

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2021-03-11	2022-03-11
Block - DC	Fairview Microwave	SD3379	AMM	2020-09-21	2021-09-21

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

The method in section 5.2.4.4 of ANSI C63.26 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed on all sixteen ports at NR5 middle channel to demonstrate that the AAIB antenna ports are essentially electrically identical. AAIB 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.

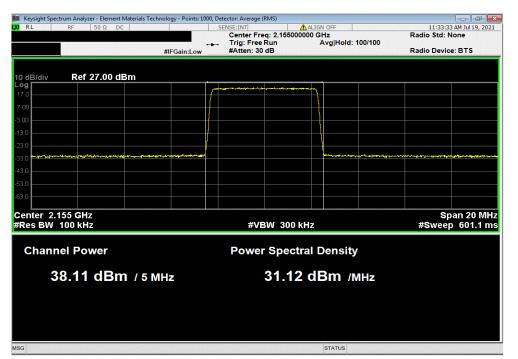


						TbtTx 2021.03.19.1	XMit 202
	AAIB (FCC/ISED C2PC)				Work Order:		
Serial Number:						19-Jul-21	
	Nokia Solutions and Netwo	orks			Temperature:		
	David Le, Mitchell Hill					58.6% RH	
Project:					Barometric Pres.:		
	Brandon Hobbs		Power: 54 VDC		Job Site:	TX09	
T SPECIFICAT	IONS		Test Method				
; 27:2021			ANSI C63.26:2015				
6-139 Issue 3:20	015, RSS-170 Issue 3:2015		RSS-139 Issue 3:20	15, RSS-170 Issue 3:2015			
IMENTS							
•	orts. Band n66 NR5 carriers	are enabled at maximum power (6.25	i watts/carrier).				
e							
nfiguration #	2	Signature	2 Jan				
			Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Limit (dBm)	Result
n66, 2110 MH	z - 2200 MHz			~ /			
	5 MHz Bandwidth						
	256-QAM Modu	ulation					
		ulation lid Channel 2155 MHz					
			38.235	0	38.2	Inside Tolerance	N/A
		lid Channel 2155 MHz	38.235 38.114	0 0	38.2 38.1	Inside Tolerance Inside Tolerance	N/A N/A
		lid Channel 2155 MHz Port 1					
		lid Channel 2155 MHz Port 1 Port 2	38.114	0	38.1	Inside Tolerance	N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3	38.114 38.013	0 0	38.1 38.0	Inside Tolerance Inside Tolerance	N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4	38.114 38.013 37.995	0 0 0	38.1 38.0 38.0	Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5	38.114 38.013 37.995 38.020	0 0 0 0	38.1 38.0 38.0 37.9 38.0	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6	38.114 38.013 37.995 38.020 37.922	0 0 0 0 0	38.1 38.0 38.0 38.0 38.0 37.9	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7	38.114 38.013 37.995 38.020 37.922 38.036	0 0 0 0 0	38.1 38.0 38.0 37.9 38.0	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 5 Port 6 Port 7 Port 8	38.114 38.013 37.995 38.020 37.922 38.036 37.942	0 0 0 0 0 0 0	38.1 38.0 38.0 38.0 37.9 38.0 37.9	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8 Port 9	38.114 38.013 37.995 38.020 37.922 38.036 37.942 37.879	0 0 0 0 0 0 0 0	38.1 38.0 38.0 37.9 38.0 37.9 37.9 37.9	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8 Port 9 Port 10	38.114 38.013 37.995 38.020 37.922 38.036 37.942 37.879 37.767		38.1 38.0 38.0 38.0 37.9 38.0 37.9 37.9 37.9 37.9 37.8	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 5 Port 6 Port 7 Port 8 Port 9 Port 10 Port 11	38.114 38.013 37.995 38.020 37.922 38.036 37.942 37.879 37.767 37.808		38.1 38.0 38.0 37.9 38.0 37.9 37.9 37.9 37.8 37.8 37.8	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8 Port 9 Port 9 Port 10 Port 11 Port 12	38.114 38.013 37.995 38.020 37.922 38.036 37.942 37.879 37.767 37.808 37.867		38.1 38.0 38.0 37.9 38.0 37.9 37.9 37.9 37.8 37.8 37.8 37.8 37.9	Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A N/A N/A
		lid Channel 2155 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8 Port 9 Port 10 Port 11 Port 12 Port 13	38.114 38.013 37.995 38.020 37.922 38.036 37.942 37.879 37.767 37.808 37.867 37.979		38.1 38.0 38.0 37.9 38.0 37.9 37.9 37.9 37.8 37.8 37.8 37.8 37.9 38.0	Inside Tolerance Inside Tolerance	N/A N/A N/A N/A N/A N/A N/A N/A N/A



	Avg Cond	Duty Cycle		Single Port	Limit	
	Pwr (dBm)	Factor (dB)	T	dBm/Carrier BW	(dBm)	Results
	38.235	0		38.2	Inside Tolerance	N/A
Keysight Spectrum Analyzer - Ele RL RF 50 Ω	ment Materials Tech		tector: Average (RMS) ENSE:INT	ALIGN OFF	11,20,4	43 AM Jul 19, 2021
KL KF 50 M	DC	3	Center Freq: 2.155	000000 GHz	Radio Std:	
			Trig: Free Run #Atten: 30 dB	Avg Hold: 100	/100 Radio Devi	OC BTS
		#IFGain:Low	#Atten: 30 dB		Radio Devi	ce: BTS
10 dB/div Ref 27.0	0 dBm					
17.0						
7.00						
-3.00						
-13.0						
-23.0						
-33.0 ***********************************	hand a state of the state of th	manuna		and and a start of the start of	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	applicipation
-43.0						
-53.0						
-63.0						
Center 2.155 GHz					S	pan 20 MHz
#Res BW 100 kHz			#VBW 30	0 kHz	#Swee	p 601.1 ms
Channel Power			Power Spe	ctral Density		
			04.0			
38.23 dl	3m / 5 M	Hz	31.2	25 dBm /мн	Z	
MSG				STATUS		

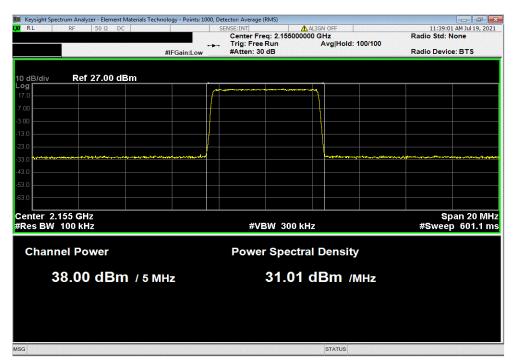
	Avg Cond	Duty Cycle	Single Port	Limit	
	Pwr (dBm)	Factor (dB)	dBm/Carrier BW	(dBm)	Results
	38.114	0	38.1	Inside Tolerance	N/A





		Avg Cond	Duty Cycle		Single Port	Limit	
		Pwr (dBm)	Factor (dB)		dBm/Carrier BW	(dBm)	Results
		38.013	0		38	Inside Tolerance	N/A
			nology - Points: 1000, D				
RL	RF 5	OΩ DC		SENSE:INT Center Freq: 2.15	ALIGN OFF	11:36:1 Radio Std:	15 AM Jul 19, 2021
				Trig: Free Run	Avg Hold: 100	/100	
			#IFGain:Low	#Atten: 30 dB		Radio Devi	ce: BTS
	Ref 27	.00 dBm					
Log 17.0			~				
7.00							
-3.00							
-13.0			/				
-23.0							
-33.0			and the second sec		Manufar a service a	Manual Called Start Association	ward and the second
-43.0							
-53.0							
-63.0							
Center 2.15							pan 20 MHz
#Res BW 10	00 KHZ			#VBW 30	0 kHz	#Swee	p 601.1 ms
Channel	Pow	er		Power Spe	ctral Density		
38	.01 c	dBm / 5 №	IHz	31.	02 dBm /м⊦	z	
MSG					STATUS		

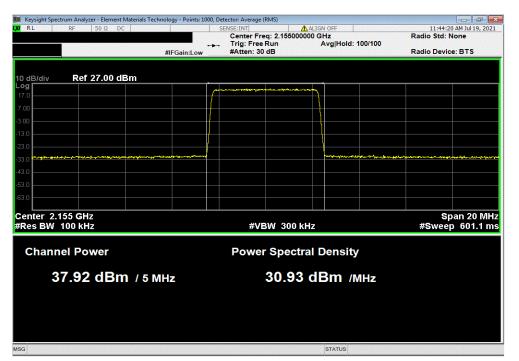
	Avg Cond	Duty Cycle	Single Port	Limit	
	Pwr (dBm)	Factor (dB)	 dBm/Carrier BW	(dBm)	Results
	37.995	0	38	Inside Tolerance	N/A





