

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	SD3239	ANC	2022-03-02	2023-03-02
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17
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 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 testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The occupied bandwidth was measured with the EUT configured in the modes called out in the data sheets. FCC 27.53(H)(3) defines he 26dB emission bandwidth requirement. RSS GEN Section 6.7 defines the 99% emission bandwidth requirement.

	FCC and ISED Emission Designators for Band X (2110MHz to 2170MHz)						
Ch	Radio	WCDM	A: QPSK	WCDMA	: 16QAM	WCDMA	: 64QAM
BW	Channel	FCC	ISED	FCC	ISED	FCC	ISED
	Low					4M62F9W	4M14F9W
5MHz	Mid	4M62F9W	4M15F9W	4M61F9W	4M13F9W	4M61F9W	4M15F9W
	High					4M61F9W	4M15F9W
Note: FCC emis	sion designator	s are based on 2	26dB emission b	andwidth. ISED	emission desigr	nators are based	d on 99%
emission bandy	width.						



							TbtTx 2022.05.02.0	XMit 2022.02.07.0
EUT:	AHFII (FCC/ISED C2PC)					Work Order:	NOKI0040	
Serial Number:	YK214000036					Date:	13-May-22	
Customer:	Nokia Solutions and Net	works				Temperature:	23.2 °C	
Attendees:	David Le, John Rattanav	ong				Humidity:	47.7% RH	
Project:	None					Barometric Pres.:	1014 mbar	
Tested by:	Brandon Hobbs		Power:	54 VDC		Job Site:	TX05	
TEST SPECIFICAT	IONS			Test Method				
FCC 27:2022				ANSI C63.26:2015				
RSS-139 Issue 3:20	015			RSS-139 Issue 3:2015				
COMMENTS								
All losses in the m	easurement path were ac	counted for: attenuators, cables, DC block and	d filter when ir	n use. PCS Band II / AWS Band X car	iers were enabled	at maximum power	(30 watts/carrier).	
	•						. ,	
DEVIATIONS FROM	I TEST STANDARD							
None								
Configuration #	2	Signature		-1				
					Value	Value		
					99% (MHz)	26dB (MHz)	Limit	Result
AWS BAND X, 2110) MHz - 2170 MHz							
	Port 1							
	5 MHz Band	wdith						
		QPSK Modulation						
		Mid Channel, 2140 MHz			4.15	4.62	Within Band	Pass
		16-QAM Modulation						
		Mid Channel, 2140 MHz			4.13	4.61	Within Band	Pass
		64-QAM Modulation						
		Low Channel, 2112.4 MHz			4.14	4.62	Within Band	Pass
		Mid Channel, 2140 MHz			4.15	4.61	Within Band	Pass
		High Channel, 2167.6 MHz			4.15	4.61	Within Band	Pass





Keysight Spectrum Analyzer - Element Mate	erials Technology - Points: 3000,	Detector: Peak		- P ×
M RL RF 50 Ω DC	#IFGain:Low	SENSE:INT AI Center Freq: 2.14000000 Trig: Free Run #Atten: 30 dB	LIGN AUTO 0 GHz Avg Hold: 50/50	09:47:41 AM May 14, 2022 Radio Std: None Radio Device: BTS
Ref Offset 41.58 c 10 dB/div Ref 59.00 dBm	iB 1			
49.0				
39.0	~	man man manager	Anna _	
29.0				
19.0	/		<u>\</u>	
9.00				
-1.00				
-11.0				
-21.0 aron man	her and a second			- Alaman - Anna - Anna
-31.0				
Center 2.140000 GHz #Res BW 100 kHz		#VBW 300 kH	Z	Span 15.00 MHz Sweep 1.599 ms
Occupied Bandwidt	h	Total Power	53.2 dBm	
4.	1329 MHz			
Transmit Freq Error	7.147 kHz	% of OBW Powe	r 99.00 %	
x dB Bandwidth	4.605 MHz	x dB	-26.00 dB	
MSG			STATUS	













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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANC	2022-03-02	2023-03-02
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17
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 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 testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The occupied bandwidth was measured with the EUT configured in the modes called out in the data sheets. FCC 24.238(b) defines he 26dB emission bandwidth requirement. RSS GEN Section 6.7 defines the 99% emission bandwidth requirement.

FCC and ISED Emission Designators for Band II (1930MHz to 1990MHz)							
Radio	WCDM/	A: QPSK	WCDMA	: 16QAM	WCDMA: 64QAM		
Channel	FCC	ISED	FCC	ISED	FCC	ISED	
Low					4M61F9W	4M13F9W	
Mid	4M62F9W	4M14F9W	4M60F9W	4M16F9W	4M60F9W	4M17F9W	
High					4M63F9W	4M16F9W	
ion designators	s are based on 2	26dB emission b	andwidth. ISED	emission design	nators are based	1 on 99%	
	FCC and ISE Radio Channel Low Mid High ion designator	FCC and ISED Emission Radio WCDMA Channel FCC Low Image: Comparison of the second of t	FCC and ISED Emission Designators Radio WCDMA: QPSK Channel FCC ISED Low ISED ISED Mid 4M62F9W 4M14F9W High ISED ISED	FCC and ISED Emission Designators for Band II (2) Radio WCDMA: QPSK WCDMA: Channel FCC ISED FCC Low Image: Colspan="2">Image: Colspan="2" Image:	FCC and ISED Emission Designators for Band II (1930MHz to Radio WCDMA: QPSK WCDMA: 16QAM Channel FCC ISED Low ISED FCC ISED Mid 4M62F9W 4M14F9W 4M60F9W 4M16F9W High ISED Emission designators are based on 26dB emission bandwidth. ISED emission design	FCC and ISED Emission Designators for Band II (1930MHz to 1990MHz) Radio WCDMA: QPSK WCDMA: 16QAM WCDMA Channel FCC ISED FCC ISED FCC Low 4M62F9W 4M14F9W 4M60F9W 4M16F9W 4M60F9W 4M66F9W 4M6F9W 4M6F9W	



							TOTTX EDEE.00.0E.0	Junit LOLL.OL.
EUT: A	HFII (FCC/ISED C2PC)					Work Order:	NOKI0040	
Serial Number: Y	K214000036					Date:	13-May-22	
Customer: N	okia Solutions and Net	works				Temperature:	22.3 °C	
Attendees: D	avid Le, John Rattanav	rong				Humidity:	50.3% RH	
Project: N	one					Barometric Pres.:	1013 mbar	
Tested by: B	randon Hobbs		Power:	54 VDC		Job Site:	TX05	
TEST SPECIFICATION	NS			Test Method				
FCC 24E:2022				ANSI C63.26:2015				
RSS-133 Issue 6:2013	3+A1:2018			RSS-133 Issue 6:2013+A1:2018				
COMMENTS								
DEVIATIONS FROM T	EST STANDARD							
None		-						
Configuration #	2	Signature		-1				
					Value 99% (MHz)	Value 26dB (MHz)	Limit	Result
PCS WCDMA, 1930 M	IHz - 1990 MHz							
P	ort 1							
	5 MHz Band	wdith						
		QPSK Modulation						
		Mid Channel, 1960 MHz			4.14	4.62	Within Band	Pass
		16-QAM Modulation						
		Mid Channel, 1960 MHz			4.16	4.60	Within Band	Pass
		64-QAM Modulation						
		Low Channel, 1932.4 MHz			4.13	4.61	Within Band	Pass
		Mid Channel, 1960 MHz			4.17	4.60	Within Band	Pass
		High Channel, 1987.6 MHz			4.16	4.63	Within Band	Pass





🔤 Keysight Spectrum Analyzer - Element Mate	rials Technology - Points: 3000,	Detector: Peak		
LXI RL RF 50Ω DC		SENSE:INT A	ALIGN AUTO	08:08:57 AM May 14, 2022
		Center Freq: 1.9600000	00 GHz	Radio Std: None
	#IEGain:Low	#Atten: 30 dB	Avginoid:>50/50	Radio Device: BTS
	WI Guilleow			
Ref Offset 41.58 d	В			
10 dB/div Ref 60.00 dBm				
Log				
50.0				
40.0	~~~	www.www.wowwawa	n l	
30.0				
20.0				
40.0				
10.0				
0.00				
-10.0				
-20.0	- A Contractor of the Contractor			
20.0				Alle on Alexandra Provident Data (Alexandra Caller of Alexandra Alexandra)
-30.0				
Center 1 960000 GHz		l l		Snan 15 00 MHz
#Res BW 100 kHz		#VBW 300 kH	iz	Sweep 1.599 ms
Occupied Bandwidth	n	Total Power	53.4 dBm	
4.1	1590 MHZ			
Tranamit Frag Error	6 070 kUz		··· 00.00.0/	
fransmit Fred Error	0.272 KHZ	% OF OBW Fowe	99.00 %	
x dB Bandwidth	4.604 MHz	x dB	-26.00 dB	
MSG			STATUS	
			International Advances in the second s	and a second sintensis in the data of the second size and a second size of the se













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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANC	2022-03-02	2023-03-02
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

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

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

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

Per FCC part 27.50(d)(5) and RSS-139 6.5, 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 only on one port. The testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.



