

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	27-Feb-20	27-Feb-21
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21

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((N)] to account for the device operation as a N port MIMO transmitter, as per FCC KDB 622911.

For Bands 12 and 14, the adjustment factor is $-10^{10}(4) = -6 \text{ dB}$. The Bands 12 and 14 adjusted limit is -19 dBm. For Band 29, the adjustment factor is $-10^{10}(2) = -3 \text{ dB}$. The Band 29 adjusted limit is -16 dBm.

Per FCC section 27.53(g) and RSS 130 4.7.1, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the RRH may operate as a 4 port MIMO transmitter for Band 12.

FCC 27.53(g) and RSS 130 4.7.1 requires a \geq 100 kHz measurement bandwidth for emissions 100 kHz outside of the RRH operating frequency range. FCC 27.53(g) requires a \geq 30 kHz measurement bandwidth for emissions between 100 kHz outside of the RRH operating frequency range and band edge of the operating frequency range.



					XMit 2020.03.25.0
EUT: Airscale Serial Number: K919351	Base Transceiv 14835	er Station Remote Radio Head Model AHLBBA	Work Order Date	: NOKI0013 : 23-Mar-20	
Customer: Nokia So	olutions and Net	works	Temperature	: 24.5 °C	
Attendees: Mitch Hi	ill, John Rattana	/ong	Humidity Barametria Bros	: 36.6% RH	
Tested by: Brandor	n Hobbs	Power: 54 VDC	Job Site	: TX03	
TEST SPECIFICATIONS		Test Method			
FCC 27:2020 RSS-130-2019		ANSI C63.26:2015 RSS_130:2019			
COMMENTS		100 100.2010			
All measurement path losse channels in each extended	es were accounte band The worst	ed for in the reference level offest including any attenuators, filters and DC blocks. The hottest port per case port was determined in the original client provided test report. The carrier power was set to maxi	r power amplifier (PA) was used for t imum for all testing	lesting. Measured o	only the affected
		base port was determined in the original cheft provided test report. The carrier power was set to maxi	intum for un testing.		
None	DIANDARD				
Configuration #	2.6	2 /1 1			
Configuration #	2,0	Signature			
			Value (dDm)	Limit (JDm)	Desult
Band 12, 729 MHz -745 MHz,	LTE		Value (dBm)	Limit (dBm)	Result
Port 1	5 MUE Dead				
	3 WITZ BATIO	QPSK Modulation			
		High Channel, 742.5 MHz, Range 1	-23.8	-19	Pass
		16-QAM Modulation	-27.0	-19	F d55
		High Channel, 742.5 MHz, Range 1	-23.8	-19	Pass
		64-QAM Modulation	-21.5	-19	F d55
		High Channel, 742.5 MHz, Range 1	-23.8	-19	Pass
		256-QAM Modulation	-27.1	-13	1 855
		High Channel, 742.5 MHz, Range 1	-24.0	-19	Pass
	10 MHz Band	width	-27.1	-19	F d55
		QPSK Modulation	-26.6	-10	Pass
		High Channel, 740 MHz, Range 2	-20.0	-19	Pass
		16-QAM Modulation	-26.0	-10	Pass
		High Channel, 740 MHz, Range 2	-30.8	-19	Pass
		64-QAM Modulation	-26.5	-10	Pass
		High Channel, 740 MHz, Range 2	-30.4	-19	Pass
		256-QAM Modulation	-27.0	-19	Pass
		High Channel, 740 MHz, Range 2	-30.6	-19	Pass
Port 2	5 MHz Bandy	width			
	o mili Dano	QPSK Modulation			
		High Channel, 742.5 MHz, Range 1 High Channel, 742.5 MHz, Range 2	-24.6 -24.9	-19 -19	Pass
		16-QAM Modulation			
		High Channel, 742.5 MHz, Range 1 High Channel, 742.5 MHz, Range 2	-24.7 -24.3	-19 -19	Pass
		64-QAM Modulation			
		High Channel, 742.5 MHz, Range 1 High Channel, 742.5 MHz, Range 2	-24.6 -24.4	-19 -19	Pass
		256-QAM Modulation			
		High Channel, 742.5 MHz, Range 1 High Channel, 742.5 MHz, Range 2	-24.8 -24.3	-19 -19	Pass Pass
	10 MHz Ban	Jwidth			
		High Channel, 740 MHz, Range 1	-24.2	-19	Pass
		High Channel, 740 MHz, Range 2	-26.7	-19	Pass
		High Channel, 740 MHz, Range 1	-24.2	-19	Pass
		High Channel, 740 MHz, Range 2 64-OAM Medulation	-26.6	-19	Pass
		High Channel, 740 MHz, Range 1	-24.1	-19	Pass
		High Channel, 740 MHz, Range 2 256-OAM Modulation	-26.3	-19	Pass
		High Channel, 740 MHz, Range 1	-24.5	-19	Pass
Band 29 717 MHz - 728 MHz	ITF	High Channel, 740 MHz, Range 2	-26.6	-19	Pass
Port 1					
	5 MHz Bandy	vidth QPSK Modulation			
		Low Channel, 719.5 MHz, Range 1	-31.3	-19	Pass
		Low Channel, /19.5 MHz, Range 2 16-QAM Modulation	-35.8	-19	Pass
		Low Channel, 719.5 MHz, Range 1	-31.1	-19	Pass
		64-QAM Modulation	-36.0	-19	Pass
		Low Channel, 719.5 MHz, Range 1	-31.0	-19	Pass
		256-QAM Modulation	-35.8	-19	Pass
		Low Channel, 719.5 MHz, Range 1	-31.4	-19	Pass
	10 MHz Band	width	-00.6	-19	1 455
		QPSK Modulation	-32 1	-10	Pace
		Low Channel, 722 MHz, Range 2	-37.3	-19	Pass
		16-QAM Modulation	-30.0	-19	Pass
		Low Channel, 722 MHz, Range 2	-37.4	-19	Pass
		64-QAM Modulation	-32.6	-19	Pass
		Low Channel, 722 MHz, Range 2	-37.4	-19	Pass
		256-QAM Modulation Low Channel, 722 MHz, Range 1	-32.3	-19	Pass
		Low Channel, 722 MHz, Range 2	-37.4	-19	Pass



































































