	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Single P dBm/Carrie		Limit (dBm)	Results
	38.02		1	38		de Tolerance	N/A
-							
Keysight Spectrum Analyzer	- Element Materials Tech 50 Ω DC		tector: Average (RN ENSE:INT	ALIGN OFF		11:41:	a a a a a a a a a a a a a a a a a a a
		#IFGain:Low		2.155000000 GHz un Avg H	old: 100/100	Radio Std: Radio Devi	None
	7.00 dBm						
17.0							
7.00							
-3.00							
-13.0							
-23.0							
-33.0 "************************************	and a star of the	the second second second second			1-144-40-400-404-404-404-404-404-404-404	house and a start of the second s	ang ang the second s
-43.0							
-53.0							
Center 2.155 GHz #Res BW 100 kHz			#VBV	V 300 kHz			pan 20 MHz p 601.1 ms
Channel Pow	ver		Power	Spectral Dens	sity		
38.02	dBm / 5 N	IHz	3	1.03 dBm	/MHz		
MSG				STATU	IS		

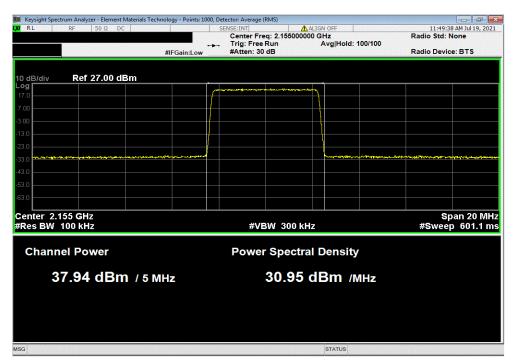
	Band n6	6, 2110 MHz - 22	00 MHz, 5 MHz I	Bandwidth, 256-C	AM Modulation, Mid	Channel 2155 MH	z, Port 6
		Avg Cond	Duty Cycle		Single Port	Limit	
		Pwr (dBm)	Factor (dB)		dBm/Carrier BW	(dBm)	Results
[37.922	0		37.9	Inside Tolerance	N/A





		Avg Cond	Duty Cycle	•	Single Port	Limit	
		Pwr (dBm)	Factor (dB		dBm/Carrier BV		Results
		38.036	0		38	Inside Tolerance	N/A
			nology - Points: 1000,	Detector: Average (RMS)			
XI RL	RF 5	OΩ DC		SENSE:INT Center Freq: 2.	ALIGN OFF	11:47:0 Radio Std:	0 AM Jul 19, 2021
				, Trig: Free Run	Avg Hold: 1		None
			#IFGain:Low	#Atten: 30 dB		Radio Devid	ce: BTS
10 dB/div	Ref 27	'.00 dBm					
Log 17.0			1				
7.00							
-3.00							
-13.0			-				
-23.0							
-33.0	- Mary - And	*******	***************************************			Madulaphan and an and an all and a second and a second	a and a set the set of the set of the
-43.0							
-53.0							
-63.0							
Center 2.1	55 GHz					Q	pan 20 MHz
#Res BW 1				#VBW	300 kHz		p 601.1 ms
Channe	el Pow	er		Power Sp	ectral Density		
31	3.04 (dBm / 5 M	Hz	31	.05 dBm /м	Hz	
MSG					STATUS		

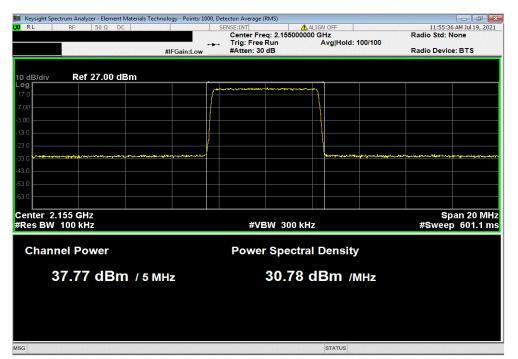
	Avg Cond	Duty Cycle	Single Port	Limit	
	Pwr (dBm)	Factor (dB)	dBm/Carrier BW	(dBm)	Results
	37.942	0	37.9	Inside Tolerance	N/A





		g Cond	Duty Cycl			Single Port		imit	Desertes
		r (dBm) 7.879	Factor (dE	5)		dBm/Carrier BV 37.9		Bm) Tolerance	Results N/A
	3	1.019	0			57.9	Inside	Tolerance	N/A
				-					
Keysight Spectrum Analy RL RF	zer - Element 50 Ω D		nology - Points: 1000		ctor: Average (RMS)	ALIGN OFF		11:52:3	4 AM Jul 19, 2021
		-			Center Freq: 2.155	000000 GHz		Radio Std: I	
			#IFGain:Low	•	Trig: Free Run #Atten: 30 dB	Avg Hold: 1	100/100	Radio Devid	e: BTS
10 dB/div Ref	27.00 d	Bm							
Log	21.00 0					www.			
17.0									
7.00									
-3.00									
-13.0									
-23.0									
-33.0 -33.0			Alexandry Million and a real			Martin California	******	aparatan ang tang tang tang tang tang tang t	
-43.0									
-53.0									
-63.0									
Center 2.155 GH	7							S	oan 20 MHz
#Res BW 100 kH					#VBW 30	0 kHz			p 601.1 ms
Channel Po	wer				Power Spe	ctral Density			
37.88	dBn	n / 5 M	Hz		30.8	39 dBm /M	IH7		
MSG						STATUS			

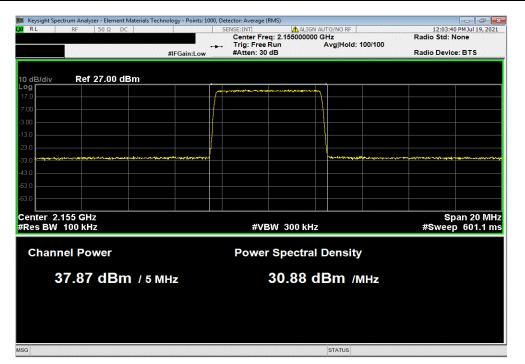
	Avg Cond	Duty Cycle	Single Port	Limit	
	Pwr (dBm)	Factor (dB)	dBm/Carrier BW	(dBm)	Results
	37.767	0	37.8	Inside Tolerance	N/A





	Avg Cond	Duty Cycle			ngle Port	Limit	Desults
	Pwr (dBm) 37.808	Factor (dB)		aBM	Carrier BW 37.8	(dBm) Inside Tolerance	Results N/A
	57.000	0			57.0	Inside Tolerance	N/A
Keysight Spectrum Analyzer	- Element Materials Tech	nology - Points: 1000, Det	ector: Average (RI	VIS)			
X/RL RF	50 Ω DC	SE	ENSE:INT	ALIGN A : 2.155000000	UTO/NO RF	11: Radio St	58:53 AM Jul 19, 2021
		·•·	Trig: Free R		Avg Hold: 100		u. None
		#IFGain:Low	#Atten: 30 d	IB		Radio De	evice: BTS
	7.00 dBm						
17.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
7.00							
-3.00					\		
-13.0					\		
-23.0							
-33.0	way way and a second	wange wages in the first			and the second states and	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
43.0							
-53.0							
-63.0							
Center 2.155 GHz	I						Span 20 MHz
Res BW 100 kHz			#VB\	N 300 kHz			eep 601.1 ms
Channel Pow	/er		Power	Spectral	Density		
37.81	dBm / 5 м	Hz		30.82 d	Вт /мн	z	
SG					STATUS		

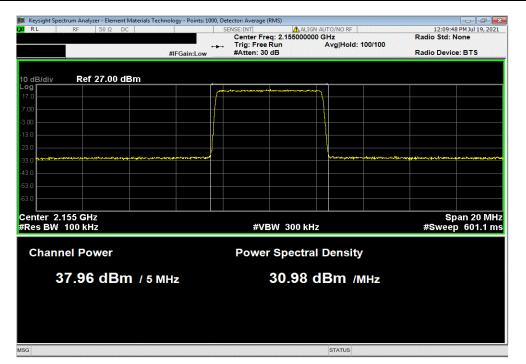
Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz, Port 12									
	Avg Cond	Duty Cycle		Single Port	Limit				
	Pwr (dBm)	Factor (dB)		dBm/Carrier BW	(dBm)	Results			
	37.867	0		37.9	Inside Tolerance	N/A			





	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)			ingle Port n/Carrier BV		imit Bm)	Results
	37.979		1	UBI	38		Folerance	N/A
Keysight Spectrum Analyzer -	Element Materials Techn		tector: Average (I ENSE:INT		AUTO/NO RF		12-06-1	3 PM Jul 19, 2021
	IS2 DC]]]		q: 2.155000000			Radio Std:	
		#IFGain:Low	Trig: Free #Atten: 30		Avg Hold: 1	100/100	Radio Devid	e BTS
		#II Gall.LOW					14410 2011	
10 dB/div Ref 27	.00 dBm							
Log		(m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
17.0								
7.00								
-3.00								
-13.0								
-23.0								
-33.0	๛๚๚๛๚๛๛๛๚๛๛๛๛๛	mphaseduluenon			and and a start of the second s	the state of the second second	have and the series	montragetant
43.0								
-53.0								
-63.0								
Center 2.155 GHz	1						S	pan 20 MHz
#Res BW 100 kHz			#VE	W 300 kHz	:			p 601.1 ms
Channel Powe	er		Power	Spectral	Density			
07.00	D							
37.98 0	IBm / 5 м	Hz		30.99 c	IBM /N	IHZ		
ASG					STATUS			