					10(1X 2022.03.02.0	70000 2022-02-01-0
EUT:	AHFII (FCC/ISED C2PC)			Work Order:	NOKI0040	
Serial Number:	YK214000036			Date:	13-May-22	
Customer:	Nokia Solutions and Net	works		Temperature:	21.9 °C	
Attendees:	David Le, John Rattanav	ong		Humidity:	51.9% RH	
Project:	None			Barometric Pres.:	1014 mbar	
Tested by:	Brandon Hobbs		Power: 54 VDC	Job Site:	TX05	
TEST SPECIFICATION	ONS		Test Method			
FCC 27:2022			ANSI C63.26:2015			
RSS-139 Issue 3:20 ⁻	15		RSS-139 Issue 3:2015			
COMMENTS						
All measurement pa	ath losses were accounte	d for in the reference level offest includi	ng any attenuators, filters and DC blocks. AWS Band	X carriers are enabled at maximum p	ower (30 watts/carri	er).
DEVIATIONS FROM	I TEST STANDARD					
None						
Configuration #	2	Signature	a Jar			
Configuration #	2	Signature	-J-1	PAPR Value (dB)	PAPR Limit (dB)	Results
Configuration #	2 0 MHz - 2170 MHz	Signature	Jal	PAPR Value (dB)	PAPR Limit (dB)	Results
Configuration #	2) MHz - 2170 MHz Port 1	Signature	- Jal	PAPR Value (dB)	PAPR Limit (dB)	Results
Configuration #	2 0 MHz - 2170 MHz Port 1 5 MHz Bandy	Signature	- J.	PAPR Value (dB)	PAPR Limit (dB)	Results
Configuration #	2 0 MHz - 2170 MHz Port 1 5 MHz Bandy	Signature vidith QPSK Modulation	a Jan	PAPR Value (dB)	PAPR Limit (dB)	Results
Configuration #	2 0 MHz - 2170 MHz Port 1 5 MHz Bandy	Vdith QPSK Modulation Mid Channel, 2140 MHz	Jal	PAPR Value (dB) 8.21	PAPR Limit (dB) 13	Results Pass
Configuration #	2) MHz - 2170 MHz Port 1 5 MHz Bandy	Signature vdith QPSK Modulation Mid Channel, 2140 MHz 16-QAM Modulation	- J.	PAPR Value (dB) 8.21	PAPR Limit (dB) 13	Results Pass
Configuration #	2) MHz - 2170 MHz Port 1 5 MHz Bandy	Signature wdith QPSK Modulation Mid Channel, 2140 MHz 16-QAM Modulation Mid Channel, 2140 MHz	-J-A	PAPR Value (dB) 8.21 8.11	PAPR Limit (dB) 13 13	Results Pass Pass
Configuration #	2 0 MHz - 2170 MHz Port 1 5 MHz Bandy	vdith QPSK Modulation Mid Channel, 2140 MHz 16-QAM Modulation Mid Channel, 2140 MHz 64-QAM Modulation	Jal	PAPR Value (dB) 8.21 8.11	PAPR Limit (dB) 13 13	Results Pass Pass
Configuration #	2) MHz - 2170 MHz Port 1 5 MHz Bandy	Signature vdith QPSK Modulation Mid Channel, 2140 MHz 16-QAM Modulation Mid Channel, 2140 MHz 64-QAM Modulation Low Channel, 2112.4 MHz	- J.J.	PAPR Value (dB) 8.21 8.11 8.11	PAPR Limit (dB) 13 13 13	Results Pass Pass Pass
Configuration #	2) MHz - 2170 MHz Port 1 5 MHz Bandy	signature vdith QPSK Modulation Mid Channel, 2140 MHz 16-QAM Modulation Mid Channel, 2140 MHz 64-QAM Modulation Low Channel, 2112.4 MHz Mid Channel, 2140 MHz	- J. A	PAPR Value (dB) 8.21 8.11 8.11 8.11 8.15	PAPR Limit (dB) 13 13 13 13 13	Results Pass Pass Pass Pass Pass





STATUS





8.83 dB

8.87 dB

53.28 dBm

0.001 %

0.0001 %

0.001 %

Peak

0.0001 % 8.85 dB

0 dB Info BW 5.0000 MHz

STATUS

20 dB







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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3239	ANC	2022-03-02	2023-03-02
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17

TEST DESCRIPTION

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

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

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

Per FCC part 24.232(d) and RSS 133 6.4, 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 only on one port. The testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.



EUT:	AHFII (FCC/ISED C2PC)				Wo	rk Order:	NOKI0040	
Serial Number:	YK214000036					Date:	13-May-22	
Customer:	Nokia Solutions and Net	vorks			Tem	perature:	22.6 °C	
Attendees:	David Le, John Rattanavo	ong			-	lumidity:	49.7% RH	
Project:	None				Baromet	ric Pres.:	1013 mbar	
Tested by:	Brandon Hobbs		Power:	54 VDC		Job Site:	TX05	
TEST SPECIFICATION	IONS			Test Method				
FCC 24E:2022				ANSI C63.26:2015				
RSS-133 Issue 6:20	013+A1:2018			RSS-133 Issue 6:2013+A1:2018				
COMMENTS								
All measurement pa	ath losses were accounte	d for in the reference level offest includir	ng any attenuators,	filters and DC blocks. PCS band II ca	rriers are enabled at maxim	um powe	r (30 watts/carrier).	
DEVIATIONS FROM	I TEST STANDARD							
None								
None Configuration #	2	Signature	-4	-1				
None Configuration #	2	Signature	-1	-	PA Value	VPR e (dB)	PAPR Limit (dB)	Results
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz	Signature	Z J	-	PA Valu	NPR e (dB)	PAPR Limit (dB)	Results
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz Port 1	Signature	24	-	PA Valu	VPR e (dB)	PAPR Limit (dB)	Results
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz Port 1 5 MHz Bandy	Signature	= []	-1	P A Valu	VPR e (dB)	PAPR Limit (dB)	Results
None Configuration # PCS BAND II, 1930 /	2 MHz - 1990 MHz Port 1 5 MHz Bandy	Signature view of the second s	e J	-1	PA Valu	VPR e (dB)	PAPR Limit (dB)	Results
None Configuration # PCS BAND II, 1930 1	2 MHz - 1990 MHz Port 1 5 MHz Bandy	Signature with QPSK Modulation Mid Channel, 1960 MHz	- 1	-	PA Valu 8.	PR e (dB) 21	PAPR Limit (dB) 13	Results Pass
None Configuration # PCS BAND II, 1930 /	2 MHz - 1990 MHz Port 1 5 MHz Bandy	Signature with QPSK Modulation Mid Channel, 1960 MHz 16-QAM Modulation Mid Channel, 1960 MHz	z _ J	-1	PA Valu 8.	PR e (dB) 21	PAPR Limit (dB) 13	Results Pass
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz Port 1 5 MHz Bandy	xdith QPSK Modulation Mid Channel, 1960 MHz 16-QAM Modulation Mid Channel, 1960 MHz	- 1		PA Valu 8. 8.	PR e (dB) 21 06	PAPR Limit (dB) 13 13	Results Pass Pass
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz Port 1 5 MHz Bandy	signature with QPSK Modulation Mid Channel, 1960 MHz 16-QAM Modulation Mid Channel, 1960 MHz 64-QAM Modulation	æ []		PA Value 8. 8.	PR e (dB) 21 06	PAPR Limit (dB) 13 13	Results Pass Pass
None Configuration # PCS BAND II, 1930 f	2 MHz - 1990 MHz Port 1 5 MHz Bandy	vdith QPSK Modulation Mid Channel, 1960 MHz 16-QAM Modulation Mid Channel, 1960 MHz 64-QAM Modulation Low Channel, 1932 4 MHz	z_1	-1	PA Valu 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	PR e (dB) 21 06 11	PAPR Limit (dB) 13 13 13 13	Results Pass Pass Pass Pass
None Configuration # PCS BAND II, 1930 I	2 MHz - 1990 MHz Port 1 5 MHz Bandy	xdith QPSK Modulation Mid Channel, 1960 MHz 16-QAM Modulation Mid Channel, 1960 MHz 64-QAM Modulation Low Channel, 1932.4 MHz Mid Channel, 1982.6 MHz High Channel, 1982.6 MHz	~_1		PA Valu 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	PR e (dB) 21 06 11 11 10	PAPR Limit (dB) 13 13 13 13 13	Results Pass Pass Pass Pass Pass Pass











3.64 dB 10.0 % 0.1 % 1.0 % 6.65 dB 0.1 % 8.11 dB 0.01 % 0.01 % 8.76 dB 8.82 dB 0.001 % 0.0001 % 8.83 dB 0.001 % 8.83 dB Peak 53.43 dBm 0.0001 % 0 dB Info BW 5.0000 MHz 20 dB STATUS





13 Pass



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Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17
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 spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

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

All limits were adjusted by a factor of [-10*log(2)] dB to account for the device operation as a 2 port MIMO transmitter, as per FCC KDB 622911.