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
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Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21

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((N)] to account for the device operation as a N port MIMO transmitter, as per FCC KDB 622911.

For Bands 12 and 14, the adjustment factor is -10*log(4) = -6 dB. The Bands 12 and 14 adjusted limit is -19 dBm.

For Band 14 band edge measurements from 769 MHz – 775 MHz and 799 MHz – 806 MHz, reference level offset corrections were applied to the spectrum analyzer, according to the following table:

Frequency									
(MHz)	769	769.05	769.1	769.15	769.2	769.25	769.3	769.35	769.4
Correction									
Factor (dB)	49.8	48.9	48.2	47.6	47.1	46.7	46.3	46	45.7
Frequency									
(MHz)	769.45	769.5	769.55	769.6	769.65	769.7	769.75	769.8	769.85
Correction									
Factor (dB)	45.5	45.3	45.1	44.9	44.7	44.6	44.4	44.3	44.2
Frequency									
(MHz)	769.9	769.95	770	770.5	771	775	776	798	806
Correction									
Factor (dB)	44.1	44	43.9	43.2	42.8	41.7	41.7	41	41

Per section 90.543(e)(3) and RSS 140 4.4, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the RRH may operate as a 4 port MIMO transmitter for Band 14.

FCC 90.543(e)(5) and RSS 140 4.4b requires a >100 kHz measurement bandwidth for emissions 100 kHz outside of the RRH operating frequency range. FCC 90.543(e)(5) requires a >30 kHz measurement bandwidth for emissions between 100 kHz outside of the RRH operating frequency range and band edge of the operating frequency range.

FCC 90.543(e)(1) and RSS 140 4.4a requires an emission limit of -46 dBm for any 6.25 kHz bandwidth between frequency bands 769 MHz - 775 MHz and 799 MHz - 806 MHz (Note that the upper frequency for part 90 is 805 MHz and RSS 140 is 806 MHz). The limit is adjusted to -52 dBm per 6.25 kHz bandwidth [-46 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.



						XMit 2020.03.25.0
EUT	Airscale Base Transceive	er Station Remote Radio Head Mo	odel AHLBBA	Work Order:	NOKI0013	
Serial Number:	K9193514835			Date:	25-Mar-20	
Customer	Nokia Solutions and Net	works		Temperature:	24.6 °C	
Attendees	Mitch Hill, John Rattana	/ong		Humidity:	36.6% RH	
Project:	None			Barometric Pres.:	1024 mbar	
Tested by:	Brandon Hobbs		Power: 54 VDC	Job Site:	TX03	
TEST SPECIFICAT	IONS		Test Method			
FCC 901:2020			ANSI C63.26:2015			
RSS-140:2018			RSS-140:2018			
COMMENTS						
All measurement p	oath losses were accounte	d for in the reference level offest	including any attenuators, filters and DC blocks	s. The hottest port per power amplifier (PA) was us	ed for testing. The	worst case port
was determined in	the original client provide	ed test report. The carrier power	was set to maximum for all testing.			
DEVIATIONS FROM	M TEST STANDARD					
None						
Configuration #	2,4,6,8	Signature	2 Jan			
				Value (dBm)	Limit (dBm)	Result
Band 14, 758 MHz ·	· 768 MHz, LTE					
	Port 1					
	10 MHz Band	dwidth				
		QPSK Modulation, Single Ch. 763	MHz, Lower Side			
		Range 1		-22.8	-19	Pass
		Range 2		-27.7	-19	Pass
		QPSK Modulation, Single Ch. 763	MHz, Upper Side			_
		Range 1		-25.2	-19	Pass
		Range 2		-30.4	-19	Pass
		Range 3		-61.2	-52	Pass
	Port 2	Kalige 4		-75.2	-52	F d55
	10 MHz Bap	dwidth				
	TO WITE Dank	OPSK Modulation Single Ch 763	MHz Lower Side			
		Range 1		-21.7	-19	Pass
		Range 2		-26.3	-19	Pass
		QPSK Modulation, Single Ch. 763	MHz, Upper Side			
		Range 1		-24.3	-19	Pass
		Range 2		-29.3	-19	Pass
		Range 3		-60.2	-52	Pass
		Range 4		-75.0	-52	Pass







