

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
Block - DC	Fairview Microwave	SD3239	ANC	2021-06-24	2022-06-24
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2021-03-11	2022-03-11

#### TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The method in section 5.4 of ANSI C63.26 was used to make this measurement. The spectrum analyzer settings were as follows:

- RBW is 1% 5% of the occupied bandwidth
- VBW is ≥ 3x the RBW
- Peak Detector was used
- Trace max hold was used

RF conducted emissions testing was performed only on one port. The AZHL antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during output power testing on 8 ports) 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 99% bandwidth was measured utilizing the analyzer's peak detector and measuring the carrier's 26 dB occupied bandwidth based on the peak output power level measured. A plot was taken to show the occupied bandwidth is contained within the allowable transmit band. FCC 27.53(m)(6) defines the emission bandwidth to be used as 26dB down.

The occupied bandwidth was measured with the EUT configured in the modes called out in the data sheets.

Band 41 (2496 MHz to 2690 MHz) Emission Designators derived from the measurement results:

FCC En	nission Desig	nators for B	and 41 (249	6MHz to 269	0MHz)
Chan	Radio	4G-LTE:	4G-LTE :	4G-LTE :	4G-LTE :
BW	Channel	QPSK	16QAM	64QAM	256QAM
	Low				14M1F9W
15MHz	Mid	14M3F9W	14M3F9W	14M1F9W	14M1F9W
	High				14M2F9W
	Low				18M8F9W
20MHz	Mid	18M6F9W	18M9F9W	18M9F9W	18M8F9W
	High				18M7F9W
Note: FCC emis	sion designator	s are based on 2	26dB emission b	andwidth.	



						TbtTx 2021.03.19.1	XMit 2020.12.30.0
EUT: AZH	IL (C2PC LTE/5G NR B41)				Work Order:	NOKI0035	
Serial Number: YK2	203400025				Date:	13-Oct-21	
Customer: Nok	ia Solutions and Networks				Temperature:	23 °C	
Attendees: Dav	id Le, John Rattanavong				Humidity:	52.5% RH	
Project: Nor	le				Barometric Pres.:	1011 mbar	
Tested by: Bra	ndon Hobbs	Powe	er: 54 VDC		Job Site:	TX09	
TEST SPECIFICATIONS	1		Test Method				
FCC 27:2021			ANSI C63.26:2015				
COMMENTS							
All losses in the measu 5.044ms and a gate leng	rement path were accounted gth = 6.8061ms.	for: attenuators, cables, DC block and filter whe	en in use. Band n41 carriers ar	nd enabled at maximum powe	er. External 1 gatin	g was set using a tri	g delay =
DEVIATIONS FROM TES	ST STANDARD						
None							
Configuration #	2	Signature	J-1				
				Value 99% (MHz)	Value 26dB (MHz)	Limit	Result
4G LTE, Band 41, 2496 N	1Hz - 2690 MHz						
Port	:1						
	LTE15 (15MHz)						
	QFSK	Mid Channel 2502 Mills		12.4	14.2	Within Dand	Deee
	160 4 14	Wild Chariner 2595 WHZ		15.4	14.5	Within Danu	F d55
	TOQAN	Mid Chappel 2502 MHz		12.4	14.2	Within Rond	Page
	64000	Mid Channel 2595 MHz		13.4	14.3	Within Banu	F d55
	04QAIV	Mid Chappel 2593 MHz		13.4	14.1	Within Band	Pass
	25604			13.4	14.1	within Dand	1 833
	2000	Low Channel 2503 5 MHz		13.4	14 1	Within Band	Pass
		Mid Channel 2593 MHz		13.4	14.1	Within Band	Pass
		High Channel 2682 5 MHz		13.4	14.2	Within Band	Pass
	LTE20 (20MHz)			10.1		Than Bana	1 400
	OPSK						
	di oli	Mid Channel 2593 MHz		17.9	18.6	Within Band	Pass
	16QAM						
		Mid Channel 2593 MHz		17.9	18.9	Within Band	Pass
	64QAM				. 2.0	Dund	
		Mid Channel 2593 MHz		17.9	18.9	Within Band	Pass
	256QA	И					
		Low Channel 2506 MHz		17.9	18.8	Within Band	Pass
		Mid Channel 2593 MHz		17.9	18.8	Within Band	Pass
		High Channel 2680 MHz		17.9	18.7	Within Band	Pass

















Keysight Spectr	rum Analyzer - Eleme	nt Materials Technolo	gy - Points: 3000, D	Detector: Peak					
LXI RL	RF 50 Ω	DC		SENSE:EXT	\Lambda ALIGN	AUTO/NO RF		12:20:16	5 PM Oct 13, 2021
				Center Fre	q: 2.682500000 Run	) GHz AvaiHold	50/50	Radio Std: N	lone
		#1	FGain:Low	#Atten: 30	dB			Radio Devic	e: BTS
	Bof Offerst 4	10 dP							
10 dB/div	Ref 36.00	dBm							
Log			AMILLANDAA . M	Ad a strategy	the C. L. to part at love	No Availa & so. 6			
26.0			And the state of the	an Alda, Anda, I.	an a start a s				
16.0							l		
6.00							1		
-4.00									
-14.0 marthal	and the second states of the s	www.wshipmy.					Unsom	Anna marine and a south	the more haven
-24.0									
-34.0									
-44.0									
-54.0									
Center 2.68	250 GHz						1	Snan	35.00 MHz
#Res BW 2	240 kHz			#VE	3W 750 kHz	z		Swe	ep 1.2 ms
Occupi	ed Bandw	vidth		Total P	ower	44.0 d	Bm		
Coodpi	ballan	42 444							
		13.444							
Transm	it Freq Erro	r -15.9	50 kHz	% of O	BW Power	99.0	0 %		
x dB Ba	ndwidth	14.2	2 MHz	x dB		-26.00	dB		
MSG						STATUS			





	latenais recimology - Folints 5000,	SENSE:EXT ALIG	N AUTO/NO RE	02:19:53 PM Oct 13, 2021
		Center Freq: 2.59300000	0 GHz	Radio Std: None
		🛶 Trig: Free Run	Avg Hold: 50/50	
	#IFGain:Low	#Atten: 30 dB		Radio Device: BTS
Bat Offerst 40.40				
10 dBidiy Ref 39 00 dB	im sub			
29.0	North Marchen	the man and the man the second	Month Manual L	
19.0				
0.00				
9.00			1	
-1.00	<mark>/</mark>			
-11.0				
-21.0 margher worth manuful damary	(Margarow MAN)		- Loning Mar	moundalimber warman by some
21.0				
31.0				
-41.0				
-51.0				
Center 2.59300 GHz				Span 45.00 MHz
#Res BW 300 KHz		#VBW 910 KH	Z	Sweep 1.2 ms
		Total Bausar	45.0 dDm	
Occupied Bandwid	ith	Total Fower	45.0 UBIII	
1	7 940 MHz			
Transmit Freq Error	24.945 kHz	% of OBW Powe	r 99.00 %	
y dB Bondwidth	40.00 MU-	x dB	26.00 dB	
		хuв	-20.00 aB	
MSC			STATUS	
MSG			STATUS	









