

XMit 2019.09.05

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT:	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	K9193514835				Date:	18-Nov-19	
Customer:	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees:	John Rattanavong				Humidity:	29.6% RH	
Project:	None				Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer		Power:	54VDC	Job Site:	TX09	
TEST SPECIFICAT	IONS			Test Method			
FCC 90I:2019				ANSI C63.26:2015			
COMMENTS				-			
Band 14 PAPR me	asurements for LTE5 char	nnel bandwidth at Mid channel using 2	256QAM on all four	antenna ports. EUT is operated at 1	00% duty cycle.		
		,					
DEVIATIONS FROM	M TEST STANDARD						
None							
			8				
Configuration #	2		Jonathan	Kiefer			
		Signature	0	0			
					PAPR	Limit	
					Value (dB)	(dB)	Results
Band 14							
	256QAM Modulation						
	LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz					
		Antenna Port 1			7.68	13	Pass
		Antenna Port 2			6.78	13	Pass
		Antenna Port 3			6.79	13	Pass
		Antenna Port 4			7.71	13	Pass











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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT	: AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	: K9193514835				Date:	18-Nov-19	
Customer	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees	John Rattanavong				Humidity:	29.6% RH	
Project:	: None				Barometric Pres.:	1019 mbar	
Tested by:	: Jonathan Kiefer		Power:	54VDC	Job Site:	TX09	
TEST SPECIFICAT	IONS			Test Method			
FCC 90I:2019				ANSI C63.26:2015			
COMMENTS							
Band 14 PAPR me	asurements for LTE5 char	nnel bandwidth at Mid channel for fou	r modulationt type	s. Tested on highest power antenna p	ort (Port 1). EUT is operated at 100%	duty cycle. Note 2	56QAM
modulation LTE5	Mid channel data is shown	elsewhere in this report.		3	, , , , , , , , , , , , , , , , , , , ,		
DEVIATIONS FROM	M TEST STANDARD						
None							
			8	12			
Configuration #	2		Jonathan	Kiefen			
		Signature	0	- 0			
					PAPR	Limit	
					Value (dB)	(dB)	Results
Band 14							
	QPSK Modulation						
	LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz			7.66	13	Pass
	16QAM Modulation						
	LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz			7.66	13	Pass
	64QAM Modulation						
	64QAM Modulation LTE5 Bandw	idth					



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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT	: AHLBBA RRH				Work Order:	NOKI0004	
Serial Number	r: K9193514835				Date:	18-Nov-19	
Customer	r: Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees	: John Rattanavong				Humidity	29.6% RH	
Project	Project: None				Barometric Pres.:	1019 mbar	
Tested by	by: Jonathan Kiefer Power: 54VDC			Job Site:	TX09		
TEST SPECIFICA	TIONS			Test Method			
FCC 90I:2019				ANSI C63.26:2015			
COMMENTS							
cycle. Note 256QA	AM LTE5 BW Mid channel c	lata shown elsewhere in the report.	channels for LTE5	and LIEIU channel Dahdwidths. Test	ed on nignest power antenna port (P	ort i). EUT is operat	ed at 100% duty
None							
Configuration #	2	Signature	Jonathan	Kiefer			
	•				PAPR	Limit	
					Value (dB)	(dB)	Results
Band 14							
	256QAM Modulation						
	LTE5 Bandw	ridth					
		Low Channel, 760.5 MHz			7.69	13	Pass
		High Channel, 765.5 MHz			7.77	13	Pass
	LTE10 Band	width					
		Single Channel, 763.0 MHz			7.77	13	Pass