			Value (dBm) -25.231	Limit (dBm) -19	Result Pass
RL RF 50 Ω DC	sterials Technology	ENSE:INT	ALIGN OFF	RMS	04:13:04 PM Mar 24, 2020
	PNO: Fast +++ IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Hold:	1000/1000	TYPE A WWWWW DET A NNNNN
Ref Offset 40.4 dB				Mkr1 70	68.100 00 MHz
					20.201 0.2.1
30.4					
20.4					
10.4					
10.4					
0.400					
-9,60					
-19.6	1				-19.00 dBm
-29.6					
-39.6		******			
-49.6					
Start 758.00 MHz	I				Stop 808.00 MHz
TRES DVV TUU NHZ	VBW	300 kHz*		Sweep 6.4	00 ms (8001 pts)
Band 14, 758 MHz - 768 MH	VBW z, LTE, Port 1, 10 MHz B	300 kHz* Bandwidth, QPSK	STATUS	Sweep 6.4 e Ch. 763 MHz, U	00 ms (8001 pts)
Band 14, 758 MHz - 768 MH	VBW	300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -30.398	Sweep 6.4 e Ch. 763 MHz, U Limit (dBm) -19	pper Side, Range 2 Result Pass
Band 14, 758 MHz - 768 MH	VBW z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -30.398	Sweep 6.4 e Ch. 763 MHz, U Limit (dBm) -19	pper Side, Range 2 Result Pass
Band 14, 758 MHz - 768 MH	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK	STATUS Modulation, Singl Value (dBm) -30.398 ▲ALIGN OFF #Avg Type	Sweep 6.4 e Ch. 763 MHz, U Limit (dBm) -19	pper Side, Range 2 Result Pass 04:13:53 PM Mar 24, 2020 TRACE 12:24 54
Band 14, 758 MHz - 768 MH	Z, LTE, Port 1, 10 MHz E sterials Technology PNO: Wide → IFGain:Low	300 kHz* Bandwidth, QPSK Sandwidth, QP	STATUS Modulation, Single Value (dBm) -30.398 A ALIGN OFF #Avg Type Avg Hold: :	Sweep 6.4 e Ch. 763 MHz, U Limit (dBm) -19	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE TRACE DET ANNNN
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Image: Constraint of the second seco	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -30.398 ▲ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4 e Ch. 763 MHz, U Limit (dBm) -19 : RMS 1000/1000 MIKr1 768	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE [2:34:56] TYPE [2:34:56] Det ANNINAN 3.000 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Keysight Spectrum Analyzer - Element Ma R L RF S0 Ω DC Ref Offset 40.4 dB Log Ref 40.40 dBm	VEW z, LTE, Port 1, 10 MHz E	300 kHz [*] Bandwidth, QPSK ENSE:INT Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: 1	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE TRACE 24.3 ST NNNNN 3.0000 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MHz Band 14, 758 Mz - 768 Mz Band 14, 758 Mz - 768 Mz Band 14, 758 Mz - 768 Mz Band 14, 758 Mz Band 14, 758 Mz	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: ·	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:33 PMMar 24, 2020 TRACE [2 3 4 5 6 TRACE [2 3 4 5 6 04:00 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Example 10 Keysight Spectrum Analyzer - Element Ma Keysight Spectrum Analyzer - Element Ma R R RF 50 Ω DC Ref Offset 40.4 dB Ref 40.40 dBm 30.4 30.4 30.4 30.4	VBW z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398	Sweep 6.4	000 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:55 PMmar 24, 2020 TRACE 2 3 4 50 04:23 4 50 TRACE 2 3 4 50 TRACE 3 3 50 TRACE 3 50