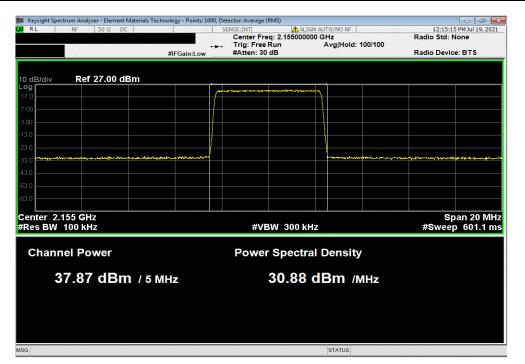
Band n66	6, 2110 MHz - 22	00 MHz, 5 MHz E	Bandwidth, 256-Q	AM Modulation, Mid	Channel 2155 MHz	, Port 14
	Avg Cond	Duty Cycle		Single Port	Limit	
	Pwr (dBm)	Factor (dB)		dBm/Carrier BW	(dBm)	Results
	37.965	0		38	Inside Tolerance	N/A





	Avg Cond	Duty Cycle			gle Port	Limit	
r	Pwr (dBm)	Factor (dB)	1		Carrier BW	(dBm)	Results
	37.891	0			37.9	Inside Tolerance	N/A
Keysight Spectrum Analyzer							
X RL RF	50 Ω DC	5	ENSE:INT Center Frea:	2.155000000 G		Radio Std:	27 PM Jul 19, 2021 None
		•••	Trig: Free Ru	in <i>i</i>	Avg Hold: 100/1		
		#IFGain:Low	#Atten: 30 dB	3		Radio Devi	ice: BTS
	7.00 dBm						
Log 17.0			***************************************	······			
7.00							
-3.00							
-13.0							
-23.0							
-33.0							
-43.0							
-53.0							
-63.0							
Center 2.155 GHz				ļ		S	pan 20 MHz
#Res BW 100 kHz			#VBV	/ 300 kHz			ep 601.1 ms
Channel Pow	ver		Power \$	Spectral [Density		
07.00			•	0.00			
37.89	dBm / 5 N	Hz	చ	0.90 di	Зт /мна	2	
MSG					STATUS		
9	ndende sensense de sen				514105		

Band n6	6, 2110 MHz - 22	00 MHz, 5 MHz B	Bandwidth, 256-Q	AM Modulation, Mid	Channel 2155 MHz	, Port 16
	Avg Cond	Duty Cycle		Single Port	Limit	
	Pwr (dBm)	Factor (dB)		dBm/Carrier BW	(dBm)	Results
	37.873	0		37.9	Inside Tolerance	N/A



OUTPUT POWER - LOWERED POWER



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMM	2020-09-21	2021-09-21
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2021-03-11	2022-03-11
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

The method in section 5.2.4.4 of ANSI C63.26 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed on one port. The AAIB antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification report) and port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4. The total average transmit power of all antenna ports was determined per ANSI C63.26-2015 paragraph 6.4.3.1.

As shown in the EIRP calculation table in the "PSD and EIRP Calculations" report section, the highest AAIB antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 29.1 dBm/MHz. The NR5 and NR10 maximum carrier power levels were reduced by 3.0dB and 1.0 dB respectively by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit (62.15 dBm/MHz).

The AAIB base station configuration file parameters set for maximum carrier output power (37.9dBm) gives a measured maximum NR5 PSD/port result of 32.1dBm/MHz and a worst case calculated EIRP that is 2.95dB over the EIRP limit (62.15dBm/MHz). To show compliance with the EIRP limit (62.15dBm/MHz), the AAIB base station configuration file parameters setting for NR5 carrier output power was set to 34.9dBm (reduced 3.0 dB from maximum) that gives a measured maximum NR5 PSD/port result of 29.0dBm/MHz and a worst case calculated EIRP that is 0.1dB below the EIRP limit (62.15dBm/MHz).

The AAIB base station configuration file parameters set for maximum carrier output power (37.9dBm) gives a measured maximum NR10 PSD/port result of 29.6dBm/MHz and a worst case calculated EIRP that is 0.45dB over the EIRP limit (62.15dBm/MHz). To show compliance with the EIRP limit (62.15dBm/MHz), the AAIB base station configuration file parameters setting for NR10 carrier output power was set to 36.9dBm (reduced 1.0 dB from maximum) that gives a measured maximum NR10 PSD/port result of 28.4dBm/MHz and a worst case calculated EIRP that is 0.7dB below the EIRP limit (62.15dBm/MHz).

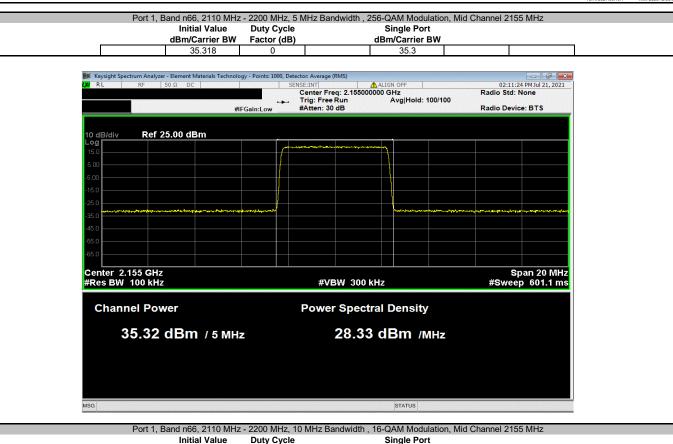
OUTPUT POWER - LOWERED POWER



EUT: A	AIB (FCC/ISED C2PC)				Work Order:	NOKI0030	
Serial Number: Bl	3L2032123Y0					21-Jul-21	
Customer: No	lokia Solutions and Netw	vorks			Temperature:	21.1 °C	
Attendees: Da	David Le, Mitchell Hill					52.1% RH	
Project: No					Barometric Pres.:		
	Brandon Hobbs		Power: 54 VDC		Job Site:	TX09	
TEST SPECIFICATION	NS		Test Method				
FCC 27:2021			ANSI C63.26:2015				
RSS-139 Issue 3:2015,	5, RSS-170 Issue 3:2015		RSS-139 Issue 3:20	15, RSS-170 Issue 3:20	15		
COMMENTS							
bandwidth on port 1.		ier power levels were reduced to de	monstrate compliance with EIRP limits	shown elsewhere in th	lis report.		
DEVIATIONS FROM T		ier power levels were reduced to de Signature	Jar				
DEVIATIONS FROM T None Configuration #	TEST STANDARD	· 	monstrate compliance with EIRP limits	shown elsewhere in th Duty Cycle Factor (dB)	single Port dBm/Carrier BW		
DEVIATIONS FROM T None Configuration #	TEST STANDARD	· 	- Jan Initial Value	Duty Cycle	· Single Port		
DEVIATIONS FROM T None Configuration #	TEST STANDARD	· 	- Jan Initial Value	Duty Cycle	· Single Port		
DEVIATIONS FROM T None Configuration #	2 0 MHz - 2200 MHz MHz Bandwidth 256-QAM Mo	Signature	Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW		
DEVIATIONS FROM T None Configuration # Port 1, Band n66, 2110 5 I	2 2 D MHz - 2200 MHz MHz Bandwidth 256-QAM Mo	Signature	- Jan Initial Value	Duty Cycle	Single Port		
DEVIATIONS FROM T None Configuration # Port 1, Band n66, 2110 5 I	2 0 MHz - 2200 MHz MHz Bandwidth 256-QAM Mo	dulation Mid Channel 2155 MHz	Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW		

OUTPUT POWER - LOWERED POWER





Initial value	Duty Cycle	Single Port	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	
37.095	0	37.1	

Keysight Spectrum Analyzer - Element Material RL RF 50 Ω DC			GN AUTO/NO RF	02:40:52 PM Jul 21, 202	
	#IFGain:Low	Center Freq: 2.155000		Radio Std: None Radio Device: BTS	
dB/div Ref 28.00 dBm					
0					
0 0					
o 					
enter 2.155 GHz				Span 25 MH	
tes BW 200 kHz		#VBW 620 k	Hz	#Sweep 601.1 m	
Channel Power		Power Spectr			
37.09 dBm /	10 MHz	27.09	dBm /мнz		
			STATUS		



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	Agilent	N9010A	AFL	2021-03-11	2022-03-11
Block - DC	Fairview Microwave	SD3379	AMM	2020-09-21	2021-09-21
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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 AAIB 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 and 6.4.6.3.

The applicable FCC and ISED regulatory requirements for EIRP are as follows.