	2000 1	Valu	e(0	Value		000	
		99% (N	Hz)	26dB (MHz)	Limit	R	esult
		17.90	7	18.823	Within Bar	nd F	Pass
Keysight Spectrum Analyzer - Element Material	Technology - Points: 3000,	Detector: Peak					
<b>X</b> RL RF 50 Ω DC		SENSE:EXT	1: 2 59300	LIGN AUTO/NO RF		02:16:2 Radio Std:	25 PM Oct 13, 2021
		Trig: Free I	Run	Avg Hold: 5	0/50	rtudio ota.	none
	#IFGain:Low	#Atten: 30	dB			Radio Devi	ce: BTS
Ref Offset 40.18 dB							
10 dB/div Ref 38.00 dBm							
28.0	- monoral	Antoma Mangle	-harrow with	aquerter whythe			
18.0	1						
8.00							
-2.00	<mark>/</mark>						
-12.0							
-22.0 minute the stand of the second se	rhun,1/11				Jar White Martin	when any gift	Marker Analys And Mark
-32.0							
-42.0							
-52.0							
Center 2.59300 GHz #Res BM 300 kHz		#VB	14 010	kH7		Spar Swi	1 45.00 MHz een 12 ms
		<i>"•</i> Ε	N 313				
Occupied Bandwidth		Total P	ower	45.5 dE	3m		
17.9	907 MHz						
Transmit Freg Error	8.680 kHz	% of O		ver 99.00	%		
				26.00			
X dB Bandwidth	10.02 MHZ	хав		-26.00	u D		
leave l				lesses al			
MSG				STATUS			
4GITE Band 41 24	196 MHz - 2690 M	Hz Port 1 I T	E20 (201	(Hz) 2560AM	High Channe	≥I 2680 MH	7
	100 Mil 12 - 2030 Mil	Valu	e (201	Value	- ngir Onanne	2000 1011	
		99% (N	Hz)	26dB (MHz)	Limit	R	esult
		17.85		18.688	Within Bar	nd F	Pass

02:43:30 PM Oct 13, 2021 Radio Std: None Keysight Spectrum Analyzer - Element Materials Technology - Points: 3000, Detector: Peak
 Ku RF 50 Ω DC SENSE:EXT ENSE:EXT ALIGN AUTO/NO RF Center Freq: 2.680000000 GHz Trig: Free Run Avg|Hold: 50/50 #Atten: 30 dB -#IFGain:Low Radio Device: BTS Ref Offset 40.18 dB Ref 37.00 dBm 10 dB/div Log manapanahhan maken way and a strategy and a Maladad mananta www.what ۲**ار ا** Mahambar N Span 45.00 MHz Sweep 1.2 ms Center 2.68000 GHz #Res BW 300 kHz #VBW 910 kHz Total Power 45.3 dBm **Occupied Bandwidth** 17.858 MHz Transmit Freq Error -8.157 kHz % of OBW Power 99.00 % x dB Bandwidth 18.69 MHz x dB -26.00 dB STATUS MSG



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#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANC	2021-06-24	2022-06-24
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 measurements. This method uses trace averaging across the 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 in decimal, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed only on one port. The AZHL antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during 8 port output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The total average transmit power of all antenna ports was determined per ANSI C63.26-2105 paragraph 6.4.3.1.

The EIRP limit is defined by FCC Part27.50(h)(ii) as 33dBW+ 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz. PSD (power/1MHz) measurements are not required for this radio since the FCC limits for EIRP are defined in watts.



EUT: AZHL (C2PC LTE/5G NR B41) Work Order: NOKI0035 Serial Number: YK203400025 Date: 8-Oct-21 Customer: Nokia Solutions and Networks Temperature: 21.1 °C Humidity: 50.6% RH Barometric Pres.: 1021 mbar Job Site: TX09 Attendees: David Le, John Rattanavong Project: None Tested by: Brandon Hobbs TEST SPECIFICATIONS Power: 54 VD Test Method FCC 27:2021 ANSI C63 26:2015 COMMENTS All losses in the measurement path were accounted for: attenuators, cables, DC block and filter when in use. Band n41 carriers and enabled at maximum power. External 1 gating was set using a trig delay = 86.2us and a gate length = 3.714ms. The following is the output power measurements at the radio output ports. The output power was measured for a single carrier channel bandwidth on port 1. The total output power for multiport (2x2 MIMO, 4x4 MIMO and 8x8 MIMO) operation was determined based upon ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 Log Nout). The total output power for two port operation is single port power + 3dB [i.e.: 10 Log(2)]. The total output power for four port operation is single port power + 6dB [i.e.: 10 Log(4)]. The total output power for eight port operation is single port power + 9dB [i.e.: 10 Log(8)]. DEVIATIONS FROM TEST STANDARD None Configuration # 2 1 1 Signature 4 Port (4x4 MIMO) dBm/Carrier BW Initial Value Single Port 2 Port (2x2 MIMO) dBm/Carrier BW dBm/Carrier BW 2 Port (2x2 MIMO) Duty Cycle 8 Port (8x8 MIMO) dBm/Carrier BW dBm/Carrier BW Port 1, 5G NR, Band n41, 2496 MHz - 2690 MH (NR20) 20 MHz Bandwidth 256QAM Modulation Low Channel 2506.02 MHz 38.930 38.9 47.9 41.9 44.9 0 Mid Channel 2592.99 MHz 38.870 0 38.9 41.9 44.9 47.9 High Channel 2679.99 MHz 38.929 38.9 41.9 44.9 47.9 (NR30) 30 MHz Bandwidth 256QAM Modulation Low Channel 2511.00 MHz 40.707 46.7 0 40.7 43.7 49.7 Mid Channel 2592.99 MHz 40.911 0 40.9 43.9 46.9 49.9 40.819 40.8 46.8 High Channel 2674.98 MHz 43.8 49.8 (NR40) 40 MHz Bandwidth 256QAM Modulation Low Channel 2516.01 MHz 41.846 50.8 41.8 44.8 47.8 47.9 0 Mid Channel 2592 99 MHz 41 928 0 419 44 9 50.9 High Channel 2670.00 MHz 42.100 42.1 45.1 48.1 51.1 (NR50) 50 MHz Bandwidth 256QAM Modulation Low Channel 2521.02 MHz 42.600 0 42.6 45.6 48.6 51.6 Mid Channel 2592.99 MHz 42.810 43.136 0 42.8 43.1 45.8 46.1 48.8 51.8 52.1 High Channel 2664.99 MHz 49.1 (NR60) 60 MHz Bandwidth 256QAM Modulation 43.491 Low Channel 2526.00 MHz 0 43.5 46.5 49.5 52.5 Mid Channel 2592.99 MHz High Channel 2659.98 MHz 43.507 0 43.5 46.5 49.5 52 5 46.8 43.786 49.8 43.8 52.8 0 (NR70) 70 MHz Bandwidth 256QAM Modulation Low Channel 2531.01 MHz 44.016 0 44.0 47.0 50.0 53.0 43.981 44.252 44.0 44.3 47.0 47.3 50.0 50.3 53.0 53.3 Mid Channel 2592.99 MHz 0 High Channel 2655.00 MHz 0 (NR80) 80 MHz Bandwidth 256QAM Modulation Low Channel 2536.02 MHz 44.866 0 44.9 47.9 50.9 53.9 51.0 51.1 Mid Channel 2592.99 MHz 44.957 0 45.0 48.0 54.0 High Channel 2649.99 MHz 45.128 0 45.1 48.1 54.1 (NR90) 90 MHz Bandwidth QPSK Modulation Mid Channel 2592.99 MHz 45.426 0 45.4 48.4 51.4 54.4 16QAM Modulati Mid Channel 2592.99 MHz 45.5 51.5 54.5 45.492 48.5 0 64QAM Modulation Mid Channel 2592.99 MHz 45.347 45.3 54.3 48.3 51.3 0 256QAM Modulation Low Channel 2541.00 MHz Mid Channel 2592.99 MHz 45.467 0 45.5 48.5 51.5 51.4 54.5 45.359 0 48.4 54.4 45.4 High Channel 2644.98 MHz 45.584 0 45.6 48.6 51.6 54.6