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MHz Band 14, 758 Mz Band 14, 758 Mz<	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: 1	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PM Mar 24, 2020 TRACE TRACE 03:000 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH ■ Keysight Spectrum Analyzer - Element Ma M RL RF S0 Ω DC 0 dB/dlv Ref Offset 40.4 dB 10 dB/dlv Ref 40.40 dBm 30.4 0.4 0.400 0.400	VBW	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE TYPE ANNNNAN 3.0000 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MHz Band 14, 758 Mz <td>Z, LTE, Port 1, 10 MHz E</td> <td>300 kHz* Bandwidth, QPSK Sense:Int Trig: Free Run #Atten: 30 dB</td> <td>STATUS Modulation, Single Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: ·</td> <td>Sweep 6.4</td> <td>100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE TRACE 03:000 000 MHz -30.398 dBm</td>	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK Sense:Int Trig: Free Run #Atten: 30 dB	STATUS Modulation, Single Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: ·	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE TRACE 03:000 000 MHz -30.398 dBm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Image: Sector management of the secto	VEW	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE 2.3.4.50 TYPE ANNNNN 3.0000 000 MHz -30.398 dBm
Res BW 100 KH2 MSG Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Image: Sectrum Analyzer - Element Mage Image: Sectrum Analyzer - Sectrum Analyzer - Sectrum Analyzer - Sectrum Analyzer -	Z, LTE, Port 1, 10 MHz E	300 kHz [*] Bandwidth, QPSK Bandwidth, QPSK ENSE:INT Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ALIGN OFF #Avg Type Avg Hold: 1	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PM Mar 24, 2020 TRACE 2 34 56 TYPE 2 35 TYPE 2 35
Res BW 100 KHz MSG Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Ref Offset 40.4 dB Ref Offset 40.4 dB Cog 30.4 20.4 10.4 10.4 11.6 12.6	VEW	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Internet State Bandwidth, QPSK Bandwi	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PM/ar 24, 2020 TRACE 12:34 50 04:0000 MHz -30.398 dBm -19.00 dbm
Res BW 100 KH2 MSG Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Image: Sector management of the	VEW	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Figure Run Frig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold: 1	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:55 PMar 24, 2020 TRACE 2 3 4 50 07:77E 4 WINNIN 3.000 000 MHz -30.398 dBm -19.00 dbm
Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MHz Band 14, 758 MHz -	Z, LTE, Port 1, 10 MHz E	300 kHz* Bandwidth, QPSK I I I Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMar 24, 2020 TRACE 12:34:54 04:000 000 MHz -30.398 dBm -19:00 cbm
Res DW DU R2 MSG Band 14, 758 MHz - 768 MH Band 14, 758 MHz - 768 MH Image: Sector management of the sector managem	VBW	300 kHz* Bandwidth, QPSK Bandwidth, QPSK Trig: Free Run #Atten: 30 dB	STATUS Modulation, Singl Value (dBm) -30.398 ▲ ALIGN OFF #Avg Type Avg Hold:	Sweep 6.4	100 ms (8001 pts) pper Side, Range 2 Result Pass 04:13:53 PMMar 24, 2020 TRACE 2 3 4 5 0 TYPE A WANNAW 3.000 000 MHz -30.398 dBm