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 Section 6.5/SRSP-513 Section 5.1.1 SRSP-513 5.1 Radiated Power and Antenna Height Limits

5.1.1 Fixed and Base Stations

5.1.1.2 For fixed and base stations operating within the frequency range 2110-2180 MHz with a channel bandwidth greater than 1 MHz, the maximum permissible e.i.r.p. is 1640 watts/MHz e.i.r.p. (i.e. no more than 1640 watts e.i.r.p. in any 1 MHz band segment) with an antenna height above average terrain (HAAT) up to 300 metres.

5.1.1.3 Fixed and base stations located in geographic areas at a distance greater than 26 km from large or medium population centres and transmitting within the frequency range 2110-2180 MHz, may increase their e.i.r.p. up to a maximum of 3280 watts/MHz (i.e. no more than 3280 watts e.i.r.p. in any 1 MHz band segment), with an antenna HAAT up to 300 metres.

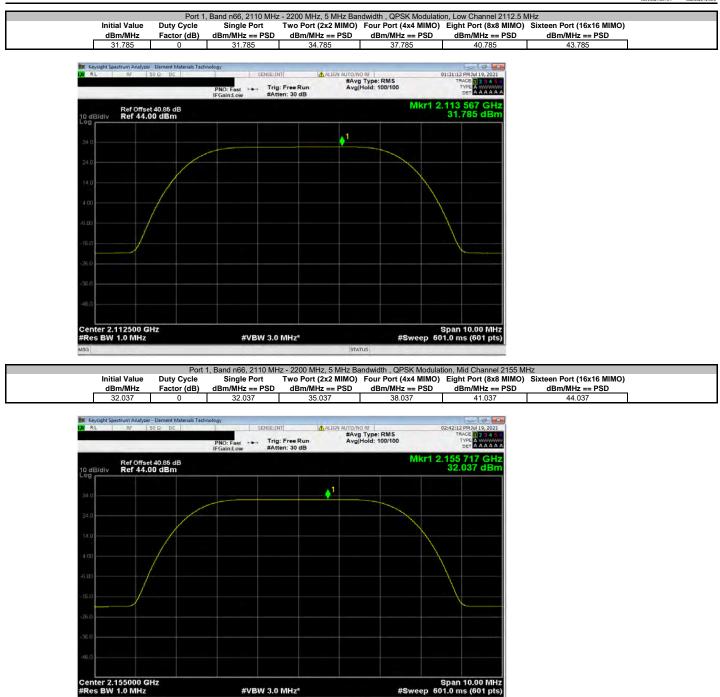
5.1.1.4 Fixed and base station antenna heights above average terrain may exceed 300 metres with a reduction in e.i.r.p. The maximum permissible e.i.r.p. for installations with antenna HAAT in excess of 300 metres is given in the following table:

ISED Requirements RSS-170 Section 5.3.1/SRSP-519 Section 5.1 SRSP-519 5.1 Radiated Power and Antenna Height Limits for Base Stations

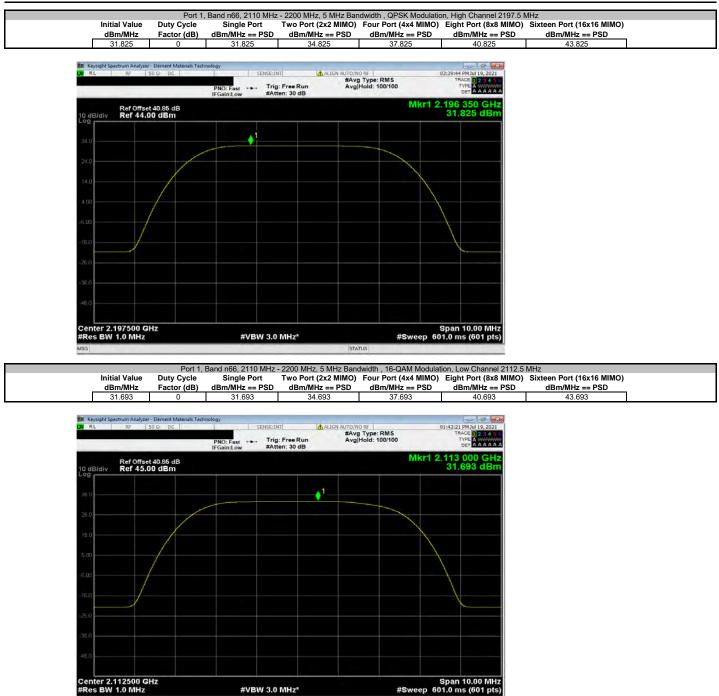


								TbtTx 2021.03.19.1	XMit 2020.12
	AIB (FCC/ISED C2PC)						Work Order:		
Serial Number: B								21-Jul-21	
	okia Solutions and Ne	tworks					Temperature:		
	avid Le, Mitchell Hill							52.9% RH	
Project: N			Bauran	54 VDC			Barometric Pres.:		
EST SPECIFICATIO	randon Hobbs		Power:	Test Method			Job Site:	1809	
	00				~				
CC 27:2021		-		ANSI C63.26:201		0015			
	5, RSS-170 Issue 3:201	5		RSS-139 Issue 3	2015, RSS-170 Issue 3	3:2015			
OMMENTS									
x4 MIMO, 8x8 MIMO	& 16x16 MIMO) opera	tion was determinded based	upon ANSI 63.26 clause 6.4	.3.2.4 (10 Log No	ut). The total PSD for t	two port operation is s	ingle port PSD +3dB [i.	.e. 10 Log(2)]. The total	PSD for four port operation
aximum for all testi	ing.	e total PSD for eight port ope	ration is single port PSD +9	dB [I.e. 10 Log(8)j. The total PSD for s	axteen port operation	is single port PSD +120	1B [I.e. 10 Log(16)]. The	carrier power was set to
EVIATIONS FROM T	TEST STANDARD								
one		-							
onfiguration #	2		Jac L	I-1					
		Signature	Initial Value dBm/MHz	Duty Cycle	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD	Eight Port (8x8 MIMO) dBm/MHz == PSD	Sixteen Port (16x16 MIN dBm/MHz == PSD
ort 1, Band n66, 211	0 MHz - 2200 MHz		UBIII/WIH2	Factor (dB)					UBII/WINZ == P3D
	MHz Bandwidth	lation							
	QPSK Modu	Low Channel 2112.5 MHz	31.785	0	31.8	34.8	37.8	40.8	43.8
		Mid Channel 2155 MHz	32.037	0	32.0	35.0	38.0	40.8	43.8
		High Channel 2197.5 MHz	31.825	0	31.8	34.8	37.8	40.8	43.8
	16-QAM Mo		31.625	0	31.0	34.0	37.0	40.0	43.0
	T6-QAM MC	Low Channel 2112.5 MHz	31.693	0	31.7	34.7	37.7	40.7	43.7
		Mid Channel 2155 MHz	32.046	0	32.0	35.0	38.0	40.7	44.0
		High Channel 2197.5 MHz	31.912	0	31.9	34.9	37.9	40.9	44.0
	64-QAM Mo		31.912	0	51.9	34.9	37.9	40.9	43.9
		Low Channel 2112.5 MHz	31.789	0	31.8	34.8	37.8	40.8	43.8
		Mid Channel 2155 MHz	32.04	0	32.0	35.0	38.0	41.0	43.0
		High Channel 2197.5 MHz	31.909	ő	31.9	34.9	37.9	40.9	43.9
	256-QAM M		01.000		01.0	01.0	01.0	10.0	10.0
	200 40 40 40	Low Channel 2112.5 MHz	31.808	0	31.8	34.8	37.8	40.8	43.8
		Mid Channel 2155 MHz	32.086	õ	32.1	35.1	38.1	41.1	44.1
		High Channel 2197.5 MHz	31.925	ō	31.9	34.9	37.9	40.9	43.9
1	0 MHz Bandwidth	right offantion 2 for to finite	01.020		01.0	01.0	01.0	10.0	10.0
	QPSK Modu	ulation							
		Mid Channel 2155 MHz	28.984	0	29.0	32.0	35.0	38.0	41.0
	16-QAM Mo								
		Mid Channel 2155 MHz	29.643	0	29.6	32.6	35.6	38.6	41.6
	64-QAM Mo								
		Mid Channel 2155 MHz	28.952	0	29.0	32.0	35.0	38.0	41.0
	256-QAM M	odulation							
		Mid Channel 2155 MHz	28.999	0	29.0	32.0	35.0	38.0	41.0
1	5 MHz Bandwidth								
	QPSK Modu	Ilation							
		Mid Channel 2155 MHz	27.114	0	27.1	30.1	33.1	36.1	39.1
	16-QAM Mo								
		Mid Channel 2155 MHz	28.119	0	28.1	31.1	34.1	37.1	40.1
	64-QAM Mo								
		Mid Channel 2155 MHz	27.112	0	27.1	30.1	33.1	36.1	39.1
	256-QAM M								
_		Mid Channel 2155 MHz	27.163	0	27.2	30.2	33.2	36.2	39.2
2	0 MHz Bandwidth								
	QPSK Modu								
		Mid Channel 2155 MHz	25.853	0	25.9	28.9	31.9	34.9	37.9
	16-QAM Mo								
		Mid Channel 2155 MHz	27.476	0	27.5	30.5	33.5	36.5	39.5
	GA OAMAMA	dulation							
	04-QAIVI IVIO			-					
		Mid Channel 2155 MHz	25.878	0	25.9	28.9	31.9	34.9	37.9
	256-QAM M	Mid Channel 2155 MHz	25.878 25.839	0	25.9 25.8	28.9 28.8	31.9 31.8	34.9 34.8	37.9 37.8