Per section 27.53(h)(1) and RSS-139 6.6, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -16 dBm [-13 dBm -10 log (2)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 2 port MIMO transmitter.

The RBW to be used for these measurements are per 27.53(h)(3), and RSS-139 6.6. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified).

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



					TbtTx 2022.05.02.0	XMit 2022.02.07.0
EUT	AHFII (FCC/ISED C2PC)			Work Order:	NOKI0040	
Serial Number	: YK214000036			Date:	13-May-22	
Customer	Nokia Solutions and Net	works		Temperature:	22.1 °C	
Attendees	David Le, John Rattanav	rong		Humidity:	50.6% RH	
Project	None			Barometric Pres.:	1013 mbar	
Tested by	: Brandon Hobbs		Power: 54 VDC	Job Site:	TX05	
TEST SPECIFICAT	TIONS		Test Method			
FCC 27:2022			ANSI C63.26:2015			
RSS-139 Issue 3:2	2015		RSS-139 Issue 3:2015			
COMMENTS						
All losses in the m	neasurement path were ac	counted for: attenuators, cables, DC block	and filter when in use. PCS Band II / AWS Band X carr	iers were enabled at maximum power (30) watts/carrier).	
DEVIATIONS FRO	M TEST STANDARD					
None	-					
Configuration #	2	Signature	-1-1			
		· · · · · · · · · · · · · · · · · · ·	Frequency Range	Max Value (dBm)	Limit < (dBm)	Result
AWS BAND X, 211	0 MHz - 2170 MHz			· · · ·	· · ·	
	Port 1					
	5 MHz Band	wdith				
		QPSK Modulation				
		Low Channel, 2112.4 MHz	1	-25.7	-16	Pass
		Low Channel, 2112.4 MHz	2	-19.9	-16	Pass
		Low Channel, 2112.4 MHz	3	-25.3	-16	Pass
		High Channel, 2167.6 MHz	1	-25.1	-16	Pass
		High Channel, 2167.6 MHz	2	-20.1	-16	Pass
		High Channel, 2167.6 MHz	3	-26.3	-16	Pass
		16-QAM Modulation		05.0	10	Deres
		Low Channel, 2112.4 MHz	1	-25.2	-16	Pass
		Low Channel, 2112.4 MHz	2	-19.9	-10	Pass
		Low Channel, 2112.4 MHz	3	-20.0	-10	F d55
		High Channel, 2167.6 MHz	2	-20.0	-10	Pass
		High Channel, 2167.6 MHz	2	-20.0	-10	Pass
		64-OAM Modulation	5	-20.3	-10	1 835
		Low Channel 2112 4 MHz	1	-25.3	-16	Pass
		Low Channel, 2112 4 MHz	2	-20.0	-16	Pass
		Low Channel, 2112.4 MHz	3	-25.4	-16	Pass
		High Channel, 2167.6 MHz	1	-25.4	-16	Pass
		High Channel, 2167.6 MHz	2	-20.1	-16	Pass
		High Channel 2167 6 MHz	2	26.6	16	Bass



Frec Ra	luency ange			Max Value (dBm)	Limit < (dBm)	Result
	1			-25.7	-16	Pass
10000						
Keysight Spectrum Analyzer - Element 1	Materials Technology	SENSEIIN	т	ALIGN AUTO		10:08:40 AM May 14, 2022
10 10 00				#Avg Type:	RMS	TRACE 1 2 3 4 5
	PNO: IFGai	Wide 🗭 Trig: n:Low #Atte	en: 30 dB	Avg Hold: 5	00/500	
Ref Offset 41.58 d	IB				Mkr1	2.110 000 GHz
10 dB/div Ref 41.58 dBm				1	1	-25.655 aBm
			ľ			
31.6						
21.6						
11.6						
1.58						
-8.42						
10.4			/			DL1 -16.00 dBm
-10.4			1			
-28.4						
			_			
-38.4						
-48.4						
Start 2.109000 GHz			A		S	top 2.111000 GHz
#Res BW 51 kHz		#VBW 160	kHz*		Sweep 1.	000 ms (1001 pts
MSG				STATUS		
		T Dort 4 E MIL	- Pondudith		n Low Changel	
AVVO DAINU X, 2110			z Banuwulth,	Max Value	I imit	, ZTTZ.4 IVINZ
R	ande			(dBm)	< (dBm)	Result
	2			-19.9	-16	Pass
4	-	•				
🔤 Keysight Spectrum Analyzer - Element I	Materials Technology - I	oints: 1000, Detector: A	verage (RMS)			
LX/RL RF 50Ω DC		SENSE:IN	r er Freg: 2 1085	ALIGN AUTO	Rac	10:09:13 AM May 14, 2022
					Transfer to the second s	

	#IFGain:Low	Trig: Free Run Avg Ho #Atten: 30 dB	ld: 500/500	Radio Device: BTS		
Ref Offs 10 dB/div Ref 11	set 41.58 dB .58 dBm					
Log 1.58						
-8.42						
-18.4						
-28.4						
-38.4						
-48.4						
-58.4						
-68.4						
-78.4						
Center 2.1085000 G Res BW 9.1 kHz	Hz	VBW 91 kHz		Span 1.000 MHz Sweep 14.45 ms		
Channel Powe	er	Power Spectral Dens	ity			
-19.89 d	IBm / 1 MHz	-19.89 dBm				
MSG		STATU	3			



	Freq ^r Rr	uency				Max Value (dBm)	Limit	Result
		3			— ,	-25.3	-16	Pass
······	<u>·</u>	<u> </u>			·		· · ·	
Keysight Spectrur	im Analyzer - Element M	Materials Technr	alogy					
CXI RL /	RF 50 Ω DC			SENSE:INT		ALIGN AUTO	DMC	10:09:49 AM May 14, 2022
			PNO: Fast ↔ IFGain:Low	- Trig: Free F #Atten: 20	Run dB	Avg Hold: 5	RMS 00/500	
10 dB/div R	ef Offset 41.58 d Ref 41.58 dBm	в					Mkr	1 2.107 82 GHz -25.340 dBn
31.6								
21.6								
11.6								
1.58								
-8.42								
-18.4								DL1 -16.00 dBm
-28.4								
-38.4						Alex		
-48.4								
Start 2.09800	00 GHz							Stop 2.108000 GHz
#Res BW 1.0	MHZ		#VI-	SW 3.0 MHZ			Sweep 1	1.000 ms (1001 pts)
MSG						STATUS		
AW/S	DAND V 2110	MH- 217		4 E MHz Bar	duvdith	ODEK Modulatic	- High Chann	-L 0467 6 MHz
AWGL	BAND A, 2110			, 5 IVIEZ Dani	dwurin,	Max Value		H, 2107.0 WITZ
	Ra	inge				(dBm)	< (dBm)	Result
		-				05.1	16	Deee





· · · · · ·	Range		1	(dBm)	< (dBm)	Result
	2			-20.1	-16	Pass
		D				
Keysight Spectrum Analyzer - Eler	DC DC	- Points: 1000, D	etector: Average (RMS)			10:45:53 AM May 14, 2022
V KE N 3032			Center Freq: 2.	171500000 GHz	Ra	idio Std: None
			Trig: Free Run	Avg Hold: 5	500/500	
	#IFG	ain:Low	#Atten: 30 dB		Ra	idio Device: BTS
Ref Offset	41.58 dB					
10 dB/div Ref 11.5	8 dBm					
Log						
1.50						
-8.42						
-18.4						
-28.4						
-38.4						
49.4						
-40.4						
-58.4						
-68.4						
-78.4						
						A
Center 2.1715000 GH	z		VBM	4 645		Span 1.000 MHz
Res DW 9.1 KHZ			VDVV 9			Sweep 14.45 ms
Channel Dever			Derver Cr	a stral Density		
Channel Power			Power Sp	bectrar Density		
-20 09 dF			-20	09 dBm		
-20.00 ul			-20		1112	
MSG				STATUS		

AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, QPSK Modulation , High Channel, 2167.6 MHz						
	Frequency			Max Value	Limit	
	Range			(dBm)	< (dBm)	Result
	3			-26.3	-16	Pass