			Value (dBm) -24.334	Limit (dBm) -19	Result Pass
Keysight Spectrum Analyzer - Element Materials	Technology				- J J -
χ RL RF 50 Ω DC	PNO: Fast ++	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN OFF #Avg Type: Avg Hold: 1	RMS 1000/1000	03:52:27 PM Mar 24, 2020 TRACE 2 3 4 5 6 TYPE A WWWW DET A N N N N N
Ref Offset 40.4 dB				Mkr1 76	8.100 00 MHz
30.4					
20.4					
10.4					
0.400					
-9.60					
-19.6					-19.00 dBm
-29.0		·······		·····	·····
-39.6					
-49.6					
Start 758.00 MHz #Res BW 100 kHz Msg Band 14, 758 MHz - 768 MHz, LT	VBM E, Port 2, 10 MHz	300 kHz* Bandwidth, QPSK	STATUS	Sweep 6.4	Stop 808.00 MHz 00 ms (8001 pts) oper Side, Range 2
Start 758.00 MHz #Res BW 100 kHz Msg Band 14, 758 MHz - 768 MHz, LT	VBW E, Port 2, 10 MHz	8 300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -29.348	Sweep 6.4 e Ch. 763 MHz, Uj Limit (dBm) -19	Stop 808.00 MHz 400 ms (8001 pts) oper Side, Range 2 Result Pass
Start 758.00 MHz #Res BW 100 kHz Band 14, 758 MHz - 768 MHz, LT	VBW E, Port 2, 10 MHz	8 300 kHz* Bandwidth, QPSK	STATUS Modulation, Single Value (dBm) -29.348	Sweep 6.4	Stop 808.00 MHz 100 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMMar 24, 2020
Start 758.00 MHZ #Res BW 100 kHz MSG Band 14, 758 MHz - 768 MHz, LT	VBW FE, Port 2, 10 MHz I Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348 -29.348 -29.348 -29.348 -29.348 -29.348 -29.348	Sweep 6.4	Stop 808.00 MHz 400 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE 2 3 5 6 TYPE 2 5 7 7 TYPE 2 5 7 T
Start 758.00 MHz #Res BW 100 kHz MsG Band 14, 758 MHz - 768 MHz, LT	VBW TE, Port 2, 10 MHz I Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348 -29,348	Sweep 6.4 e Ch. 763 MHz, Up Limit (dBm) -19 RMS 000/1000 Mkr1 768	Stop 808.00 MHz 00 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE [2 34 50 DET ANNINA 8.0000 000 MHz -29.348 dBm
Start 758.00 WHZ #Res BW 100 kHz #sig Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz - 768 MHz - 768 MHz, LT Band 14, 758 Mz - 768 MHz	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348	Sweep 6.4	Stop 808.00 MHz 100 ms (8001 pts) oper Side, Range 2 Result Pass 03:54:24 PMMar 24, 2020 TRACE 2 2 3 5 6 TYPE A WAYNAY 05 TYPE A W
Start 758.00 MHZ #Res BW 100 kHz Msg Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Keysight Spectrum Analyzer - Element Materials R R RF 50 Q DC Ref Offset 40.4 dB 0 dB/div Ref 40.40 dBm	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348 ALIGN OFF #Avg Type: Avg Hold: 1	Sweep 6.4	Stop 808.00 MHz 400 ms (8001 pts) oper Side, Range 2 Result Pass 03:54:24 PMar 24, 2020 TRACE 2 3 4 5 6 02:54:24 PMar 24, 2020 TRACE 2 3 4 5 6 00:54:24 PMar 24, 2020 TRACE 2 3 5 6 00:54:24 PMar 24, 2020 TRACE 2 3 5 6 00:54:24 PMar 24, 2020 TRACE 2 3 5 6 00:54:24 PMar