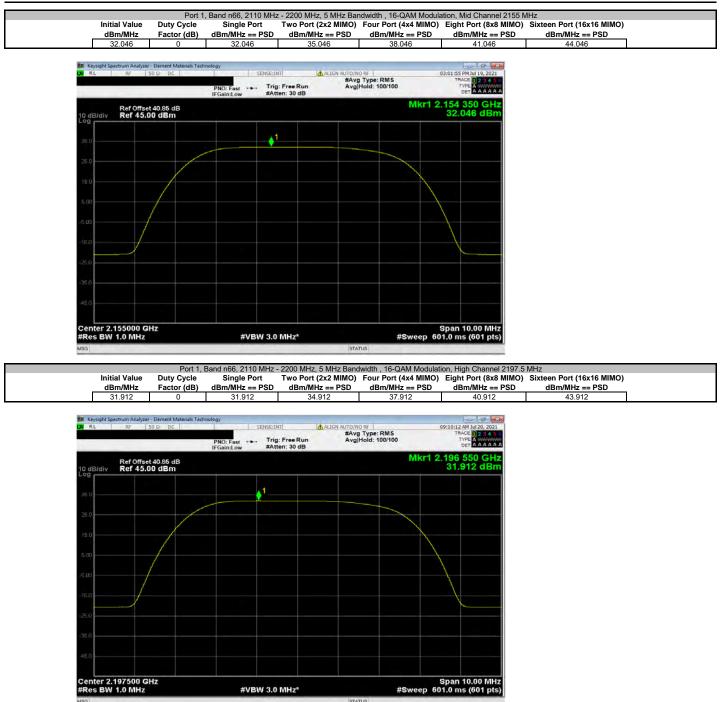




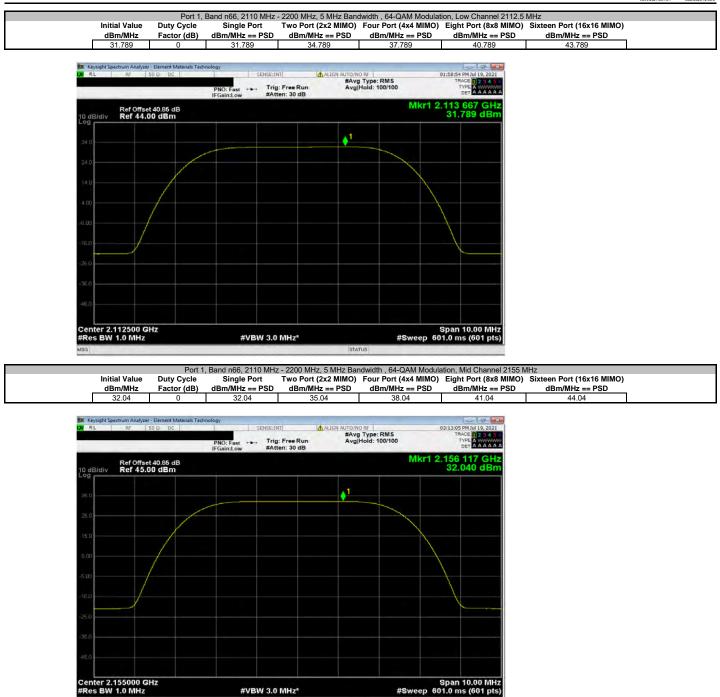




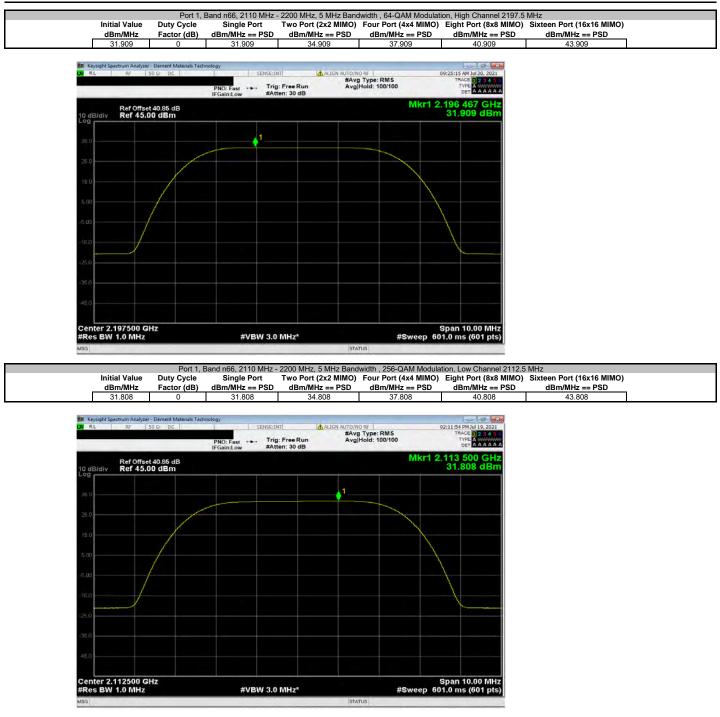




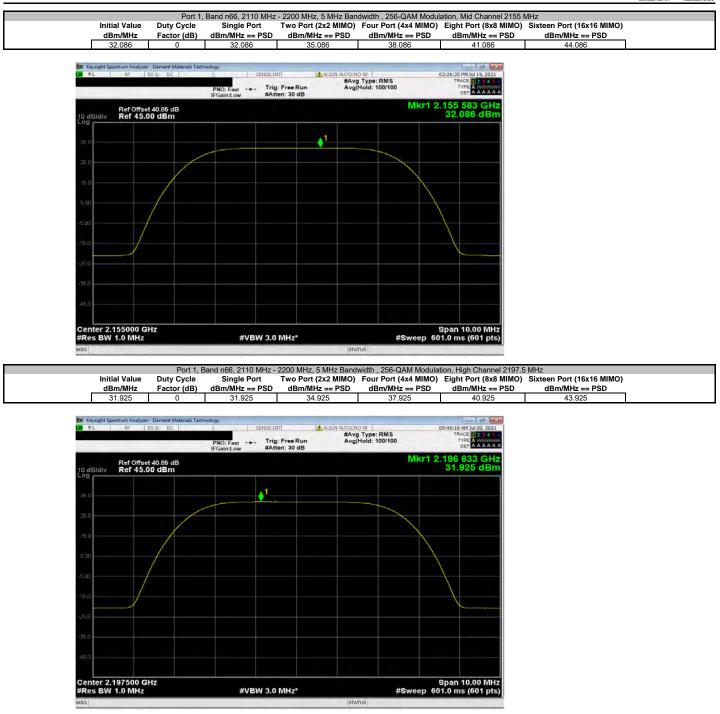




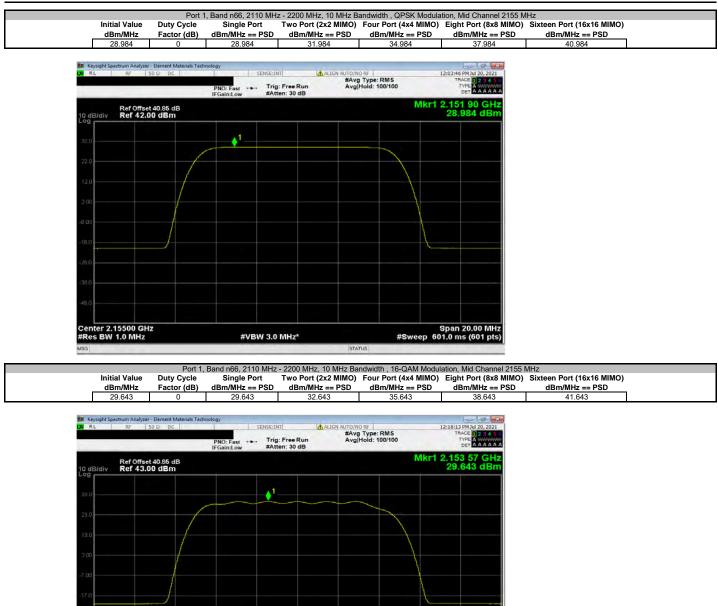










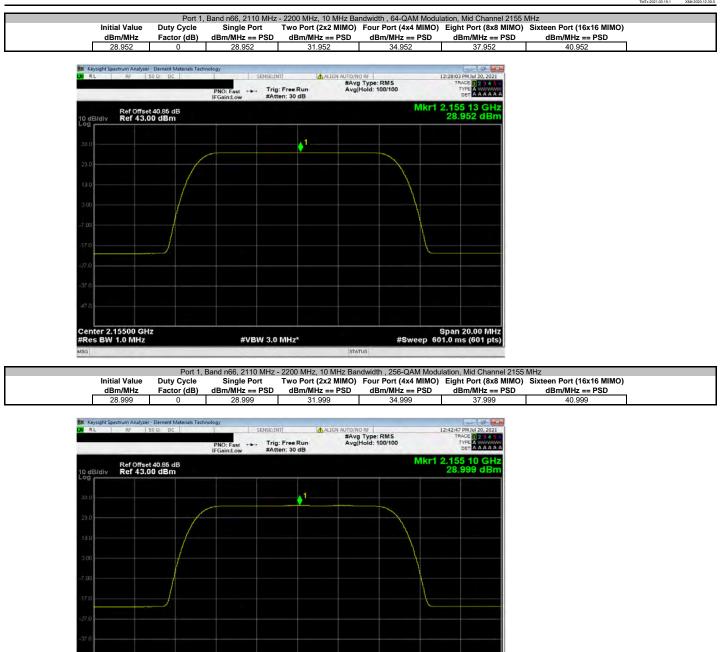


Span 20.00 MHz #Sweep 601.0 ms (601 pts)

Center 2.15500 GHz #Res BW 1.0 MHz

#VBW 3.0 MHz*



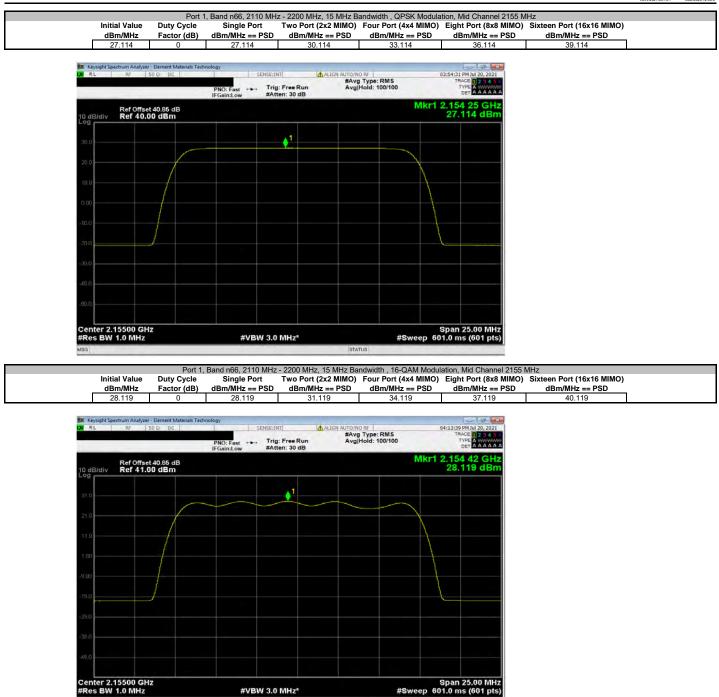


Span 20.00 MHz #Sweep 601.0 ms (601 pts)

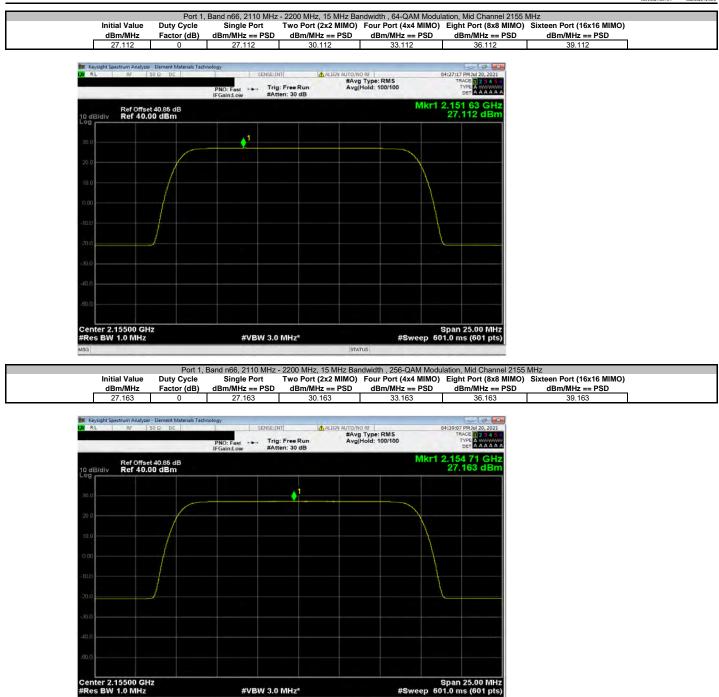
Center 2.15500 GHz #Res BW 1.0 MHz

#VBW 3.0 MHz*













Span 35.00 MHz #Sweep 601.0 ms (601 pts)

Center 2.15500 GHz #Res BW 1.0 MHz

#VBW 3.0 MHz*





SG		STATUS	
Center 2.15500 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz*	#Swe	Span 35.00 MH: ep 601.0 ms (601 pts
51.0			
41.0			
31.0			
21.0			1
110			
2.00			
19.0			
1			
29.0	<u>1</u>		



5G NR EIRP Calculations for Sixteen Port MIMO Operations

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.

The AAIB radio module connects to an 8-column antenna assembly with a maximum beamforming gain of 24 dBi. The columns within the antenna have +45° cross-polarized (orthogonal) radiators. The sixteen AAIB transmitter outputs are connected to the columns (eight are connected to +45° radiators/antennas and eight are connected to the -45° radiators/antennas). The AAIB radio module provides transmitter outputs for one 8-column antenna assembly.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for a system of correlated output signals) from the results of the power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna assembly beamforming gain (8-column antenna maximum beamforming gain is 24 dBi) was used for this calculation. The cable loss between the antenna and transmitter is assumed to be 0dB for this worst case EIRP calculation. Calculations of worst-case EIRP for sixteen port MIMO are as follows:

Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW
	1.62 W/MHz	0.91 W/MHz	0.65 W/MHz	0.56 W/MHz
Worst Case PSD/Antenna Port	or	or	or	or
	32.1 dBm/MHz	29.6 dBm/MHz	28.1 dBm/MHz	27.5 dBm/MHz
Cable Loss	0 dB	0 dB	0 dB	0 dB