Keysigh	t Spectrum Analyzer - Element Materials	Technology	CENCE-INT		10:46:25 AM May 14, 2022
	N 3032 DC	PNO: Fast ++-	Trig: Free Run #Atten: 20 dB	#Avg Type: RMS Avg Hold: 500/500	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNN
10 dB/di	Ref Offset 41.58 dB v Ref 41.58 dBm				Mkr1 2.172 06 GHz -26.329 dBm
3			Ť		
31.6					
21.6					
11.6					
1.58					
-8.42					
					DL1 -16.00 dBm
-18.4					
-28.4			#~~!~&		
-38.4					
-48.4					
start 2. #Res B	.172000 GHz W 1.0 MHz	#VB	W 3.0 MHz*	SI	Stop 2.182000 GHz weep 1.000 ms (1001 pts)
MSG				STATUS	



Image: Start 2.109000 GHz #VEW 160 kHz* Starts AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz	Frequen Range	cy		Max Value (dBm)	Limit < (dBm)	Result
Keysight Spectrum Analyzer - Element Materials Technology ALION AUTO 10:1239 AM Multip. 2022 PR0: Wide Trig: Free Run FGain.Low #Avg Type: RMS AvgHold: 500/500 Trice: Free Run AvgHold: 500/500 Trice: Free Run AvgHold: 500/500 10:dB/dv Ref Offset 41.68 dB Mkr1 2.110 0.000 GHz -25.229 dBm Mkr1 2.110 0.000 GHz 31:0 Image: State 2.10000 GHz State 2.10000 GHz State 2.10000 GHz State 2.109000 GHz #VEW 160 kHz* Stop 2.111000 GHz State 2.109000 GHz #VEW 160 kHz* Stop 2.111000 GHz Misci 2.100 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QM Modulation, Low Channel, 2112.4 MHz AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QM Modulation, Low Channel, 2112.4 MHz Frequency Range (dBm) <(dBm) Kest	1			-25.2	-16	Pass
Ref Offset 41.58 dB PNO: Wide IF Galitilitow Trig: Free Run #Atten: 30 dB ALIGN MIC 10:12:99 attent; 19:202 0 dB/du/ IF Galitilitow PNO: Wide IF Galitilitow Trig: Free Run #Atten: 30 dB Mikr1 2.110 000 GH; -25:229 dBm Trig: Free Run atten: 30 dB Mikr1 2.110 000 GH; -25:229 dBm Trig: Free Run atten: 30 dB Other Ref 41.58 dB Trig: Free Run atten: 30 dB Mikr1 2.110 000 GH; -25:229 dBm Trig: Free Run atten: 30 dB Trig: Free Run atten: 30 dB Trig: Free Run	Keyright Spartrum Analyzer - Element Materia	r Technology				
PN::Wide Trig: Free Run #Atten: 30 dB #Avg Type: RMS Avg Hold: 500/500 Trice D234 Store 10 dB/dtv Ref Offset 41.58 dB Mkr1 2.110 000 GHz -25.229 dBm -25.229 dBm 310	Reysignt Spectrum Analyzer - Element Wateria Q RL RF 50 Ω DC	s rechnology S	ENSE:INT	ALIGN AUTO		10:12:50 AM May 14, 2022
Ref Offset 41.58 dB Mkr1 2.110 000 GH; -25.229 dBn 31.0		PNO: Wide ↔	Trig: Free Run	#Avg Type: Avg Hold: 5	RMS 00/500	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N
0 gB/dlv Ref 41.58 dBm -25.229 dBm 31.6	Bef Offset /1 58 dB	IFGain:Low	#Atten: 30 dB		Mkr1	2.110 000 GHz
213 313 214 314 115 314 116 314 117 314 118 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 119 314 11000 G 11000 <td< td=""><td>10 dB/div Ref 41.58 dBm</td><td></td><td></td><td></td><td></td><td>-25.229 dBm</td></td<>	10 dB/div Ref 41.58 dBm					-25.229 dBm
310 216 116 126 126 127 128 129 129 120 121 120 120 121 120 120 121 120 120			1 A A A A A A A A A A A A A A A A A A A			
216 116 129 129 120 120 120 120 120 120 120 120	31.6					
21.5						
11.6	21.6					
116 0						
1.58 6.42 18.4 18.4 18.4 18.4 18.4 18.4 19.4	11.6					
8.42 0	1.50		,			
AV AV AV AV BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency C 1-1600 design AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency C 1-1600 design AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency C 1-1600 design C 1-160	0.01					
-18.4 -1.1.1600 der -28.4 -1.1.1000 GHz Start 2.109000 GHz #VBW 160 kHz* Start 2.109000 GHz #VBW 160 kHz* Stop 2.111000 GHz Stop 2.111000 GHz #Res BW 51 kHz #VBW 160 kHz* Sweep 1.000 ms (1001 pts) Sweep 1.000 ms (1001 pts) M3G Startus AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm)	-8.42					
-18.4 -29.4 -21.1000 GHz -21.1000 GHz -21.100 GHz -21.100 GHz -21.000 ms (1001 pts) -21.000 ms (1001 pts)						DI1 -16 00 dBm
23.4 -33	-18.4					
234			•			
AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency AWS BAND X, 2110 MHZ - 2170 MHZ, Port 1, 5 MHZ BAND X, 210 MHZ AWS BAND X, 2110 MHZ - 2170 MHZ, Port 1, 5 MHZ BAND X, 210 MZ AWS BAND X, 2110 MHZ - 2170 MHZ, Port 1, 5 MHZ BAND X, 210 MZ AWS BAND X, 2110 MHZ - 2170 MHZ, Port 1, 5 MHZ BAND X, 210 MZ AWS BAND X, 2110 MHZ - 2170 MZ AWS BAND X, 210 MZ AWS BAND X,	-28.4		~			
Start 2.109000 GHz Stop 2.111000 GHz #Res BW 51 kHz #VBW 160 kHz* Start 2.109000 GHz \$TATUS MSG STATUS AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Range (dBm) < (dBm)						
48.4 Start 2.109000 GHz Stop 2.111000 GHz #Res BW 51 kHz #VBW 160 kHz* Sweep 1.000 ms (1001 pts Msg Start 2.100 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm)	-30.4					
Start 2.109000 GHz Stop 2.111000 GHz #Res BW 51 kHz #VBW 160 kHz* Sweep 1.000 ms (1001 pts) MSG STATUS STATUS AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm) Result 2 -19.9 -16 Pass	-48.4					
Start 2.109000 GHz #Res BW 51 kHz Stop 2.111000 GHz Sweep #VBW 160 kHz* Sweep Msg startus AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) 2 -19.9 -16 Pass						
#Res BW 51 kHz #VBW 160 kHz* Sweep 1.000 ms (1001 pts MSG Istatus AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm)	Start 2.109000 GHz			I	SI	top 2.111000 GHz
STATUS AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm) 2 -19.9 -16 Pass	#Res BW 51 kHz	#VBV	V 160 kHz*		Sweep 1.	000 ms (1001 pts)
AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, Low Channel, 2112.4 MHz Frequency Max Value Limit Range (dBm) < (dBm)	MSG			STATUS		
Frequency RangeMax Value (dBm)Limit Result2-19.9-16Pass	AWS BAND X, 2110 MHz	- 2170 MHz. Port 1	5 MHz Bandwdith	6-QAM Modulat	ion. Low Channe	I. 2112.4 MHz
Range(dBm)< (dBm)Result2-19.9-16Pass	Frequen	су	e de la contration di tri,	Max Value	Limit	.,
2 -19.9 -16 Pass	Range	-		(dBm)	< (dBm)	Result
	2			-19.9	-16	Pass

	NT 30.32 DC	+ #IFGain:Low	Center Freq: 2.1085000 Trig: Free Run #Atten: 30 dB	Radio Std: None Radio Device: BTS		
10 dB/div	Ref Offset 41.58 dB Ref 11.58 dBm					
-8.42						
-28.4						
-58.4						
Center 2.1085000 GHz Res BW 9.1 kHz			VBW 91 kHz	Span 1.000 MHz Sweep 14.45 ms		
Channe	Channel Power		Power Spectr			
-1	9.91 dBm / 1	MHz	-19.91			
MSG				STATUS		



