Hu	umidity: 23	3.7% RH	
Project:	None					Barometrie	c Pres.: 10	026 mbar	
Tested by:	Mark Baytan		Power:	54 VDC		Je	ob Site: T	X09	
TEST SPECIFICAT	IONS			Test Method					
FCC 27:2022				ANSI C63.26:2015					
RSS-139 Issue 3:20	015			RSS-139 Issue 3:201	15				
RSS-170 Issue 3:20	015			RSS-170 Issue 3:201	15				
COMMENTS									
All measurement p	ath losses were accounte	d for in the reference level offest includi	ing any attenuators,	filters and DC block	s. The Band n66	NR5, NR10, NR15 and NR20 c	arrier pow	ver levels were re	educed to
demonstrate comp	liance with EIRP limits. Th	ne maximum port 1 PSD Lower limit leve	el is 37.9 dBm/MHz fo	or the base station of	alculated EIRP le	evel not to exceed the EIRP lin	nit (1640W	atts/MHz). The m	naximum port 1
PSD higher limit le	vel is 40.9 dBm/MHz for th	e base station calculated EIRP level not	t to exceed the EIRP	limit (3280 Watts/M	Hz).				
DEVIATIONS FROM	I TEST STANDARD								
None									
			n /						
Configuration #	2		4LE	St					
Configuration #	2	Signature	446	5+					
Configuration #	2	Signature	446	Initial Value	Duty Cycle	Single	Port	Limit	
Configuration #	2	Signature	446	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz	Port == PSD	Limit (dBm/MHz)	Results
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N	Signature	446	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz	Port == PSD	Limit (dBm/MHz)	Results
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N QPSK Modulation	Signature	446	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz	Port == PSD	Limit (dBm/MHz)	Results
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie	Signature R r	4-4 6	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz	Port == PSD	Limit (dBm/MHz)	Results
Configuration #	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie	Signature R f MHz Bandwidth, Low Limit	4-+ 6	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz	Port == PSD	Limit (dBm/MHz)	Results
Configuration #	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie	Signature R r 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz	446	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz 37.5	Port == PSD	Limit (dBm/MHz) 37.9	Results Pass
Configuration #	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie	Signature R 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit	4-4 6	Initial Value dBm/MHz == PSD	Duty Cycle Factor (dB)	Single dBm/MHz 37.	Port == PSD	Limit (dBm/MHz) 37.9	Results Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G NI QPSK Modulation Single Carrie	Signature R 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491	Duty Cycle Factor (dB) 0	Single dBm/MHz 37.9	Port == PSD 5	Limit (dBm/MHz) 37.9 40.9	Results Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N QPSK Modulation Single Carrie 16-QAM Modulation	Signature R r 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491	Duty Cycle Factor (dB) 0	Single dBm/MHz 37.9 40.9	Port == PSD 5	Limit (dBm/MHz) 37.9 40.9	Results Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie 16-QAM Modulation Single Carrie	Signature R 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491	Duty Cycle Factor (dB) 0	Single dBm/MHz 37. 40.3	Port == PSD 5	Limit (dBm/MHz) 37.9 40.9	Results Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G NI QPSK Modulation Single Carrie 16-QAM Modulation Single Carrie	Signature R r 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r 10 MHz Bandwidth, Low Limit	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491	Duty Cycle Factor (dB) 0	Single dBm/MHz 37. 40.	Port == PSD 5	Limit (dBm/MHz) 37.9 40.9	Results Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N QPSK Modulation Single Carrie 16-QAM Modulation Single Carrie	Signature R r 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r 10 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491 37.601	Duty Cycle Factor (dB) 0 0	Single dBm/MHz 37.0 40.0 37.0	Port == PSD 5 5	Limit (dBm/MHz) 37.9 40.9 37.9	Results Pass Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G Ni QPSK Modulation Single Carrie Single Carrie	Signature R 5 MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r 10 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz 15 MHz Bandwidth, Low Limit	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491 37.601	Duty Cycle Factor (dB) 0 0	Single dBm/MHz 37. 40. 37.	Port == PSD 5 6	Limit (dBm/MHz) 37.9 40.9 37.9	Results Pass Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N OPSK Modulation Single Carrie 16-QAM Modulation Single Carrie	Signature Signature S MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r 10 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz 15 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491 37.601 37.405	Duty Cycle Factor (dB) 0 0 0	Single dBm/MHz 37. 40. 37. 37.	Port == PSD 5 5 6 4	Limit (dBm/MHz) 37.9 40.9 37.9 37.9	Results Pass Pass Pass Pass
Configuration # Port 1, Band n66, 21	2 110 MHz - 2200 MHz, 5G N QPSK Modulation Single Carrie 16-QAM Modulation Single Carrie	Signature Signature S MHz Bandwidth, Low Limit Low Channel, 2112.5 MHz 5 MHz Bandwidth, High Limit Low Channel, 2112.5 MHz r 10 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz 15 MHz Bandwidth, Low Limit Mid Channel, 2155.0 MHz 20 MHz Bandwidth, Low Limit	4-2 6	Initial Value dBm/MHz == PSD 37.505 40.491 37.601 37.405	Duty Cycle Factor (dB)	Single dBm/MHz 37.4 40.9 37.4 37.4 37.4 37.4	Port == PSD 5 5 6 4	Limit (dBm/MHz) 37.9 40.9 37.9 37.9 37.9	Results Pass Pass Pass Pass





Initial value	Duty Cycle		Single Port	Limit	
dBm/MHz == PSD	Factor (dB)	(dBm/MHz == PSD	(dBm/MHz)	Results
40.491	0		40.5	40.9	Pass