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR20) 20 MHz Bandwidth, 256QAM Modulation, Mid Channel 2592.99 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW

 38.87
 0
 38.87
 41.87
 44.87
 47.87

Keysight Spe	ectrum Analyzer - Element Ma	terials Technology - Points: 1001, D	etector: Average (RMS)		
<b>U</b> RL	RF 50 Ω DC	#IFGain:Low	SENSE:EXT Center Freq: 2.592990 Trig: External1 #Atten: 30 dB	ALIGN OFF 000 GHz Avg Hold: 10/10	10:22:16 AM Oct 08, 2021 Radio Std: None Radio Device: BTS
10 dB/div	Ref Offset 40.18 Ref 53.18 dBr	dB n			
43.2					
3.2					
3.2					
.18					
82 5.8					
5.8	······				<u></u>
à.8					
enter 2.: Res BW	59299 GHz 430 kHz		#VBW 1.3 N	IHz	Span 53.33 MH #Sweep 1
Chan	nel Power		Power Spect	ral Density	
3	38.87 dBm	/ 20 MHz	-34.14	dBm /Hz	
ST IST INCOME.	and a second		Construction of the second	Construction and an and a second seco	





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR30) 30 MHz Bandwidth, 256QAM Modulation, Low Channel 2511.00 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 40.707

 40.707
 0
 40.707
 43.707
 46.707
 49.707

Keysight Spect	rum Analyzer - Element Materials	Technology - Points: 1001,	Detector: Average (RMS)		
RL	RF 50 Ω DC	, #IFGain:Low	SENSE:EXT Center Freq: 2.511000 Trig: External1 #Atten: 30 dB	ALIGN OFF 0000 GHz Avg Hold: 10/10	05:06:25 PM Oct 07, 20: Radio Std: None Radio Device: BTS
dB/div	Ref Offset 40.18 dB Ref 53.18 dBm				
1 <b>g</b> 3.2					
.2					
8					
8		)			
8					
nter 2.5 <sup>°</sup> es BW (	1100 GHz 620 kHz		#VBW 2 MF	z	Span 80.00 M #Sweep イ
Chann	el Power		Power Spect	ral Density	
4	0.71 dBm / 3	0 MHz	-34.06	dBm /Hz	
				STATUS	





Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR30) 30 MHz Bandwidth, 256QAM Modulation, High Channel 2674.98 MHz										
Initial Value Duty Cycle Single Port 2 Port (2x2 MIMO) 4 Port (4x4 MIMO) 8 Port (8x8 MIMO)										
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW				
	40.819	0	40.819	43.819	46.819	49.819				

Keysight Spe	ectrum Analyzer - Elemen	nt Materials Technology	- Points: 1001, D	etector: Average (	RMS)				
XI RL	RF 50 Ω [	DC DC		SENSE:EXT		ALIGN OFF		09:39:	17 AM Oct 08, 2021
				Center Fre	q: 2.67498000	0 GHz	40/40	Radio Std:	None
	Gate: LO	#150		#Atten: 30	dB	Avginoid	1. 10/10	Radio Devi	ce: BTS
		#IFV	Sam.LOw	#/tttem. oo	40			Rudio Berr	
	Ref Offset 40	.18 dB							
10 dB/div	Ref 53.18 (	dBm							
Log									
43.2							+		
33.2									
23.2			1						
13.2							<u>                                      </u>		
3.18			<u> </u>						
0.00									
-b.82									
-16.8									
-26.8									
20.0									
-30.0									
Center 2	67409 CHz				l			Snar	20 00 MU2
#Doc BM	620 kHz			#\/E				- Spai	180.00 Miliz
#RES DW	020 KH2			# V E				,	-Sweep 15
Chan	nel Power			Power	Spectra	I Densi	tv		
					•				
					22.05	-ID			
2	40.82 aBi	m / 30 MH	Z		33.95	aBm	/Hz		
						and the second se			





Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR40) 40 MHz Bandwidth, 256QAM Modulation, Mid Channel 2592.99 MHz								
Initial Value Duty Cycle Single Port 2 Port (2x2 MIMO) 4 Port (4x4 MIMO) 8 Port (8x8 MIMO)								
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
	41.928	0	41.928	44.928	47.928	50.928		

Keysight Spect	rum Analyzer - Element I	Materials Technology	Points: 1001, D	etector: Average (RMS	)				
LXI RL	RF 50 Ω DC Gate: LO			SENSE:EXT Center Freq: 2 Trig: External	▲A 2.592990000 1	LIGN OFF 0 GHz Avg Hold: 10/	10	04:06:3 Radio Std: M	8 PM Oct 07, 2021
		#IFG	ain:Low	#Atten: 30 dB				Radio Devic	e: BTS
10 dB/div	Ref Offset 40.1 Ref 53.18 di	8 dB 3m							
Log 43.2									
33.2									
23.2									
13.2		/							
3.18		ł							
-6.82		<b> </b>							
-16.8									
-26.8									
-36.8									
Center 2 5	0200 GH7							Snan	80.00 MHz
#Res BW	820 kHz			#VBW	2.7 MH	Z		۵pun #	Sweep 1s
Chann	el Power			Power S	pectra	I Density			
4	1.93 dBn	1 / 40 MHz		-34	4.09 d	dBm /Hz			





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR50) 50 MHz Bandwidth, 256QAM Modulation, Low Channel 2521.02 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW

 42.6
 0
 42.6
 45.6
 48.6
 51.6

RL	RF 50 Ω DC		SENSE:EXT Center Freq: 2.521020	ALIGN OFF 0000 GHz Avg Hold: 10/10	01:38:51 PM Oct 08, 20 Radio Std: None
	Gate: EO	#IFGain:Low	#Atten: 30 dB		Radio Device: BTS
dB/div	Ref Offset 40.18 d Ref 53.18 dBm	B			
2					
2					
2					
2					
nter 2.52 es BW 1	2102 GHz 1 MHz		#VBW 3 MH	IZ	Span 133.3 Ml #Sweep 1
Chann	el Power		Power Spect	ral Density	
42	2.60 dBm	/ 50 MHz	-34.39	dBm /нz	
				STATUS	





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR50) 50 MHz Bandwidth, 256QAM Modulation, High Channel 2664.99 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 52.136