Start 758.00 MHz #Res BW 100 kHz Msg Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Image: Start Spectrum Analyzer - Element Materials Image: Resignt Spectrum Analyzer - Element Materials </td <td>VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low</td> <td>SENSE:INT</td> <td>STATUS Modulation, Single Value (dBm) -29,348</td> <td>Sweep 6.4</td> <td>Stop 808.00 MHz 100 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE [2 3 4 5 6 TPEE A WINNIN 3.0000 000 MHz -29.348 dBm</td>	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29,348	Sweep 6.4	Stop 808.00 MHz 100 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE [2 3 4 5 6 TPEE A WINNIN 3.0000 000 MHz -29.348 dBm
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Start 758.00 WHZ #Res BW 100 kHz #scg Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Image: Start Spectrum Analyzer - Element Materials RL RF S0 q DC Ref Offset 40.4 dB O dB/div Ref 000 dB 30.4 0.4 10.4 0.4	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348 ▲ ALIGN OFF #Avg Type: Avg Hold: 1	Sweep 6.4	Stop 808.00 MHz 400 ms (8001 pts) Oper Side, Range 2 Result Pass 03:54:24 PM 4724, 2020 TRACE 2345 6 TRACE 2345 7 TRACE
Start 758.00 WHZ #Res BW 100 kHz #sg Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Image: Spectrum Analyzer - Element Materials <	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348 ▲ALIGN OFF #Avg Type: Avg Hold: 1	Sweep 6.4	Stop 808.00 MHz 400 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE 2 2 3 5 G TYPE ANNINA 3.000 000 MHz -29.348 dBm
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Start 758.00 WHZ #Res BW 100 kHz #scg Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Image: start for the start of the st	VBW	Sense:INT	STATUS Modulation, Single Value (dBm) -29.348 ▲ALIGN OFF #Avg Type: Avg Hold: 1	Sweep 6.4	Stop 808.00 MHz 100 ms (8001 pts) oper Side, Range 2 Result Pass 03:54:24 PMMar 24, 2020 TRACE 2 3 4 5 TYPE ANNNN 3.0000 000 MHz -29.348 dBm -19.00 dbm
Start 7/38.00 WHZ #Res BW 100 kHz MsG Band 14, 758 MHz - 768 MHz, LT Band 14, 758 MHz - 768 MHz, LT Image: Comparison of the start of th	VBW TE, Port 2, 10 MHz Technology PNO: Wide IFGain:Low	SENSE:INT	STATUS Modulation, Single Value (dBm) -29.348	Sweep 6.4	Stop 808.00 MHz 400 ms (8001 pts) oper Side, Range 2 Result Pass 03:51:24 PMar 24, 2020 TRACE 2 3 4 5 0 TRACE 2 3 4 5