Frequency	y	2 Danaranan, re	Max Value	Limit	Result
3			-25.5	-16	Pass
Keysight Spectrum Analyzer - Element Materials	Technology	INT			10:14:00 AM May 14, 2022
	PNO: Fast →→ Tr IFGain:Low ##	ig: Free Run Atten: 20 dB	#Avg Type: Avg Hold: 5	RMS 500/500	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNN
Ref Offset 41.58 dB 10 dB/div Ref 41.58 dBm		_		Mkr	1 2.107 92 GHz -25.542 dBm
31.6		Ĭ			
21.6					
11.6					
1.58					
-8.42					DL1 -16.00 dBm
-18.4					
-38.4					
-48.4					
Start 2.098000 GHz	#\/B\A(-2	0 MHz*		Sweep 1	top 2.108000 GHz
		v-mill4	STATUS	-oweep 1	
AWS BAND X, 2110 MHz - Frequency	2170 MHz, Port 1, 5 MI /	HZ Bandwdith, 16	Max Value	Ion, High Channe Limit	Pocult





F	equency Range		Ma	(dBm)	Limit	Result
	2		`	-20.0	-16	Pass
Keyrinht Snactrum Analyzer - Flam	ant Materials Technology - Doin	tr 1000 Detector Average	ne (RMS)		•	
XI RL RF 50 Q	DC	SENSE:INT	JE (KWS)	GN AUTO		10:41:38 AM May 14, 2022
	#IFGain:L	ow Center F Trig: Fro #Atten:	Freq: 2.171500000 ee Run 30 dB	GHz Avg Hold:	500/500 Ri	adio Std: None adio Device: BTS
Ref Offset 4 10 dB/div Ref 11.58	1.58 dB dBm					
Log						
1.50						
-6.42						
-18.4						
-28.4						
-38.4						
-48.4						
-58.4						
-68.4						
-78.4						
Center 2 1715000 GHz						Snan 1,000 MHz
Res BW 9.1 kHz		V	BW 91 kHz			Sweep 14.45 ms
Channel Power		Pow	er Spectral	Density	/	
-19.98 dB	m / 1 MHz		-19.98 d	IBm /I	MHz	
)		
MSG				STATUS		

AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 16-QAM Modulation, High Channel, 2167.6 MHz								
	Frequency			Max Value	Limit			
Range				(dBm)	< (dBm)	Result		
	3			-26.5	-16	Pass		

Keysight Spectrum Analyzer - Element Materials Tech	nnology					
GU KL NF 50 <u>S2</u> DC	PNO: Fast ++- IFGain:Low	Trig: Free Run #Atten: 20 dB	#Aug Type: Avg Hold: 5	RMS 600/500	10:42:10 TF	AM May 14, 2022 ACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N
Ref Offset 41.58 dB 10 dB/div Ref 41.58 dBm				N	/kr1 2.17 -26.	2 17 GHz 514 dBm
31.6						
21.6						
11.6						
1.58						
-8.42						DL1 -16.00 dBm
-18.4				anna da da na da se		
-38.4						
-48.4						
Start 2.172000 GHz					Stop 2.1	82000 GHz
#Res BW 1.0 MHz	#VBV	V 3.0 MHz*	STATUS	Swee	p 1.000 ms	(1001 pts)



Fi	Range				Max Value (dBm)	< (dBm)	Result
	1				-25.3	-16	Pass
		•					
Keysight Spectrum Analyzer - Elemi K RL RF 50 Ω	DC DC	logy	SENSE:INT		ALIGN AUTO		10:19:09 AM May 14, 2022
			Trine Energy		#Avg Type:	RMS	TRACE 1 2 3 4 5 (
		PNO: Wide + IFGain:Low	#Atten: 30	dB	Avginoia: (500/800	DETANNNN
Pof Offcot 41.5	0 AB					Mkr1	2.110 000 GHz
10 dB/div Ref 41.58 dE	3m						-25.245 dBm
Log				/			
21.6							
31.0							
21.6							
11.6							
1.58				/			
-8.42							
							DI 1 -16.00 dBm
-18.4				1			
)'			
-28.4							
-38.4							
-48.4							
Start 2.109000 GHz						S	top 2.111000 GHz
#Res BW 51 kHz		#VE	W 160 kHz*			Sweep 1	.000 ms (1001 pts)
MSG					STATUS		
AWS BAND X, 21	10 MHz - 2170	0 MHz, Port 1	, 5 MHz Band	dwdith, 64	1-QAM Modulat	tion, Low Channe	el, 2112.4 MHz
F	requency				Max Value	Limit	
· · · · · · · · · · · · · · · · · · ·	Range				(dBm)	< (dBm)	Result
	2				-20.0	-16	Pass

LXI RL	RF 50 Ω DC		SENSE:INT	10:19:54 AM May 14, 2022					
			Center Freq: 2.	108500000 GHz	Radio Std: None				
		+	, Trig: Free Run						
		#IFGain:Low	#Atten: 30 dB		Radio Device: BTS				
	D (000) (10 D)	-							
	Ref Unset 41.58 a	В							
Logi	Kei 11.Jo ubiii								
1.58									
-8.42									
-18.4									
-28.4									
-38.4		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	+						
-48.4									
-58.4									
-68.4									
-78.4									
0					On				
Center 2.1	085000 GHZ			Span 1.000 MHz					
Res BW 9	.1 KHZ		ARM 8	Sweep 14.45 ms					
Chann	el Power		Power Si	pectral Density					
			4.0						
-1	9.95 dBm /	/ 1 MHz	-19	.95 dBm /MHz					
MSG				STATUS					



Number Number Number Number Number 3 -25.4 -16 Pass Keylight Spectrum Analyzer - Blement Materials Technology Image: Comparison of the system of the s	Image 25.4 -16 Pass Image 25.428 -16 Pass Image 25.428 -26 -26 Image 25 -26 -26 Image 25 -26 -26 Image 26 -26		Itanige		(dBm)	< (dBm)	Result
Keysight Spectrum Analyzer - Benent Materials Technology SENSE:INT ALIGN AUTO 10:20:53 AM May 14, 2022 PNO: Fast	Keysight Spectrum Analyzer-Element Materials Technology ALION AUTO 10:20:33 AM May14, 2022 RL RF 50.0 DC SENSE:INT ALION AUTO 10:20:33 AM May14, 2022 PND: Fast Trig: Free Run #Atten: 20 dB #Avg1Type: RMS Avg1Hold: 500/500 Trice: D23/33 AM May14, 2022 Ref Offset 41.58 dB Mkr1 2.107 63 GHz -25.428 dBm -25.428 dBm -25.428 dBm 10:013/01/ Ref offset 41.59 dB -25.428 dBm -25.428 dBm 31:0 -25.428 dBm -25.428 dBm -25.428 dBm 11:0 -2.0 -2.0 -2.0 -2.0 31:0 -2.0 -2.0 -2.0 -2.0 -2.0 31:0 -2.0 -2.0 -2.0 -2.0 -2.0 -2.0 31:0 -2.0		3		-25.4	-16	Pass
Keyight Spectrum Analyzer - Element Material Technology Image: Sense introl Out of the sense introl Out of the sense introl R I RF S0 0 C SENSE INT ALION AITO 100:253:411:41:202 PIQ: Fast Trig: Free Run #Atten: 20 dB MKr1 2:107 63 GHz -25.428 dBm Image: Sense introl MKr1 1:2:107 63 GHz -2:5.428 dBm Image: Sense introl MKr1 1:2:107 63 GHz Image: Sense introl MKr1 1:2:107 63 GHz Image: Sense introl MKr1 1:2:107 63 GHz Image: Sense introl MIL Image: Sense introl MIL Image: Sense introl	Krysjøtt Spectum Anlyzer - Element Materials Technology ALION ANTO Local-Bail Alion R.L. RF 50.0 DC SENSE INT ALION ANTO 10:20:33 Million Trig: Free Run PND: Fast Trig: Free Run #Avg Type: RMS AvgHold: 500/500 Trig: Company AvgHold: 500/500 Trig: Free Run 10:00:33 Million Ref Offset 41.58 dB Million Status Company Compan						
Ref Offset 41.58 dB Mkr1 2.107 63 GHz 10 dE/div Ref Offset 41.58 dB 10 dE/div Ref A1.58 dB 11.5 Image: Comparison of the second se	Image: Non-First Processing Procesing Procestendependent Processing Processing Processing	Keysight Spectrum Analyzer - Elen	nent Materials Technology	SENSETINT	ALIGN AUTO		10:20:53 AM May 14, 2022
Ref Offset 41.58 dB Mkr1 2.107 63 GHz 10 dB/div Ref 41.58 dB 316 -25.428 dBm 317 -25.428 dBm 318 -25.428 dBm 319 -25.428 dBm 320 -25.428 dBm 321 -25.428 dBm 322 -25.428 dBm 323 -25.428 dBm 324 -25.428 dBm	Ref Offset 41.58 dB Mkr1 2.107 63 GHz 10 dB/div Ref 41.58 dB 31 6		PNO: Fast IFGain:Lo	t +++ Trig: Free Run w #Atten: 20 dB	#Avg Type: Avg Hold: 5	RMS 00/500	TRACE 1 2 3 4 5 6 TYPE A NNNN
316	31.6	Ref Offset 41. 10 dB/div Ref 41.58 d	58 dB IBm			Mkr	1 2.107 63 GHz -25.428 dBm
21.6	21.6	31.6		<u>د کا ک</u>			
21.8 11.6 1.58 1.58 1.6 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.84 1.60 1.60 1.60 1.85 1.00 1.60 1.60 1.60 1.60	21.0 11.6 11.6 11.6 11.6 1.58 1.58 1.58 1.58 1.58 1.58 1.58 1.4 1.58 1.58 1.58 1.4 1.58 1.58 1.58 1.4 1.58 1.58 1.58 1.4 1.58 1.58 1.58 1.4 1.58 1.58 1.58 1.4 1.58 1.58 1.58 2.0.4 1.58 1.58 1.58 3.3.4 1.58 1.58 1.58 3.3.4 1.58 1.58 1.58 Start 2.098000 GHz #VBW 3.0 MHz* Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Stop 2.108000 GHz MSG 1.000 ms (1001 pts) 1.000 ms (1001 pts)	31.0					
1.53	1.69	11.6					
3.42	13.4 13.4 14.4	1.58					
-18.4 -18.4 -28.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.4 -11 -39.5 -11 -39.6 -11 -39.7 -11 -39.8 -11 -39.8 -11 -39.8 -11 -39.8 -11	-10.4 -10.4 -10.4 -10.4 -10.4 -20.4 -10.4 -10.4 -10.4 -30.4 <td>-8.42</td> <td></td> <td></td> <td></td> <td></td> <td></td>	-8.42					
28.4	28.4 1 -38.4 -38.4 -38.4 -38.4 -38.4 -38.4 Start 2.098000 GHz Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Stop 2.108000 GHz #VBW 3.0 MHz* Starus	-18.4					DL1 -16.00 dBm
-38.4 -48.4 -48.4 -48.4 Start 2.098000 GHz #VBW 3.0 MHz* Step 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Start 2.098000 GHz #Res BW 1.0 MHz	38.4	-28.4					1
-48.4 -48.4 -	-48.4 -48.4	-38.4					
Start 2.098000 GHz Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts) MSG Startus Startus Startus	Start 2.098000 GHz Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts) MSG STATUS	-48.4					
Start 2.098000 GHz Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts) MSG status Status Status	Start 2.098000 GHz Stop 2.108000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts) MSG STATUS STATUS STATUS						
MSG	MSG STATUS	Start 2.098000 GHz #Res BW 1.0 MHz		#VBW 3.0 MHz*		Sweep 1	top 2.108000 GHz .000 ms (1001 pts)
		MSG			STATUS		