Keysight Spect	trum Analyzer - Elemen	t Materials Techn	ology - Points: 1001,	, Detector: Average (	RMS)				
(X) RL	RF 50 ହ ଅ Gate: LO	IC	+ #IFGain:Low	EXT REF Center Fre Trig: Exter #Atten: 30	q: 2.66499000 nal1 dB	ALIGN OFF 00 GHz Avg Hold: 10	/10	02:53:3 Radio Std: M Radio Devic	7 PM Oct 07, 2021 None e: BTS
10 dB/div	Ref Offset 40. Ref 60.00 c	18 dB IBm							
50.0									
40.0									
20.0		$\sim$							
10.0									
0.00									
-10.0									
-30.0									
Center 2.6 #Res BW	6499 GHz 1 MHz			#VE	3W 3MHz			Span #	100.0 MHz Sweep 1 s
Chann	el Power			Power	Spectra	al Density			
4	3.14 dBr	n / 50 N	lHz		26.15	dBm /м	Hz		





Port 1, 5G NF	R, Band n41, 2496 N	ИHz - 2690 MHz,	(NR60) 60 MHz Ba	ndwidth, 256QAM M	Iodulation, Mid Char	nel 2592.99 MHz
	Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
	43.507	0	43.507	46.507	49.507	52.507

Keysight Spec	trum Analyzer - Element	Materials Technolog	y - Points: 1001, De	etector: Average (R	RMS)				
LXU RL	RF 50 Ω D Gate: LO	C   #IF	Gain:Low	EXT REF Center Free Trig: Exter #Atten: 30	4: 2.59299000 nal1 dB	0 GHz Avg Hold: *	10/10	11:30:2: Radio Std: M Radio Devic	1 AM Oct 07, 2021 None e: BTS
10 dB/div	Ref Offset 40. Ref 60.00 d	18 dB IBm							
50.0									
30.0 20.0									
0.00									
-10.0								·····	
-30.0	9299 GHz							Snan	120.0 MHz
#Res BW	1.2 MHz			#VB	W 4 MHz			#	Sweep 1s
Chann	el Power			Power	Spectra	l Density	,		
4	3.51 dBr	n / 60 MH	z		25.73 (	dBm /M	ЛНz		
MSG						STATUS			





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR70) 70 MHz Bandwidth, 256QAM Modulation, Low Channel 2531.01 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW

 44.016
 0
 44.016
 47.016
 50.016
 53.016

Keysight Spect	trum Analyzer - Element	Materials Technolog	y - Points: 1001, D	etector: Average (I	RMS)				
LXI RL	RF 50 Ω D Gate: LO	C #IF	Gain:Low	EXT REF Center Fre Trig: Exter #Atten: 30	rq: 2.53101000 nal1 dB	LIGN OFF 0 GHz Avg Hold: '	10/10	09:54:5 Radio Std: M Radio Devic	7 AM Oct 07, 2021 Ione e: BTS
10 dB/div	Ref Offset 40. Ref 60.00 d	18 dB Bm							
50.0									
30.0									
0.00									
-10.0									
-30.0									
Center 2.5 #Res BW	3101 GHz 1.5 MHz			#VE	SW 5 MHz			Span #	140.0 MHz Sweep 1 s
Chann	el Power			Power	Spectra	l Density			
4	4.02 dBn	n / 70 мн	Z		25.56 (	dBm /M	٨Hz		
MSG						STATUS	an a		





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR70) 70 MHz Bandwidth, 256QAM Modulation, High Channel 2655.00 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW

 44.252
 0
 44.252
 47.252
 50.252
 53.252

Keysight Spect	rum Analyzer - Element Materia	ls Technology - Points: 1001,	Detector: Average (RMS)		
XI RL	RF 50 Ω DC	#IFGain:Low	EXT REF Center Freq: 2.65500000 Trig: External1 #Atten: 30 dB	ALIGN OFF 10 GHz Avg Hold: 10/10	10:31:44 AM Oct 07, 2021 Radio Std: None Radio Device: BTS
10 dB/div	Ref Offset 40.18 dB Ref 60.00 dBm				
50.0					
30.0					
20.0					
-10.0					
-20.0					
Center 2.6	5500 GHz				Span 140 0 MHz
#Res BW	1.5 MHz		#VBW 5 MHz		#Sweep 1s
Chann	el Power		Power Spectra	I Density	
4	4.25 dBm /	70 MHz	25.80	dBm /мнz	
150				STATUS	





Port 1, 5G NR,	Band n41, 2496 M	ИHz - 2690 MHz,	(NR80) 80 MHz Ba	andwidth, 256QAM N	Iodulation, Mid Chan	nel 2592.99 MHz
	Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
	44.957	0	44.957	47.957	50.957	53.957

Keysight Spec	trum Analyzer - Element Materia	lls Technology - Points: 100	1, Detector: Average (RM	S)				
XI RL	RF 50 Ω DC	#IFGain:Low	EXT REF Center Freq: Trig: Externa #Atten: 30 dE	2.592990000 11 3	GN OFF GHz Avg Hold:	10/10	04:20:0 Radio Std: Radio Devi	08 PM Oct 06, 2021 None ce: BTS
10 dB/div	Ref Offset 40.18 dB Ref 40.00 dBm							
100					· ·			
10.0								
-10.0		/					·····	
-40.0								
-50.0 Center 2.5	9299 GHz						Spai	160.0 MH
#Res BW	1.6 MHz		#VBN	/ 5 MHz			1	≄Sweep 1 s
Chann	el Power		Power S	Spectral	Density	/		
4	4.96 dBm /	80 MHz	2	5.93 d	Bm /	MHz		
ISG					STATUS			and the same and





Port 1, 5G N	R, Band n41, 2496	MHz - 2690 MHz	z, (NR90) 90 MHz B	andwidth, QPSK Mo	dulation, Mid Chann	el 2592.99 MHz
	Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
	45.426	0	45.426	48.426	51.426	54.426

Keysight Spect	rum Analyzer - Element N	laterials Technolog	gy - Points: 1001, De	tector: Average (R	RMS)				
RL	RF 50 Ω DC	#IF	Gain:Low	Center Free Trig: Extern #Atten: 30	4: 2.592990000 nal1 dB	D GHz Avg Hold:	10/10	02:10:2 Radio Std: M Radio Devic	7 PM Oct 06, 2021 lone e: BTS
10 dB/div	Ref Offset 40.1 Ref 60.00 dE	B dB Sm							
- <b>og</b> 50.0									
30.0									
10.0									
0.0									
0.0									
enter 2.59 Res BW	9299 GHz 1.8 MHz			#VB	W 6 MHz			Span #	180.0 MH Sweep 1
Chann	el Power			Power	Spectra	l Density	,		
4	5.43 dBm	I / 90 M⊦	Iz		25.88 (	dBm /M	/IHz		
G						STATUS			





Port 1, 5G N	R, Band n41, 2496 l	MHz - 2690 MHz	, (NR90) 90 MHz B	andwidth, 64QAM M	odulation, Mid Chan	nel 2592.99 MHz
	Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
	45.347	0	45.347	48.347	51.347	54.347