Number of Ant Ports per Polarization	8	8	8	8
	13.0 W/MHz	7.28 W/MHz	5.2 W/MHz	4.48 W/MHz
Total PSD per Polarization	or	or	or	or
	41.1 dBm/MHz	38.6 dBm/MHz	37.2 dBm/MHz	36.5 dBm/MHz
Maximum Antenna Beamforming Gain per Polarization	24.0 dBi	24.0 dBi	24.0 dBi	24.0 dBi
	65.1 dBm/MHz	62.6 dBm/MHz	61.2 dBm/MHz	60.5 dBm/MHz
EIRP per Polarization	or	or	or	or
	3236 W/MHz	1820 W/MHz	1318 W/MHz	1122 W/MHz
Number of Polarizations	2	2	2	2
	65.1 dBm/MHz	62.6 dBm/MHz	61.2 dBm/MHz	60.5 dBm/MHz
EIRP Total (See Note 1)	or	or	or	or
	0000014/00/	1000 11/2 11	10101010	4400 1410 1

Note 1: The EIRP per antenna polarization 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).

Calculation Summary

Calculation Summary
The worst case AAB sixteen post MIMO EIRP levels using the 8-column antenna assembly are:
(1) Less than the FCC and ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 13 (5, 10, 15 & 20MHz) channel bandwidths.
(2) Less than the FCC and ISED (3280 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 15 & 20MHz channel bandwidth and by 0.45 dB for the 10MHz channel bandwidth.
(3) Over the FCC and ISED (1640 W/MHz or 65.16 dBm/MHz) EIRP Regulatory Limits for 15 & 20MHz channel bandwidth and by 0.45 dB for the 10MHz channel bandwidth. EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements as noted above.
(4) The AAB antenna port NRS maximum carrier power level was reduced 3.04 Bb ychanging the BTS configuration file output power parameter definition to show compliance with the 62.15 dBm/MHz EIRP regulatory limit. See "Output Power Lowered Power" and "Power Spectral Density Lowered Power" sections of this report for details.
(5) The AAB antenna port NRS maximum carrier power level was reduced 3.04 Bb by changing the BTS configuration file output power parameter definition to show compliance with the 62.15 dBm/MHz EIRP regulatory limit. See "Output Power Lowered Power" and "Power Spectral Density Lowered Power" sections of this report for details.
(5) The AAB antenna port NRS were Lowered Power" and "Power Spectral Density Lowered Power" sections of this report for details.