	Frequency			Max Value (dBm)	Limit	Ro	sult
	2			-20.1	-16	P	ass
Keysight Spectrum A	nalyzer - Element Materials Teo	hnology - Points: 1000, De	tector: Average (RMS)				
X RL RF	50 Ω DC	s s	ENSE:INT Center Freq: 2 Trig: Free Run #Atten: 30 dB	ALIGN AUTO .171500000 GHz Avg Hold:	500/500	10:35:11 Radio Std: N	AM May 14, 2022
R 10 dB/div R	ef Offset 41.58 dB ef 11.58 dBm	#IFGain.Low	#Atten: 00 ab			ruaio Berro	
Log							
1.58							
-8.42							
-18.4							
-28.4							
-38.4	·····		~~~~	~~~~~~	<u> </u>		
-48.4							
-30.4							
-78.4							
Center 2.17150 Res BW 9.1 ki	000 GHz Hz		VBW 9	91 kHz	1	Span Sweep	1.000 MHz 14.45 ms
Channel Power -20.05 dBm / 1 MHz			Power Spectral Density				
			-20.05 dBm /мнz				
1400							

AWS BAND X, 2110 MHz - 2170 MHz, Port 1, 5 MHz Bandwdith, 64-QAM Modulation, High Channel, 2167.6 MHz								
	Frequency			Max Value	Limit			
Range			(dBm)	< (dBm)	Result			
	3			-26.6	-16	Pass		

Keysight Sp	ectrum Analyzer - Element I	Materials Technology			
L <mark>X/</mark> RL	RF 50 Ω DC		SENSE:INT	ALIGN AUTO	10:35:48 AM May 14, 2022
		PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Hold: 500/500	TYPE A WWWWW DET A NNNN
10 dB/div	Ref Offset 41.58 d Ref 41.58 dBm	IB N			Mkr1 2.172 10 GHz -26.643 dBm
			Ť.		
31.6					
21.6					
11.6					
1.58					
0.10					
-8.42					DL1 -16.00 dBm
-18.4					
-28.4	******				
-38.4					
-48.4					
Start 2.17 #Res BW	2000 GHz 1.0 MHz	#\	/BW 3.0 MHz*		Stop 2.182000 GHz Sweep 1.000 ms (1001 pts)
MSG				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	SD3239	ANC	2022-03-02	2023-03-02
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

TEST DESCRIPTION

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

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

All limits were adjusted by a factor of [-10*log(2)] dB to account for the device operation as a 2 port MIMO transmitter, as per FCC KDB 622911.

Per section 24.238(a) and RSS-133 6.5(i), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -16 dBm [-13 dBm -10 log (2)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 2 port MIMO transmitter.

The RBW to be used for these measurements are per 24.238(b), and RSS-133 6.5. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified).

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



EUT: A	HFII (FCC/ISED C2PC)			Work Order:	NOKI0040			
Serial Number: Y	K214000036			Date:	13-May-22			
Customer: No	okia Solutions and Net	works		Temperature:	22.8 °C			
Attendees: Da	avid Le, John Rattanav	ong		Humidity:	49.3% RH			
Project: No	one			Barometric Pres.: 1013 mbar				
Tested by: Br	randon Hobbs		Power: 54 VDC	Job Site:	TX05			
TEST SPECIFICATION	NS		Test Method					
FCC 24E:2022			ANSI C63.26:2015					
RSS-133 Issue 6:2013	s+A1:2018		RSS-133 Issue 6:2013+A1:2018					
COMMENTS								
All measurement path	n losses were accounte	ed for in the reference level offest includi	ng any attenuators, filters and DC blocks. PCS band II	carriers are operated at maximum pow	er (30 Watts / carr	ier)		
DEVIATIONS FROM T	EST STANDARD							
None								
Configuration #	2	Signature	Jal					
			Frequency Range	Max Value (dBm)	Limit < (dBm)	Result		
	9 WITZ Bailu	QPSK Modulation Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz High Channel, 1987.6 MHz High Channel, 1987.6 MHz 16-QAM Modulation Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz High Channel, 1932.4 MHz High Channel, 1932.4 MHz High Channel, 1932.4 MHz	1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2	-25.6 -20.3 -25.5 -25.1 -20.6 -26.4 -25.3 -20.5 -25.5 -25.3 -20.5 -25.5 -25.3 -20.5	-16 -16 -16 -16 -16 -16 -16 -16 -16 -16	Pass Pass Pass Pass Pass Pass Pass Pass		
		High Channel, 1987.6 MHz High Channel, 1987.6 MHz 64-QAM Modulation Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz Low Channel, 1932.4 MHz High Channel, 1987.6 MHz High Channel, 1987.6 MHz	2 3 1 2 3 1 2 3 1 2 3	-20.5 -26.2 -25.5 -20.4 -25.7 -25.7 -25.2 -20.5 -26.1	-16 -16 -16 -16 -16 -16 -16 -16 -16	Pass Pass Pass Pass Pass Pass Pass Pass		



Frequen	су		Max Value	Limit	Beault
Range			(aBm)	< (asm)	Result
	1	1	-20.0	-10	F 833
Keysight Spectrum Analyzer - Element Materia	s Technology	SENSE:INT	ALIGN AUTO		08:56:32 AM May 14, 2022
10 0032 00		Schocking	#Avg Type:	RMS	TRACE 1 2 3 4 5 (
	PNO: Wide ++	_ Trig: Free Run #Atten: 30 dB	Avg Hold: 5	00/500	
	II Gam.cow	<i>"</i> / 110/11 01 01		Mkr1	1 930 000 GHz
Ref Offset 41.58 dB					-25.588 dBm
		Y III			
31.6					
21.6					
11.6					
1.58					
-8.42					
		<i> </i>			DL1 -16.00 dBm
-18.4		1			
29.4					
-20.4					
-38.4					
-48.4					
Start 1.929000 GHz	#\/	NAL 160 KH7*		Sweep 1	top 1.931000 GHz
	#95	577 - NAV MI12	OTATICE.	-oweep 1	ere mis (neer prs)
mou			STATUS		
PCS BAND II 1930 MHz	- 1990 MHz Port 1	5 MHz Bandwdith	OPSK Modulatio	n Low Channel	1932 4 MHz
Frequen	CV	, o minz bandwalti	Max Value	Limit	, 1002.7 10112
Range			(dBm)	< (dBm)	Result
2			-20.3	-16	Pass
🔤 Keysight Spectrum Analyzer - Element Materia	s Technology - Points: 1000,	Detector: Average (RMS)			
M RL RF 50Ω DC		SENSE:INT	ALIGN AUTO		08:57:06 AM May 14, 2022