Keysight Spect	rum Analyzer - Element	Materials Techno	logy - Points: 1001,	Detector: Average (F	RMS)					X
LXIRL	RF 50 Ω D	C	4FGain:Low	EXT REF Center Fre Trig: Exter #Atten: 30	<u>^</u> ₄ q: 2.59299000 nal1 dB	0 GHz Avg Hold:	10/10	Radio	02:24:32 PM Oct 06, 2 Std: None Device: BTS	2021
10 dB/div	Ref Offset 40. Ref 40.00 d	18 dB IBM								
30.0										
10.0										
-10.00										
-20.0		d								
-40.0										
-50.0	1299 GH7								Spap 180.0 M	<b>1H</b> 7
#Res BW 1	I.8 MHz			#VB	W 6 MHz				#Sweep	1 s
Channe	el Power			Power	Spectra	I Density	/			
4	5.35 dBn	n / 90 M	Hz		25.80	را dBm	MHz			





 Port 1, 5G NR, Band n41, 2496 MHz - 2690 MHz, (NR90) 90 MHz Bandwidth, 256QAM Modulation, Mid Channel 2592.99 MHz

 Initial Value
 Duty Cycle
 Single Port
 2 Port (2x2 MIMO)
 4 Port (4x4 MIMO)
 8 Port (8x8 MIMO)

 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW
 dBm/Carrier BW

 45.359
 0
 45.359
 48.359
 51.359
 54.359

Keysight Spect	trum Analyzer - Elemen	t Materials Techn	ology - Points: 1001, D	etector: Average (	RMS)				
LXI RL	RF 50 Ω E Gate: LO	IC	+→- #IFGain:Low	Center Fre Trig: Exter #Atten: 30	q: 2.59299000 nal1 dB	0 GHz Avg Hold:	10/10	02:30:40 Radio Std: N Radio Devic	8 PM Oct 06, 2021 Ione e: BTS
10 dB/div	Ref Offset 40 Ref 60.00 c	18 dB IBm							
50.0									
40.0									
30.0				•					
10.0									
0.00							\		
-10.0									
-20.0									
-30.0									
Center 2.5 #Res BW	9299 GHz 1.8 MHz			#VE	SW 6 MHz			Span #	180.0 MHz Sweep 1 s
Chann	el Power			Power	Spectra	l Density	,		
4	5.36 dBr	n / 90 M	IHz		25.82 (	dBm /M	٨Hz		
MSG						STATUS			







#### 5G NR EIRP Calculations for Eight 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 b ase station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon the Commscope Planar Array Antenna model T4-90A-R1-V2. This antenna assembly has four columns with a maximum beamforming gain of 22.  $3 \pm 0.8$  dBi. The columns within the antenna have  $\pm 45^\circ$  cross-polarized (orthogonal) radiators. The eight AZHL transmitter outputs are connected to the columns (four are connected to  $+45^\circ$  radiators/antennas). The AZHL provides transmitter outputs for one 4-column antenna.

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 power measurements (highest measured average power for each channel bandwidth type). The maximum antenna assembly beamforming 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 eight port MIMO are as follows:

Parameter	20 MHz	30 MHz	40 MHz	50 MHz	60 MHz	70 MHz	80 MHz	90 MHz
Falameter	Ch BW	Ch BW	Ch BW					
Power Out /Radio Antenna	38.9 dBm	40.9 dBm	42.1 dBm	43.1 dBm	43.8 dBm	44.3 dBm	45.1 dBm	45.6 dBm
Port	or	or	or	or	or	or	or	or
Fort	7.8 W	12.3 W	16.2 W	20.4 W	24.0 W	26.9 W	32.4 W	36.3 W
Cable Loss	0 dB	0 dB	0 dB					
Number of Ant Ports per Polarization	4	4	4	4	4	4	4	4
Total Dower per	31.0 Watts	49.2 Watts	64.9 Watts	81.7 Watts	96.0 Watts	107.7 Watts	129.4 Watts	145.2 Watts
Belarization	or	or	or	or	or	or	or	or
PoidTization	44.9 dBm	46.9 dBm	48.1 dBm	49.1 dBm	49.8 dBm	50.3 dBm	51.1 dBm	51.6 dBm
Maximum Antenna								
Beamforming Gain per	23.1 dBi	23.1 dBi	23.1 dBi					
Polarization								
	68.0 dBm	70.0 dBm	71.2 dBm	72.2 dBm	72.9 dBm	73.4 dBm	74.2 dBm	74.7 dBm
EIRP per Polarization	or	or	or	or	or	or	or	or
	6.34 kW	10.0 kW	13.2 kW	16.7 kW	19.6 kW	22.0 kW	26.4 kW	29.7 kW
Number of Polarizations	2	2	2	2	2	2	2	2
EIRP Total	68.0 dBm	70.0 dBm	71.2 dBm	72.2 dBm	72.9 dBm	73.4 dBm	74.2 dBm	74.7 dBm
(See Note 1)	or	or	or	or	or	or	or	or
	6.34 kW	10.0 kW	13.2 kW	16.7 kW	19.6 kW	22.0 kW	26.4 kW	29.7 kW
EIRP Limit Calculation (See Note 2)	79.6 dBm	81.4 dBm	82.7 dBm	83.6 dBm	84.4 dBm	85.1 dBm	85.7 dBm	86.2 dBm

Note 1: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators). Note 2: The EIRP limit is defined by FCC part 27.50(h)(ii) as 33dBW+ 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz. The Commscope model T4-90A-R1-V2 antenna has a horizontal beamwidth of 26 degrees. Y was selected to be 6MHz for this calculation.

#### **Calculation Summary**

The worst case AZHL eight port MIMO EIRP levels for all 5G NR channel bandwidths using the Commscope antenna assembly model "T4-90A-R1-V2" are less than the FCC regulatory limits.



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	SD3239	ANC	2021-06-24	2022-06-24

#### **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 measurements. This method uses trace averaging across the 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 in decimal, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed only on one port. The AZHL antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during 8 port output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The total average transmit power of all antenna ports was determined per ANSI C63.26-2105 paragraph 6.4.3.1.

The EIRP limit is defined by FCC Part 27.50(h)(ii) as 33dBW + 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz. PSD (power/1MHz) measurements are not required for this radio since the FCC limits for EIRP are defined in watts.