POWER SPECTRAL DENSITY - LOWERED POWER



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	Agilent	N9010A	AFL	2021-03-11	2022-03-11
Block - DC	Fairview Microwave	SD3379	AMM	2020-09-21	2021-09-21
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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 AAIB 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 6.4.6.3, section 6.4.5.3 and section 6.4.5.2

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

As shown in the EIRP calculation table of the "PSD and EIRP Calculations" report section, the highest AAIB antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 29.1 dBm/MHz. The NR5 and NR10 maximum carrier power levels were reduced by 3.0dB and 1.0 dB respectively by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit (62.15 dBm/MHz).

The AAIB base station configuration file parameters set for maximum carrier output power (37.9dBm) gives a measured maximum NR5 PSD/port result of 32.1dBm/MHz and a worst case calculated EIRP that is 2.95dB over the EIRP limit (62.15dBm/MHz). To show compliance with the EIRP limit (62.15dBm/MHz), the AAIB base station configuration file parameters setting for NR5 carrier output power was set to 34.9dBm (reduced 3.0 dB from maximum) that gives a measured maximum NR5 PSD/port result of 29.0dBm/MHz and a worst case calculated EIRP that is 0.1dB below the EIRP limit (62.15dBm/MHz).

The AAIB base station configuration file parameters set for maximum carrier output power (37.9dBm) gives a measured maximum NR10 PSD/port result of 29.6dBm/MHz and a worst case calculated EIRP that is 0.45dB over the EIRP limit (62.15dBm/MHz). To show compliance with the EIRP limit (62.15dBm/MHz), the AAIB base station configuration file parameters setting for NR10 carrier output power was set to 36.9dBm (reduced 1.0 dB from maximum) that gives a measured maximum NR10 PSD/port result of 28.4dBm/MHz and a worst case calculated EIRP that is 0.7dB below the EIRP limit (62.15dBm/MHz).

POWER SPECTRAL DENSITY - LOWERED POWER



							IbUX 2021.03.19.1	XMit 2020.12.30.0
EUT	AAIB (FCC/ISED C2PC)					Work Order:	NOKI0030	
Serial Number	r: BL2032123Y0					Date:	21-Jul-21	
Custome	r: Nokia Solutions and Net	works				Temperature:	20.9 °C	
Attendees	: David Le, Mitchell Hill					Humidity:	52.5% RH	
Projec	t: None					Barometric Pres.:	1021 mbar	
Tested by	: Brandon Hobbs		Power:	54 VDC		Job Site:	TX09	
TEST SPECIFICA	TIONS			Test Method				
FCC 27:2021				ANSI C63.26:2015				
RSS-139 Issue 3:	2015, RSS-170 Issue 3:201	5		RSS-139 Issue 3:207	15, RSS-170 Issue	e 3:2015		
COMMENTS					·			
All measurement	path losses were accounted	ed for in the reference level offest inclu	uding any attenuat	ors, filters and DC bl	ocks. The NR5 ar	nd NR10 carrier power levels were redu	uced to demonstrat	e compliance with
		s 29.1 dBm/MHz for the base station of						
DEVIATIONS FRO	DM TEST STANDARD							
None								
				<i>/.</i>				
Configuration #	2		2 -	1-1				
-		Signature	\sim)				
				Initial Value	Duty Cycle	Single Port	Limit	
				dBm/MHz == PSD		dBm/MHz == PSD	(dBm/MHz)	Results
Port 1, Band n66, 3	2110 MHz - 2200 MHz						· · ·	
,,	5 MHz Bandwidth							
	256-QAM M	odulation						
		Mid Channel 2155 MHz		28.993	0	28.993	29.1	Pass
	10 MHz Bandwidth				-			
	16-QAM Mod	dulation						
		Mid Channel 2155 MHz		28.427	0	28.427	29.1	Pass

POWER SPECTRAL DENSITY - LOWERED POWER



		Value	Duty Cycle		, 20	Single Port	n, Mid Channel 2 Limit	
	dBm/Mł	lz == PSC			d	Bm/MHz == PSD	(dBm/MHz)	Results
	28	.993	0			29.0	29.1	Pass
📕 Keysight Spectrum An			ogy					
LXI RL RF	50 Ω DC		1	ENSE:INT	∆	ALIGN OFF #Avg Type: RM		2:13:17 PM Jul 21, 2021
			PNO: Fast ↔→ IFGain:Low	Trig: Free Rur #Atten: 30 dB		Avg Hold: 100/1		TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A
Ref C)ffset 40.85 dE 43.00 dBm	3					Mkr1 2.1	154 550 GHz
10 dB/div Ref	43.00 dBm							28.993 dBm
33.0				1				
23.0								
13.0	/							
3.00								
							\ \	
-7.00								
-17.0	/							
-17.0								·
-27.0								
-37.0								
-47.0								
Center 2.15500				· · · ·			S	pan 10.00 MHz
#Res BW 1.0 M	Hz		#VB\	W 3.0 MHz*			#Sweep 601	.0 ms (601 pts)
MSG						STATUS		
Port					width, 1	6-QAM Modulatio		2155 MHz
		l Value Iz == PSE	Duty Cycle			Single Port Bm/MHz == PSD	Limit (dBm/MHz)	Results
	1	1 2 == PSL .427	0		a	28.4	29.1	Pass

RL	RF 50 Ω	DC OC		SENSE:INT	ALIGN AUTO/NO RF	02:43:01 PM Jul 21, 202
			PNO: Fast 🔸		#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 TYPE A WWW DET A A A A A
dB/div	Ref Offset 40.85 Ref 42.00 dB	dB m				Mkr1 2.153 53 GH 28.427 dBi
.0				1		
.0						
.0						
0						
0						
0						
	.15500 GHz 1.0 MHz		#VB	W 3.0 MHz*	#Sw(Span 20.00 MH eep 601.0 ms (601 pt
					STATUS	



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMM	2020-09-21	2021-09-21
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2021-03-11	2022-03-11
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

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

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

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

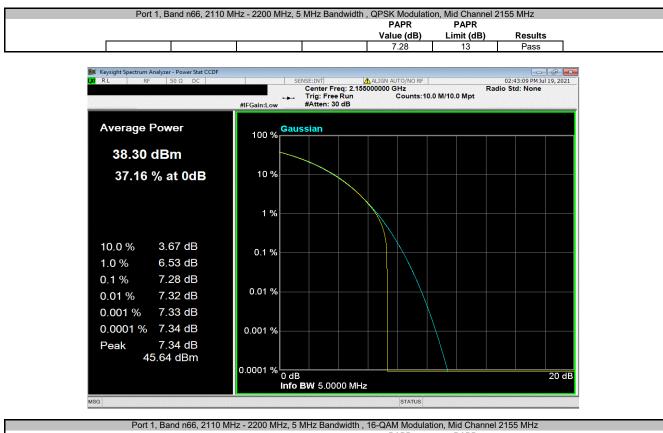
Per 27.50(d)(2), RSS-139 section 6.5, and RSS-170 section 5.3.1, the PAPR limit shall not exceed 13 dB for more than the ANSI described 0.1% of the time.

RF conducted emissions testing was performed on one port. The AAIB 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.

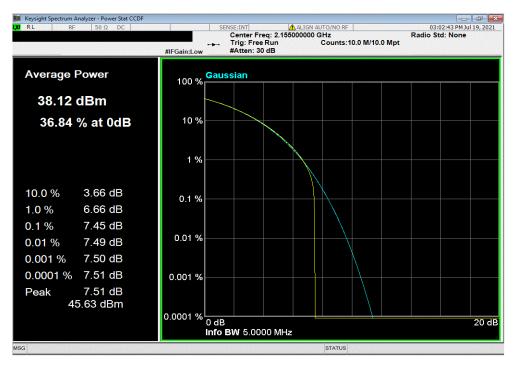


				TbtTx 2021.03.19.1	XMit 2020.
	AIB (FCC/ISED C2PC)		Work Order:		
Serial Number: BL				21-Jul-21	
	okia Solutions and Networks		Temperature:		
	avid Le, Mitchell Hill		Humidity:		
Project: No			Barometric Pres.:		
	randon Hobbs	Power: 54 VDC	Job Site:	X09	
EST SPECIFICATION	15	Test Method			
CC 27:2021		ANSI C63.26:2015			
	, RSS-170 Issue 3:2015	RSS-139 Issue 3:2015, RSS-170	ssue 3:2015		
OMMENTS	losses were accounted for in the reference low	el offest including any attenuators, filters and DC blocks. Band i	ef carriers are enabled at maximum newer	(6.25 wattelearrie	•
in measurement path	losses were accounted for in the reference leve	a oriest including any attenuators, inters and DC blocks. Band i	too carriers are enabled at maximum power	(6.25 watts/carrier).
EVIATIONS FROM TI					
one	EST STANDARD				
onfiguration #	2	fait Jal			
	Signature	· · · · ·	PAPR	PAPR	
			Value (dB)	Limit (dB)	Results
ort 1, Band n66, 2110	MHz - 2200 MHz			(==)	
	MHz Bandwidth				
0.	QPSK Modulation				
	Mid Channel 2155 MHz		7.28	13	Pass
	16-QAM Modulation				
	Mid Channel 2155 MHz		7.45	13	Pass
	64-QAM Modulation				
	Mid Channel 2155 MHz		7.27	13	Pass
	256-QAM Modulation				
	Low Channel 2112.5 MHz		7.28	13	Pass
	Mid Channel 2155 MHz		7.29	13	Pass
	High Channel 2197.5 MHz		7.30	13	Pass
10) MHz Bandwidth				
	256-QAM Modulation				
	Low Channel 2115 MHz		7.30	13	Pass
	Mid Channel 2155 MHz		7.29	13	Pass
	High Channel 2195 MHz		7.31	13	Pass
15	MHz Bandwidth				
	256-QAM Modulation				
	Low Channel 2117.5 MHz		7.47	13	Pass
	Mid Channel 2155 MHz		7.44	13	Pass
	High Channel 2192.5 MHz		7.48	13	Pass
20) MHz Bandwidth 256-QAM Modulation				
	Low Channel 2120 MHz		7.26	13	Pass
	Mid Channel 2155 MHz		7 17	13	Pass
	Mid Channel 2155 MHz High Channel 2190 MHz		7.17 7.27	13 13	Pass Pass