	+→ #IFGain:Low	Center Freq: 1.928500000 Trig: Free Run #Atten: 30 dB	GHz Avg Hold: 500/500	Radio Std: No Radio Device:	ne BTS	
Ref Offset 41.58 dB 10 dB/div Ref 11.58 dBm						
1.58						
-8.42						
-18.4						
-38.4						
-48.4						
-58.4						
-68.4						
Center 1 9285000 GHz				Span ²	000 MHz	
Res BW 9.1 kHz		VBW 91 kHz		Sweep 14.45 ms		
Channel Power		Power Spectral	Density			
-20.30 dBm / 1	MHz	-20.30 c				
MSG			STATUS			



	Range			(dBm)	< (dBm)	Result
	3			-25.5	-16	Pass
Keyright Spectrum Analyz	er - Element Materialr Tech	aalaay				
Reysignt spectrum Analyz	50 Ω DC	s	ENSE:INT	ALIGN AUTO		08:57:41 AM May 14, 2022
		PNO: Fast + IFGain:Low	Trig: Free Run #Atten: 20 dB	#Avg Type: Avg Hold: {	RMS 600/500	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN
Ref Offs 10 dB/div Ref 41	et 41.58 dB .58 dBm				Mkr	1 1.927 99 GHz -25.462 dBm
- ^{og}			Ť			
31.6						
21.6						
11.6						
11.8						
1.58						
-8.42						
-18.4						DL1 -16.00 dBm
						l l
-28.4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	······		
29.4						
-30.4						
-48.4						
Start 1.918000 GH	lz		^		S	top 1.928000 GHz
#Res BW 1.0 MHz		#VB\	N 3.0 MHz*		Sweep 1.	.000 ms (1001 pts)
MSG				STATUS		
PCS BAND	II, 1930 MHz - 199	90 MHz, Port 1,	5 MHz Bandwdith,	QPSK Modulatio	n, High Channel	, 1987.6 MHz
	Frequency			Max Value	Limit	_
	Range			(dBm)	< (dBm)	Result





R	ange		(dBm)	< (dBm)	Result
	2		-20.6	-16	Pass
🔤 Keysight Spectrum Analyzer - Element	Materials Technology - Points: 1000	, Detector: Average (RMS)			
X RL RF 50 Ω D	c	SENSE:INT	ALIGN AUTO		09:13:59 AM May 14, 2022
		Trig: Free Run	Avg Hold:	500/500	auto sta. None
	#IFGain:Low	#Atten: 30 dB		Ra	adio Device: BTS
Ref Offset 41.	58 dB				
10 dB/div Ref 11.58 d	Bm				
1.58					
8.42					
40.4					
-10.4					
-20.4					
-38.4					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-48.4					
-58.4					
-68.4					
-78.4					
Cepter 1 0015000 CHz					Span 1 000 MHz
Res BW 9.1 kHz		VBW 91	Hz		Sweep 14.45 ms
Channel Power		Power Spe	ctral Density	/	
-20.60 dBn	n / 1 MHz	-20.6	60 dBm /ı	٨Hz	
MSG			STATUS		

PCS BAND I	l, 1930 MHz - 199	90 MHz, Port 1, 5	MHz Bandwdith,	QPSK Modulatio	n , High Channel	, 1987.6 MHz
	Frequency			Max Value	Limit	
	Range			(dBm)	< (dBm)	Result
	3			-26.4	-16	Pass

Keysight Spectrum Analyzer - Element Materials Tech	nology				
KL RF 50.52 DC	PNO: Fast +++	Trig: Free Run #Atten: 20 dB	#Avg Type: RM Avg Hold: 500/5	S TRACE 100 TYPE A DET A	2 3 4 5 6 NNNNN
Ref Offset 41.58 dB 10 dB/div Ref 41.58 dBm				Mkr1 1.992 02 -26.374	2 GHz dBm
31.6					
21.6					
11.6					
1.58					
18.4					-16.00 dBm
-28.4		Monetaria and a strategy and a strat			
-38.4					
-48.4					
Start 1.992000 GHz #Res BW 1.0 MHz	#VB\	₩ 3.0 MHz*		Stop 2.00200 Sweep 1.000 ms (10	0 GHz 01 pts)
MSG			STATUS		



	Range				(dBm)	< (dBm)	Result
	1				-25.3	-16	Pass
Keysight Spectrum Analy	zer - Element Materials Tech	nology					
XIRL RF	50 Ω DC		SENSE:INT		ALIGN AUTO	DMS	08:52:00 AM May 14, 20
		PNO: Wide ↔ IFGain:Low	_ Trig: Free #Atten: 30	Run DdB	Avg Hold: 5	00/500	TYPE A
Ref Offs 10 dB/div Ref 41	set 41.58 dB I. 58 dBm					Mkr1	1.930 000 GH -25.340 dBr
				Y			
31.6							
24.0							
21.6							
11.6							
11.5							
1.58							
1.00							
-8.42							
							DL1_16.00 dB
-18.4							DE1-10.00 0E
				\			
-28.4			 	A			
-38.4							
-48.4							
Start 1.929000 GI #Res BW 51 kHz	Hz	#VE	3W 160 kHz	z*		Sweep 1	Stop 1.931000 GH .000 ms (1001 pt
MSG					STATUS		
PCS BAND	II, 1930 MHz - 19	90 MHz, Port 1	, 5 MHz Ban	dwdith, 16	6-QAM Modulati	on, Low Channe	el, 1932.4 MHz
	Frequency				Max Value	Limit	
·	Range	1			(dBm)	< (dBm)	Result
	2				-20.5	-16	Pass

LXI RL	RF 50 Ω DC	5,	SENSE:INT	ALIGN AUTO	08:52:38 AM May 14, 2022
			Center Freq: 1.9	928500000 GHz	Radio Std: None
		-	Trig: Free Run	Avg Hold: 500/500	Dedie Deview BTS
		#IFGain:Low	#Atten: 30 dB		Radio Device: B13
	Ref Offset 41.58	dB			
10 dB/div	Ref 11.58 dBr	n			
Log					
1.58					
-8.42					
-18.4					
-28.4					
-38.4					
-30.4			~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-48.4					
-58.4					
-68.4					
-78.4					
Center 1.92	85000 GHz				Span 1.000 MHz
Res BW 9.1	1 kHz		VBW 9	1 kHz	Sweep 14.45 ms
Channe	el Power		Power Sp	ectral Density	
				,	
20			20	EQ dBm (u)	
-20	J.SV AD M	/ 1 MHZ	-20	.SU ABIN /MHZ	
MSG				STATUS	



F	22 BAND I	I, 1930 MHz - 19	90 MHz, Port 1.	, 5 MHz Bandwdith	, 16-QAM Modulati	on, Low Channe	J, 1932.4 MHz
		Frequency			Max Value	Limit	Desult
· · · · ·		Kange			(dBm)	< (dBm)	Result
I		3	<u> </u>		-25.5	-16	Pass
🛄 Keysight Sp	ectrum Analyze	er - Element Materials Tec	nnology				- 5 -
LXI RL	RF	50 Ω DC		SENSE:INT	ALIGN AUTO		08:53:38 AM May 14, 2022
			PNO: Fast ++ IFGain:Low	. Trig: Free Run #Atten: 20 dB	#Avg Type: Avg Hold: {	RMS 500/500	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N
10 dB/div	Ref Offse Ref 41.	et 41.58 dB 58 dBm				Mkr	1 1.927 97 GHz -25.516 dBm
31.6							
21.6							
11.6							
1.58							
-8.42							DL1 -16.00 dBm
-18.4							
-28.4							
-38.4							<u>مر امم</u>
-48.4							
Start 1.91 #Res BW	18000 GH 1.0 MHz	z	#VE	SW 3.0 MHz*		S Sweep 1	stop 1.928000 GHz .000 ms (1001 pts)
MSG					STATUS		
PC	CS BAND I	l. 1930 MHz - 19	90 MHz, Port 1	. 5 MHz Bandwdith	. 16-QAM Modulati	ion. High Channe	el. 1987.6 MHz
		Frequency Range			Max Value (dBm)	Limit < (dBm)	Result
			T	<u> </u>		40	Dese