									10(1X 2021.03.19.1	74HIL 2020.12.00.0
EUT:	AZHL (C2PC LTE/5G NR	B41)						Work Order:	NOKI0035	
Serial Number:	YK203400025							Date:	13-Oct-21	
Customer:	Nokia Solutions and Net	tworks						Temperature:	22.6 °C	
Attendees:	David Le, John Rattanav	/ong						Humidity:	52.6% RH	
Project:	None							Barometric Pres.:	1011 mbar	
Tested by:	Brandon Hobbs			Power:	54 VDC			Job Site:	TX09	
TEST SPECIFICATI	IONS				Test Method					
FCC 27:2021					ANSI C63.26:2015					
COMMENTS										
All losses in the me	easurement path were ac	counted for	: attenuators, cables, DC b	lock and filter whe	en in use. Band n41 c	arriers and enab	led at maximum po	wer. External 1 gatir	ng was set using a tri	ig delay = 5.044ms
and a gate length =	6.8061ms. The following	is the outp	ut power measurements at	the radio output p	oorts. The output pov	er was measure	ed for a single carrie	r channel bandwidt	h on port 1. The total	output power for
multiport (2x2 MIM	O, 4x4 MIMO and 8x8 MI	NO) operatio	on was determined based u	pon ANSI C63.26	clauses 6.4.3.1 and 6	.4.3.2.4 (10 Log I	Nout). The total outp	out power for two po	rt operation is single	e port power + 3dB
[i.e.: 10 Log(2)]. The	e total output power for f	our port ope	eration is single port powe	+ 6dB [i.e.: 10 Lo	g(4)]. The total outpu	t power for eight	port operation is si	ngle port power + 9	dB [i.e.: 10 Log(8)].	
DEVIATIONS FROM	I TEST STANDARD									
None										
				7	4					
Configuration #	2				1-1					
			Signature	e						
					Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
					dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
4G LTE, Band 41, 24	496 MHz - 2690 MHz									
	Port 1									
	LTE15 (15M	IHz)								
	LTE15 (15M	IHz) QPSK								
	LTE15 (15M	IHz) QPSK	Mid Channel 2593 MHz		37.674	0	37.7	40.7	43.7	46.7
	LTE15 (15M	IHz) QPSK 16QAM	Mid Channel 2593 MHz		37.674	0	37.7	40.7	43.7	46.7
	LTE15 (15M	IHz) QPSK 16QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz		37.674 37.892	0	37.7 37.9	40.7 40.9	43.7 43.9	46.7 46.9
	LTE15 (15M	Hz) QPSK 16QAM 64QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz		37.674 37.892	0	37.7 37.9	40.7 40.9	43.7 43.9	46.7 46.9
	LTE15 (15M	Hz) QPSK 16QAM 64QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz		37.674 37.892 37.853	0 0 0	37.7 37.9 37.9	40.7 40.9 40.9	43.7 43.9 43.9	46.7 46.9 46.9
	LTE15 (15M	IHz) QPSK 16QAM 64QAM 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz		37.674 37.892 37.853	0 0 0	37.7 37.9 37.9	40.7 40.9 40.9	43.7 43.9 43.9	46.7 46.9 46.9
	LTE15 (15M	Hz) QPSK 16QAM 64QAM 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 5 MHz		37.674 37.892 37.853 37.777 27.942	0 0 0 0 0	37.7 37.9 37.9 37.8 27 8	40.7 40.9 40.9	43.7 43.9 43.9 43.8	46.7 46.9 46.9 46.8
	LTE15 (15M	Hz) QPSK 16QAM 64QAM 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz		37.674 37.892 37.853 37.777 37.813 37.716	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.8 37.7	40.7 40.9 40.9 40.8 40.8 40.8	43.7 43.9 43.8 43.8 43.8	46.7 46.9 46.9 46.8 46.8 46.8
	LTE15 (15M	Hz) QPSK 16QAM 64QAM 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz Mid Channel 2593 MHz High Channel 2682.5 MHz	_	37.674 37.892 37.853 37.777 37.813 37.716	0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.8 37.8 37.7	40.7 40.9 40.9 40.8 40.8 40.8 40.7	43.7 43.9 43.9 43.8 43.8 43.8 43.8 43.7	46.7 46.9 46.9 46.8 46.8 46.8 46.7
	LTE15 (15M LTE20 (20M	Hz) QPSK 16QAM 64QAM 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz Mid Channel 2593 MHz High Channel 2682.5 MHz		37.674 37.892 37.853 37.777 37.813 37.716	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.8 37.7	40.7 40.9 40.9 40.8 40.8 40.8 40.7	43.7 43.9 43.9 43.8 43.8 43.8 43.8 43.7	46.7 46.9 46.9 46.8 46.8 46.8 46.7
	LTE15 (15M LTE20 (20M	Hz) QPSK 16QAM 64QAM 256QAM Hz) 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz High Channel 2593 MHz High Channel 2682.5 MHz		37.674 37.892 37.853 37.777 37.813 37.716 39.023	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.8 37.7 39.0	40.7 40.9 40.9 40.8 40.8 40.8 40.7	43.7 43.9 43.9 43.8 43.8 43.8 43.7	46.7 46.9 46.9 46.8 46.8 46.7 48.0
	LTE15 (15M LTE20 (20M	Hz) QPSK 16QAM 64QAM 256QAM Hz) 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz High Channel 2593 MHz Low Channel 2596 MHz Low Channel 2596 MHz		37.674 37.892 37.853 37.777 37.813 37.716 39.023 39.100	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.7 39.0 39.1	40.7 40.9 40.9 40.8 40.8 40.7 42.0 42.1	43.7 43.9 43.9 43.8 43.8 43.8 43.7 45.0 45.1	46.7 46.9 46.9 46.8 46.8 46.8 46.7 48.0 48.1
	LTE15 (15M LTE20 (20M	Hz) QPSK 16QAM 64QAM 256QAM Hz) 256QAM	Mid Channel 2593 MHz Mid Channel 2593 MHz Mid Channel 2593 MHz Low Channel 2593 MHz High Channel 2693 MHz Low Channel 2693 MHz Low Channel 2506 MHz Mid Channel 2506 MHz		37.674 37.892 37.853 37.777 37.813 37.716 39.023 39.000 39.055	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	37.7 37.9 37.9 37.8 37.8 37.7 39.0 39.1 39.1	40.7 40.9 40.9 40.8 40.8 40.8 40.7 42.0 42.0 42.1 42.1	43.7 43.9 43.9 43.8 43.8 43.8 43.8 43.7 45.0 45.1 45.1	46.7 46.9 46.9 46.8 46.8 46.8 46.7 48.0 48.1 48.1