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	27-Feb-20	27-Feb-21
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21

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((N)] to account for the device operation as a N port MIMO transmitter, as per FCC KDB 622911.

For Bands 12 and 14, the adjustment factor is $-10^*\log(4) = -6$ dB. The Bands 12 and 14 adjusted limit is -19 dBm. For Band 29, the adjustment factor is $-10^*\log(2) = -3$ dB. The Band 29 adjusted limit is -16 dBm.

Per FCC section 27.53(g) and RSS 130 4.7.1, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the RRH may operate as a 4 port MIMO transmitter for Band 12.

FCC 27.53(g) and RSS 130 4.7.1 requires a \geq 100 kHz measurement bandwidth for emissions 100 kHz outside of the RRH operating frequency range. FCC 27.53(g) requires a \geq 30 kHz measurement bandwidth for emissions between 100 kHz outside of the RRH operating frequency range and band edge of the operating frequency range.



			XMit 2020.03.25.0
EUT: Airscale Base Transceiver Station Remote Radio Head Model AHLBBA	Work Order:	NOKI0013	
Serial Number: K9193514835	Date:	24-Mar-20	
Customer: Nokia Solutions and Networks	Temperature:	23.9 °C	
Attendees: Mitch Hill, John Rattanavong	Humidity:	37.6% RH	
Project: None	Barometric Pres.:	1025 mbar	
Tested by: Brandon Hobbs Power: 54 VDC	Job Site:	TX03	
TEST SPECIFICATIONS Test Method			
FCC 27:2020 ANSI C63.26:2015			
RSS-130:2019 RSS-130:2019			
COMMENTS			
All measurement path losses were accounted for in the reference level offest including any attenuators, filters and DC blocks. The hottest was determined in the original client provided test report. The carrier power was set to maximum for all testing.	port per power amplifier (PA) was use	ed for testing. The v	vorst case port
Deviations from test standard			
None			
Configuration # 2,6 Signature			
	Value (dBm)	Limit (dBm)	Result
Band 12, 729 MHz -745 MHz, LTE			
Port 1			
10 MHz Bandwidth			
QPSK Modulation, Low Channel, 734 MHz			
Range 1	-25.0	-19	Pass
Range 2	-30.1	-19	Pass
QPSK Modulation, High Channel, 740 MHz			
Range 1	-24.1	-19	Pass
Range 2	-29.8	-19	Pass
Port 2			
10 MHz Bandwidth			
QPSK Modulation, Low Channel, 734 MHz			
Range 1	-23.3	-19	Pass
Range 2	-28.3	-19	Pass
QPSK Modulation, High Channel, 740 MHz			
Range 1	-22.4	-19	Pass
Range 2	-28.6	-19	Pass
Band 29, 717 MHz - 728 MHz, LTE Port 1			
OPSK Modulation Low Channel 722 MHz			
Range 1	-31.6	-19	Pass
Range 2	-37.0	-19	Pass
OPSK Modulation High Channel 723 MHz	-51.6	13	1 433
Ranna 1	-28 5	-19	Pass
Narige 1	-20.0	-10	Page
Rande Z	- 14 ·		