RI DE ENO DE	centrology				
KL KF 50 SZ DC	PNO: Wide - Trig: IFGain:Low #Atte	Free Run n: 30 dB	#Avg Type: RMS Avg Hold: 500/50	5 00	TRACE 2 3 4 TYPE A WWW DET A NNN
Ref Offset 41.58 dB dB/div Ref 41.58 dBm				Mkr1 1	.990 000 G -25.247 dB
6					
3					
					DL1 -16.0
		1			
rt 1.989000 GHz				Sto	p 1.991000 G
es BW 51 kHz	#VBW 160	kHz*		Sweep 1.0	00 ms (1001 p

Report No. NOKI0040



	Frequency			м	ax Value	Limit	Pa	eult
	2				-20.5	-16	P	341
•		•						
Keysight Spectrum Analyzer	- Element Materials Tech	nology - Points: 1000, E	Detector: Average (RM	IS)	TON AUTO		00.00.00	
	50 <u>52</u> DC		Center Frea:	1.99150000	0 GHz		Radio Std: N	one 000
		· +	. Trig: Free Ru	In	Avg Hold:	500/500		
		#IFGain:Low	#Atten: 30 dE	3			Radio Device	e: BTS
Ref Of 10 dB/div Ref 1	fset 41.58 dB 1.58 dBm							
Log								
1.56								
-8.42								
-18.4								
-28.4								
-38.4								
-48.4								
-58.4								
69.4								
-00.4								
-/8.4								
Center 1.9915000	GHz						Span	1.000 MHz
Res BW 9.1 kHz			VBW	91 kHz			Sweep	14.45 ms
Channel Pow	/er		Power S	Spectra	I Density	1		
				•				
-20.51	dBm / 1 M	Hz	-2	0.51	dBm /M	MHz		
100					STATUS			

PCS BAND II, '	1930 MHz - 199	0 MHz, Port 1, 5 I	MHz Bandwdith, 1	16-QAM Modulati	on, High Channe	l, 1987.6 MHz
	Frequency			Max Value	Limit	
	Range			(dBm)	< (dBm)	Result
	3			-26.2	-16	Pass

Keysight Sp	ectrum Analyzer - Element Materia	ls Technology	CENCENNE		000	
	NF 30 32 DC	PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 20 dB	#Avg Type: RM Avg Hold: 500/	1S 500	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNN
10 dB/div Log	Ref Offset 41.58 dB Ref 41.58 dBm				Mkr1 1.	992 00 GHz 26.216 dBm
31.6						
21.6						
11.6						
1.58						
-18.4						DL1 -16.00 dBm
-28.4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	and the second secon			-144 Mar - 14 - 14 - 16 - 19 - 19 - 19 - 19 - 19 - 19 - 19
-38.4						
-48.4						
Start 1.99 #Res BW	2000 GHz 1.0 MHz	#VB	W 3.0 MHz*		Stop Sweep 1.000	2.002000 GHz ms (1001 pts)
MSG				STATUS		



Frequ	ency		Max Value	Limit	Posult
	ge		-25.5	-16	Pass
•		1	2010		1 400
Keysight Spectrum Analyzer - Element Ma	terials Technology				
μα RL RF 50 Ω DC	57	SENSE:INT	ALIGN AUTO		08:45:20 AM May 14, 2022
	RNO: Wide	Trig: Free Run	#Avg Type: Avg Hold: 5	RMS 00/500	TRACE 1 2 3 4 5 6 TYPE A WWWW
	IFGain:Low	#Atten: 30 dB			DETANNNN
Ref Offset 41.58 dB				Mkr1	1.930 000 GHz
10 dB/div Ref 41.58 dBm					-25.478 dBm
31.6					
21.6					
11.6					
1.58			/		
-8.42					
		/			DL1 -16.00 dBm
-18.4		1			
78.4					
-20.4					
-38.4					
-48.4					
Start 1.929000 GHz					top 1.931000 GHz
#Res BW 51 kHz	#V	BW 160 kHz*		Sweep 1.	000 ms (1001 pts)
MSG			STATUS		
yan nantu yang dia malakan saka pang pang saka pang pang saka saka pang saka saka saka pang saka kana saka pan Nan					
PCS BAND II, 1930 M	Hz - 1990 MHz, Port 1	I, 5 MHz Bandwdith,	64-QAM Modulati	on, Low Channel	, 1932.4 MHz
Frequ	ency		Max Value	Limit	
Ran	ge		(dBm)	< (dBm)	Result
2			-20.4	-16	Pass
8999		<u></u>			
Reysignt Spectrum Analyzer - Element Ma	tenais Technology - Points: 1000	, Detector: Average (RMS)			08:46:02 AM Max 14, 2022

		+→ #IFGain:Low	Center Freq: 1.92850000 Trig: Free Run #Atten: 30 dB	00 GHz Avg Hold: 500/500	Radio Std: None Radio Device: BTS			
10 dB/div	Ref Offset 41.58 dB Ref 11.58 dBm							
1.58 -8.42								
-18.4								
-38.4	<u> </u>							
-58.4								
-78.4								
Center 1. Res BW	9285000 GHz 9.1 kHz		VBW 91 kHz	Span 1.000 MHz Sweep 14.45 ms				
Chan	nel Power		Power Spectral Density					
-2	20.38 dBm / 1	MHz	-20.38					
MSG				STATUS				



	Range			(dBm)	< (dBm)	Result
	3			-25.7	-16	Pass
Keysight Spectrum Analyz	er - Element Materials Tech 50 Ω DC	nology	SENSE:INT	ALIGN AUTO		08:47:02 AM May 14, 2022
		PNO: Fast ← IFGain:Low	➡ Trig: Free Run #Atten: 20 dB	#Avg Type: Avg Hold: 5	RMS 500/500	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N
Ref Offs 10 dB/div Ref 41	et 41.58 dB .58 dBm				Mkr	1 1.927 98 GHz -25.663 dBm
			Ť			
31.6						
21.6						
11.6						
1.58						
-8.42						
						DL1 -16.00 dBm
-18.4						1
-28.4						
		~~~				
-38.4						
-48.4						
Start 1.918000 GH #Res BW 1.0 MHz	Iz	#V	/BW 3.0 MHz*		Sweep 1	top 1.928000 GHz .000 ms (1001 pts)
MSG				STATUS		





	Frequency Range			Max Value (dBm)	Limit < (dBm)	Re	sult
	2			-20.5	-16	P	ass
Keysight Spectrum Analyzer	- Element Materials Tech	analogy - Points 1000 D	etector: Average (RMS)				
XI RL RF	50 Ω DC		SENSE:INT	ALIGN AUTO		09:27:57	AM May 14, 2022
			Center Freq: 1.99	1500000 GHz		Radio Std: N	lone
			Trig: Free Run	Avg Hold:	500/500	Radio Devie	
		#IFGain:Low	#Atten: 30 dB			Radio Device	e: D13
Ref Of 10 dB/div <b>Ref 1</b>	fset 41.58 dB <b>1.58 dBm</b>						
Log							
1.58							
-8.42							
-18.4							
28.4							
-20.4							
-38.4	***	~~~~~					
-48.4							
-58.4							
-68.4							
70 4							
-70.4							
Center 1.9915000	GHz					Span	1.000 MHz
Res BW 9.1 kHz			VBW 91	kHz		Sweep	) 14.45 ms
			Deuver Cr	estral Densit		-	
Channel Pow	/er		Power Sp	ectral Density	/		
-20.54	dBm /1N	IHz	-20.	54 dBm /M	MHz		
NSC				STATUS			

PCS BAND II, 1930 MHz - 1990 MHz, Port 1, 5 MHz Bandwdith, 64-QAM Modulation, High Channel, 1987.6 MHz									
Frequency				Max Value	Limit				
Range				(dBm)	< (dBm)	Result			
	3			-26.1	-16	Pass			

🔤 Keysight Sp	ectrum Analyzer - Element Materials	Technology					
L <mark>XI</mark> RL	RF 50 Ω DC		SENSE:INT	ALIGN AUTO		09:28:55 4	AM May 14, 2022
		PNO: Fast ++ IFGain:Low	. Trig: Free Run #Atten: 20 dB	#Avg Type: Avg Hold: 5	RMS 00/500	TRA TY E	CE 1 2 3 4 5 6 (PE A WWWWW A N N N N N
10 dB/div	Ref Offset 41.58 dB Ref 41.58 dBm				MI	kr1 1.992 -26.1	02 GHz 42 dBm
31.6							
21.6							
11.5							
П.Б							
1.58							
-8.42							
							DL1 -16.00 dBm
-16.4							
-28.4	And the second design of the s	<b></b>		****-*********************************	***********		
-38.4							
10.1							
-40.4							
Start 1.99	92000 GHz					Stop 2.00	2000 GHz
#Res BW	1.0 MHz	#VE	3W 3.0 MHz*		Sweep	1.000 ms	(1001 pts)
MSG				STATUS			