	4G LTE, Band 41, 2	2496 MHz - 26	690 MHz, Port 1, LTE1	15 (15MHz), QPSK, I	Mid Channel 2593 M	Hz
	Initial Value	Duty Cycle	Single Port	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	8 Port (8x8 MIMO)
	dBm/Carrier BW		dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW
	37.674	0	37.674	40.674	43.674	46.674
🧱 Keysight Spectrum Analy:	zer - Element Materials Technolo	ogy - Points: 500, Dete	ector: Average (RMS)		<u>-</u>	
LXIRL RF	50 Ω DC	SE	ENSE:EXT A	ALIGN OFF	10:36:31 AM Padio Std: Non	Oct 13, 2021
Gate:	LO		Trig: External1	Avg Hold: 50/50	radio ota. non	
	#1	IFGain:Low	#Atten: 30 dB		Radio Device: B	ITS
Ref	Offset 40.18 dB					
10 dB/div Ref	27.00 dBm					
17.0		· · · · · ·				
7.00		1		1		
7.00		ł				
-3.00						
-13.0						
-23.0						
-33.0						
-43.0						
-53.0						
-63.0						
Center 2.59300 G	Hz				Span 35	.00 MHz
Channel Po 37.67	wer ' dBm / 15 MI	Hz	Power Spectra 25.91	al Density dBm /MHz		
Channel Po 37.67	wer ′ dBm / 15 мн	Hz	Power Spectra 25.91	al Density dBm /мнz		
Channel Po 37.67	wer ' dBm / 15 Mł	Hz	Power Spectra 25.91	al Density dBm /мнz <sup>status</sup>		
Channel Po 37.67	wer <b>dBm</b> / 15 MH 4G LTE, Band 41, 2	H <b>z</b> 2496 MHz - 263	Power Spectra 25.91 90 MHz, Port 1, LTE1	al Density dBm /MHz status 5 (15MHz), 16QAM,	Mid Channel 2593 M	Hz
Channel Po 37.67	wer <sup>7</sup> dBm / 15 MH 4G LTE, Band 41, 2 Initial Value	Hz 2496 MHz - 269 Duty Cycle	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO)	Mid Channel 2593 M 4 Port (4x4 MIMO)	IHz 8 Port (8x8 MIMO)
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 000	Hz 2496 MHz - 26 Duty Cycle	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW	IHz 8 Port (8x8 MIMO) dBm/Carrier BW
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892	Hz 2496 MHz - 26 Duty Cycle 0	Power Spectra 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892	Hz 2496 MHz - 26: Duty Cycle 0	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo	Hz 2496 MHz - 26: Duty Cycle 0 2sgy - Points 500, Dete	Power Spectra 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67 MSG Keysight Spectrum Analyz RL RF	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo 50 Ω DC	Hz 2496 MHz - 269 Duty Cycle 0 2999 - Points: 500, Dete	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo 59 Ω DC LO	Hz 2496 MHz - 265 Duty Cycle 0 ogy - Points 500, Dete	Power Spectra 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 cer - Element Materials Technolo 50 Ω DC LO	Hz 2496 MHz - 263 Duty Cycle 0 2099 - Points 500, Dete	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892 10:49:42 AM Radio Std: Non- Radio Device: E	IHZ 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo 50 Ω DC LO #I Coffset 40.18 dB	Hz 2496 MHz - 263 Duty Cycle 0 29y - Points 500, Dete 0 FGain:Low	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892 10:49:42 AM Radio Std: Non Radio Device: E	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo 50 Ω DC LO #I Offset 40.18 dB 27.00 dBm	Hz 2496 MHz - 26 Duty Cycle 0 pay - Points 500, Dete SE FGain:Low	Power Spectre 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892 xtor: Average (RMS) NSEEXT Center Freq: 2.5930000 Trite: Freq: 2.5930000 Center Freq: 2.5930000 Trite: Average (RMS)	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer ABM / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 er - Element Materials Technolo 50 Ω DC LO #1 Dffset 40.18 dB 27.00 dBm	Hz 2496 MHz - 26 Duty Cycle 0 cgy - Points 500, Dete FGain:Low	Power Spectra 25.91 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892 extor Average (RMS) SINSE:EXT ALL Center Freq: 2.593000 Trig: External1 #Atten: 30 dB	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 GN AUTO/NO RF 100 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 zer - Element Materials Technolo 59 Ω DC LO #I Offset 40.18 dB 27.00 dBm	Hz 2496 MHz - 26: Duty Cycle 0 ogy - Points 500, Dete FGain:Low	Power Spectra 25.91 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892 xtor Average (RMS) NSE:EXT Setter Freq: 2.5930000 Trig: External1 #Atten: 30 dB	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 5N AUTO/NO RF 5N AUTO/NO RF 5N AUTO/NO RF 5N AUTO/NO RF	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (8x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 2r - Element Materials Technolo 50 \overline DC LO #I Offset 40.18 dB 27.00 dBm	Hz 2496 MHz - 265 Duty Cycle 0 599 - Points: 500, Dete FGain:Low	Power Spectra 25.91 90 MHz, Port 1, LTE1 Single Port dBm/Carrier BW 37.892 ctor Average (RMS) Center Freq: 2.5930000 Trig: External #Atten: 30 dB	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 GN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892	Hz 8 Port (6x8 MIMO) dBm/Carrier BW 46.892
Channel Po 37.67	Wer dBm / 15 MH 4G LTE, Band 41, 2 Initial Value dBm/Carrier BW 37.892 2r - Element Materials Technolo 50 $\Omega$ DC LO #1 Offset 40.18 dB 27.00 dBm	Hz 2496 MHz - 265 Duty Cycle 0 ogy - Points 500, Dete 9 FGain:Low	Power Spectra 25.91 90 MHz, Port 1, LTE1: Single Port dBm/Carrier BW 37.892 etco: Average (RMS) ENSE:EXT Center Freq: 2.5930000 Trig: External1 #Atten: 30 dB	al Density dBm /MHz status 5 (15MHz), 16QAM, 2 Port (2x2 MIMO) dBm/Carrier BW 40.892 SN AUTO/NO RF 00 GHz Avg Hold: 50/50	Mid Channel 2593 M 4 Port (4x4 MIMO) dBm/Carrier BW 43.892 10:49:42 AM Radio Std: Non Radio Device: E	IHZ 8 Port (8x8 MIMO) dBm/Carrier BW 46.892







	Gate: LO	#IFGain:Low	Center Freq: 2.5035000 Trig: External1 #Atten: 30 dB	000 GHz Avg Hold: 10/10	Radio Std: None Radio Device: BTS
10 dB/div	Ref Offset 40.18 d Ref 53.18 dBm	В			
43.2					
23.2					
3.18					
-6.82					
-26.8	aha ay na yang na yang na na yang na na yang na				
Center 2.: #Res BW	50350 GHz 300 kHz		#VBW 910 k	Hz	Span 40.00 MHz #Sweep 1 s
Chanı	nel Power		Power Spectr	al Density	
3	37.78 dBm /	15 MHz	-33.98	dBm /Hz	
				1	





Gate: LO	• <b>•</b> •	Center Freq: 2.682500000 GHz Trig: External1 Avg Hold:	50/50	Radio Std: None	e 
	#IFGain:Low	#Atten: 30 dB		Radio Device: B	TS
Ref Offset 40.18 dB					
Log					
17.0			Ì		
7.00					
-3.00					
-13.0					
-23.0			· · · · · · · · · · · · · · · · · · ·		
-33.0					
-43.0					
-53.0					
-63.0					
Center 2.68250 GHz #Res BW 300 kHz		#VBW 910 kHz		Span 35 #Sw	.00 MHz reep <u>1 s</u>
Channel Power		Power Spectral Densit	V		
37.72 dBm / 15	MHz	25.95 dBm //	MHz		
MSG		STATUS			





Log		· · · · · · · · · · · · · · · · · · ·					1	
17.0								
7.00		<b> </b>						
-3.00					l			
-13.0		/						
-23.0		1						
-33.0								
42.0								
-43.0								
-53.0								
-63.0								
Center 2.59300 GH #Res BW 430 kHz	z		#VI	3W 1.3 MH	z		Span #	50.00 MHz Sweep 1 s
Channel Pow	/er		Powe	r Spectra	I Density	/		
Channel Pow 39.10	/er dBm / 20	MHz	Powe	r Spectra 26.09	I Density dBm /I	/ AHz		
Channel Pow <b>39.10</b>	ver dBm / 20	MHz	Powe	r Spectra 26.09	I Density	ИНz		
Channel Pow 39.10	/er dBm / 20	MHz	Powe	r Spectra 26.09	I Density dBm /I	ИНz		
Channel Pow 39.10	/er dBm / 20	MHz	Powe	r Spectra	l Density dBm  /I	/ ЛНz		







#### 4G LTE EIRP Calculations for Eight Port MIMO Operations

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

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon the Commscope Planar Array Antenna model T4-90A-R1-V2. This antenna assembly has four columns with a maximum beamforming gain of 22.3 ± 0.8dBi. The columns within the antenna have ±45° cross-polarized (orthogonal) radiators. The eight AZHL transmitter outputs are connected to the columns (four are connected to +45° radiators/antennas and four are connected to the -45° radiators/antennas). The AZHL provides transmitter outputs for one 4-column antenna.