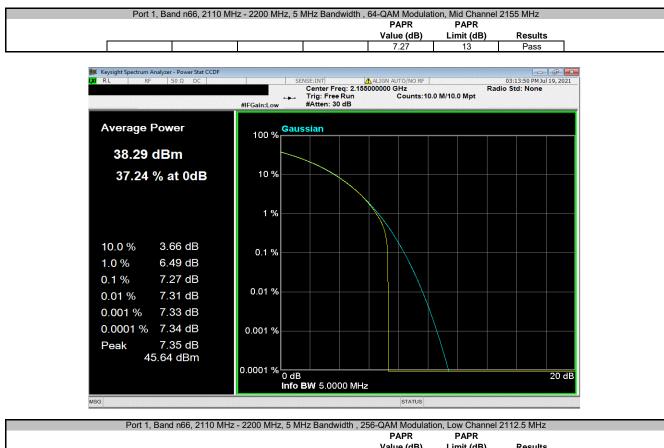




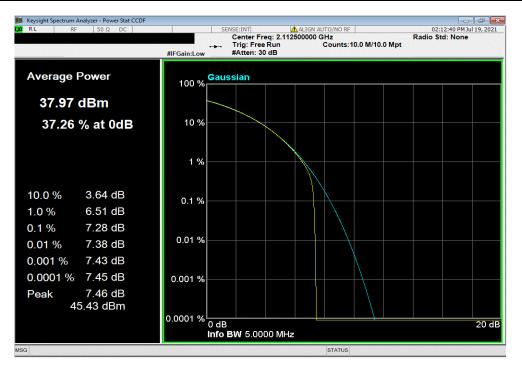
Port 1, Ba	nd n66, 2110 MH	z - 2200 MHz, 5 I	MHz Bandwidth,	16-QAM Modulat	ion, Mid Channel	2155 MHz
				PAPR	PAPR	
				Value (dB)	Limit (dB)	Results
				7.45	13	Pass





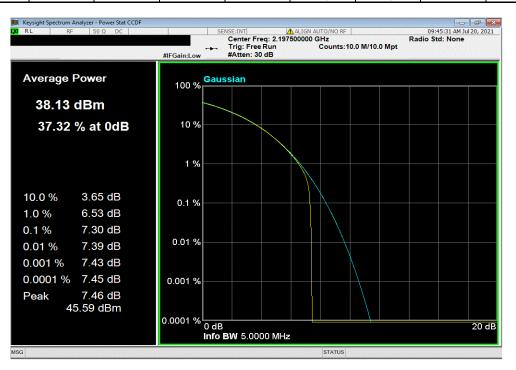


Port 1, Band	1 N66, 2110 MHZ	- 2200 MHZ, 5 MI	HZ Bandwidth , 25	bb-QAINI Modulati	on, Low Channel	2112.5 MHZ
				PAPR	PAPR	
				Value (dB)	Limit (dB)	Results
				7.28	13	Pass

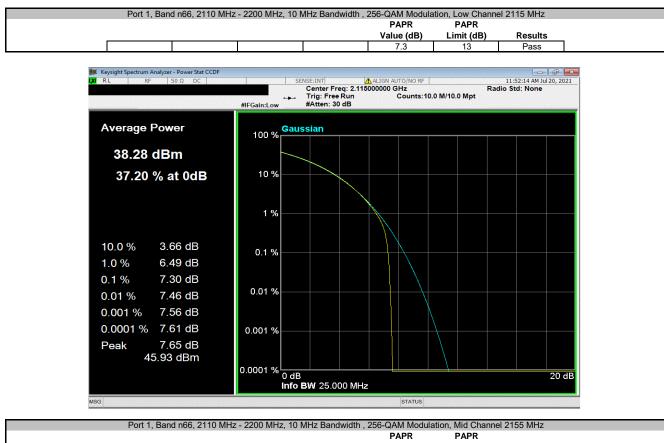




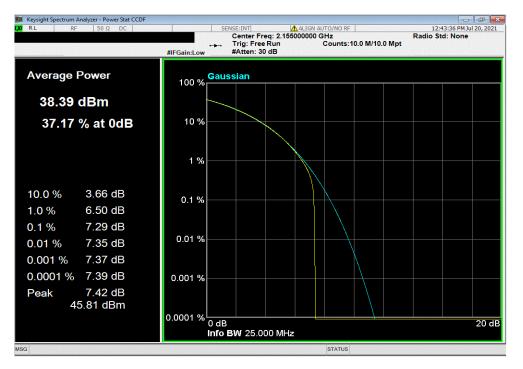








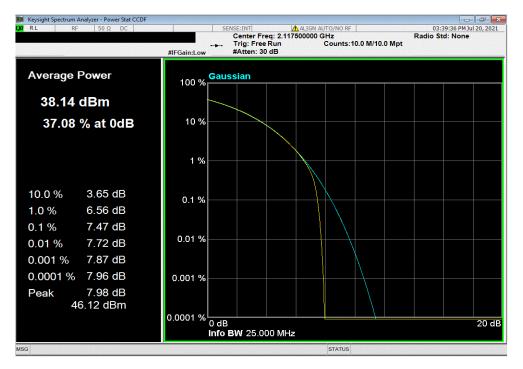
		PAPR	PAPR	
		Value (dB)	Limit (dB)	Results
		7.29	13	Pass



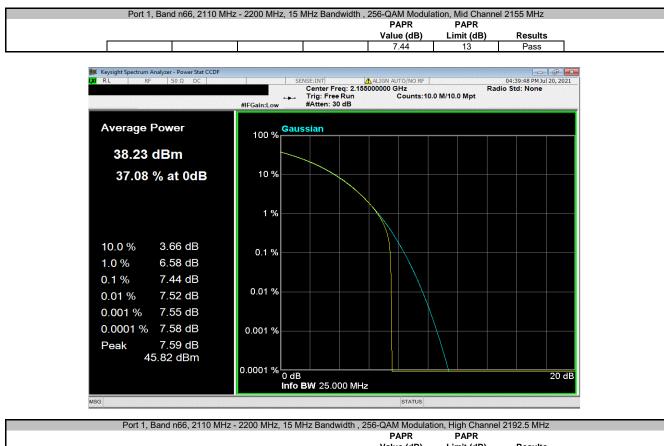




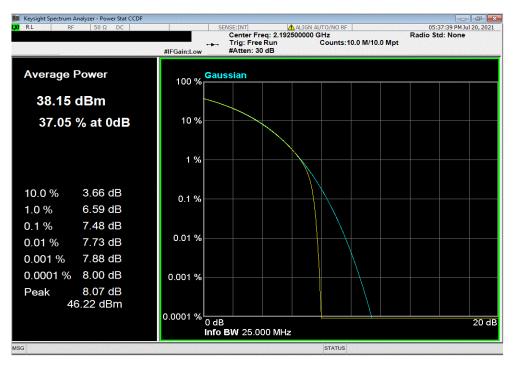
i ort i, Danu	1100, 2110 10112 -	2200 1011 12, 13 10	in iz Danuwium, z		ION, LOW CHAINE	
				PAPR	PAPR	
				Value (dB)	Limit (dB)	Results
				7.47	13	Pass







Port 1, Band	n66, 2110 MHz -	2200 MHz, 15 M	Hz Bandwidth, 2	56-QAM Modulati	ion, High Channe	I 2192.5 MHz
				PAPR	PAPR	
				Value (dB)	Limit (dB)	Results
				7.48	13	Pass







Port 1, Ban	nd n66, 2110 MHz	z - 2200 MHz, 20	MHz Bandwidth, 2	256-QAM Modula	tion, Mid Channe	el 2155 MHz
				PAPR	PAPR	
				Value (dB)	Limit (dB)	Results
				7.17	13	Pass