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 power measurements (highest measured average power for each channel bandwidth type). The maximum antenna assembly beamforming 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 eight port

Parameter	15 MHz Ch BW	20 MHz Ch BW
	37.9 dBm	39.1 dBm
Power Out /Radio Antenna	or	or
Port	6.2 W	8.1 W
Cable Loss	0 dB	0 dB
Number of Ant Ports per Polarization	4	4
Total Rower per	24.7 Watts	32.5 Watts
Delevization	or	or
Polarización	43.9 dBm	45.1 dBm
Maximum Antenna		
Beamforming Gain per Polarization	23.1 dBi	23.1 dBi
	67.0 dBm	68.2 dBm
EIRP per Polarization	or	or
	5.0 kW	6.6 kW
Number of Polarizations	2	2
	67.0 dBm	68.2 dBm
EIRP Total (See Note 1)	or	or
	5.0 kW	6.6 kW
EIRP Limit Calculation (See Note 2)	78.4 dBm	79.6 dBm

Note 1: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

Note 2: The EIRP limit is defined by FCC part 27.50(h)(iii) as 33dBW+ 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz. The Commscope model T4-90A-R1-V2 antenna has a horizontal beamwidth of 26 degrees. Y was selected to be 6MHz for this calculation.

#### **Calculation Summary**

The worst case AZHL eight port MIMO EIRP levels for all 4G LTE channel bandwidths using the Commscope antenna assembly model "T4-90A-R1-V2" are less than the FCC regulatory limits.



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	SD3239	ANC	2021-06-24	2022-06-24
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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 measurements. This method uses trace averaging across the 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 in decimal, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed on all ports at NR100 middle channel in order to prove the AZHL antenna ports are essentially electrically identical. 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 2019.08.30.0	XMit 2020.12.30
EUT:	AZHL (C2PC LTE/5G NR	B41)				Work Order	: NOKI0035	
Serial Number:	YK203400025					Date	: 8-Oct-21	
Customer:	Nokia Solutions and Net	works				Temperature	: 20.9 °C	
Attendees:	David Le, John Rattanav	ong				Humidity	: 51.1% RH	
Project:	None					Barometric Pres.	: 1021 mbar	
Tested by:	Brandon Hobbs		Power: 54 VDC			Job Site	: TX09	
TEST SPECIFICATIO	ONS		Test Method					
FCC 27:2021			ANSI C63.26:2015					
COMMENTS								
All losses in the me	asurement path were acc	counted for: attenuators, cables, DC bl	ock and filter when in use. Band n41	carriers and enable	ed at maximum p	ower (40 watts/carr	ier). External 1 gating	was set using a
trig delay = 86.2us a	nd a gate length = 3.714	ns.						
DEVIATIONS FROM	TEST STANDARD							
None								
			1 1					
Configuration #	2		and Jean					
		Signature	Ł					
			Arres Oren d	Durtes Oreals	Malaia	All Dente		
			Avg Cond	Duty Cycle	Value	All Ports	Limit	Deculto
EC ND Band n41 04			Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	All Ports Value (dBm)	Limit	Results
5G NR, Band n41, 24	96 MHz - 2690 MHz		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	All Ports Value (dBm)	Limit	Results
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 2560 MM Ma	dth	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	All Ports Value (dBm)	Limit	Results
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Mid Chappel 2592 99 MHz	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	All Ports Value (dBm)	Limit	Results
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Mid Channel 2592.99 MHz Port 1	Avg Cond Pwr (dBm) 46.023	Duty Cycle Factor (dB)	Value (dBm)	All Ports Value (dBm)	Limit	Results
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Mid Channel 2592.99 MHz Port 1 Port 2	Avg Cond Pwr (dBm) 46.023 46.000	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0	All Ports Value (dBm) N/A	Limit Within Tolerance	Results N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Mid Channel 2592.99 MHz Port 1 Port 2 Port 3	Avg Cond Pwr (dBm) 46.023 46.000 45.869	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 45.9	All Ports Value (dBm) N/A N/A N/A	Limit Within Tolerance Within Tolerance	Results N/A N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Mid Channel 2592.99 MHz Port 1 Port 2 Port 3 Port 4	Avg Cond Pwr (dBm) 46.023 46.000 45.869 46.233	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 45.9 46.2	All Ports Value (dBm) N/A N/A N/A N/A	Limit Within Tolerance Within Tolerance Within Tolerance	Results N/A N/A N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 2560AM Mo	dth dulation Mid Channel 2592.99 MHz Port 1 Port 2 Port 3 Port 4 Port 5	Avg Cond Pwr (dBm) 46.023 46.000 45.869 46.233 46.023	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 45.9 46.2 46.0	All Ports Value (dBm) N/A N/A N/A N/A N/A	Limit Within Tolerance Within Tolerance Within Tolerance Within Tolerance	Results N/A N/A N/A N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth Julation Mid Channel 2592.99 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6	Avg Cond Pwr (dBm) 46.023 46.000 45.869 46.233 46.023 46.023	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 45.9 46.2 46.0 46.0	All Ports Value (dBm) N/A N/A N/A N/A N/A N/A	Limit Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance	Results N/A N/A N/A N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth dulation Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7	Avg Cond Pwr (dBm) 46.023 46.000 45.869 46.233 46.023 46.023 46.038 46.146	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 46.2 46.0 46.0 46.1	All Ports Value (dBm) N/A N/A N/A N/A N/A N/A N/A N/A	Limit Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance	Results N/A N/A N/A N/A N/A N/A
5G NR, Band n41, 24	96 MHz - 2690 MHz (NR100) 100 MHz Bandwi 256QAM Mo	dth Mid Channel 2592.99 MHz Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8	Avg Cond Pwr (dBm) 46.023 46.000 45.869 46.233 46.023 46.038 46.146 46.240	Duty Cycle Factor (dB)	Value (dBm) 46.0 46.0 45.9 46.2 46.0 46.0 46.1 46.2	All Ports Value (dBm) N/A N/A N/A N/A N/A N/A N/A N/A N/A	Limit Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance Within Tolerance	Results N/A N/A N/A N/A N/A N/A N/A



























5G NR, Band n	41, 2496 MHz - 2	2690 MHz, (NR10	0) 100 MHz Band	dwidth, 256QAM	Modulation, Mid C	Channel 2592.99 M	Hz, Port 7	
		Avg Cond	Duty Cycle	Value	All Ports			
		Pwr (dBm)	Factor (dB)	(dBm)	Value (dBm)	Limit	Results	
		N/A	0	N/A	55.1	N/A	N/A	

AVERAGE POWER PORT SUMMING										
	PORT 1	PORT 2	PORT 3	PORT 4	PORT 5	PORT 6	PORT 7	PORT 8	SUM TOTAL	
INITIAL VALUE (dBm)	46.023	46.000	45.869	46.233	46.023	46.038	46.146	46.230	N/A	
INITIAL VALUE (Watts)	40.0	39.8	38.6	42.0	40.0	40.2	41.2	42.0	323.8	
TOTAL VALUE (dBm)	N/A	55.1								