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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30	.0 XMit 2019.09.05
EUT	AHLBBA RRH				Work Order	NOKI0004	
Serial Number	: K9193514835				Date	18-Nov-19	
Customer	: Nokia Solutions and Net	works			Temperature	22.4 °C	
Attendees	: John Rattanavong				Humidity	29.7% RH	
Project	:: None				Barometric Pres.	1019 mbar	
Tested by	: Jonathan Kiefer		Power:	54VDC	Job Site	TX09	
TEST SPECIFICATIONS Test Method							
FCC 90I:2019				ANSI C63.26:2015			
COMMENTS							
Band 14 PAPR me	easurements for LTE5 char	nnel bandwidth at Mid channel for four	modulation types	. Tested on highest power antenna p	ort (Port 2). EUT is operated at 100%	duty cycle.	
DEVIATIONS FRO	M TEST STANDARD						
None							
Configuration #	2		Jonathan	Kiefer			
		Signature	0	0			
					PAPR	Limit	
					Value (dB)	(dB)	Results
Band 14							
	QPSK Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 763.0 MHz			6.75	13	Pass
	16QAM Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 763.0 MHz			6.74	13	Pass
	64QAM Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 763.0 MHz			6.75	13	Pass









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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TDU1x 2019.06.30.0	7000 2010.00.00
EUT:	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	K9193514835				Date:	18-Nov-19	
Customer:	Nokia Solutions and Net	works			Temperature:		
Attendees:	John Rattanavong				Humidity:		
Project:	None				Barometric Pres.:		
Tested by:	Jonathan Kiefer		Power: 54VD0		Job Site:	TX09	
TEST SPECIFICAT	IONS		Test N	lethod			
FCC 90I:2019			ANSI (263.26:2015			
COMMENTS							
Band 14 PAPR mea	asurements for 256QAM m	odulation type at Low, Mid and High	channels for LTE5 and LT	E10 channel bandwidths. Test	ed on highest power antenna port (Po	ort 2). EUT is opera	ted at 100% duty
cycle. Note: 256QA	M LTE5 BW Mid Channel	data shown elsewhere in the report.			3		,
DEVIATIONS FROM	M TEST STANDARD						
None							
0 (1 #							
			o ti v:	1			
Configuration #	2	Cirmoture	Jonathan Ki	efe			
Configuration #	2	Signature	Jonathan Ki	efe	D400	Linet	
Configuration #	2	Signature	Jonathan Ki	efe	PAPR Volus (PP)	Limit	Populto
Configuration #	2	Signature	Jonathan Ki	efer	PAPR Value (dB)	Limit (dB)	Results
Band 14	2	Signature	Jonathan Ki	efe	PAPR Value (dB)	Limit (dB)	Results
Band 14	2 256QAM Modulation	Signature	Jowethan Hi	efe	PAPR Value (dB)	Limit (dB)	Results
Band 14	2 256QAM Modulation LTE5 Bandw	Signature	Jonathan Ki	efe	PAPR Value (dB)	Limit (dB)	Results
Band 14	2 256QAM Modulation LTE5 Bandw	Signature idth Low Channel, 760.5 MHz	Jonathan Ki	efe	PAPR Value (dB) 6.72 7.04	Limit (dB) 13	Results Pass Pass
Band 14	2 256QAM Modulation LTE5 Bandw	Signature idth Low Channel, 760.5 MHz High Channel, 765.5 MHz width	Jonathan Ki	efe	PAPR Value (dB) 6.72 7.04	Limit (dB) 13 13	Results Pass Pass











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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30.0	XMit 2019.09.05	
EUT:	AHLBBA RRH				Work Order	: NOKI0004		
Serial Number:	K9193514835				Date	: 18-Nov-19		
Customer:	Nokia Solutions and Net	works			Temperature	: 22.4 °C		
Attendees:	John Rattanavong				Humidity	: 29.6% RH		
Project:	None				Barometric Pres.	: 1019 mbar		
Tested by:	Jonathan Kiefer	Jonathan Kiefer Power: 54VDC			Job Site	: TX09		
TEST SPECIFICAT	IONS			Test Method				
FCC 27:2019				ANSI C63.26:2015				
COMMENTS								
Band 29 PAPR mea	Band 29 PAPR measurements for LTE5 channel bandwidth at Mid channel using 256QAM on Antenna Ports 1 & 4. EUT is operated at 100% duty cycle.							
DEVIATIONS FROM	I TEST STANDARD							
None		-						
Configuration #	2	Signature	Jonathan	Kiefer				
					PAPR Value (dB)	Limit (dB)	Results	
Band 29								
	256QAM Modulation							
	LTE5 Bandw	idth						
		Mid Channel, 723.0 MHz						
		Antenna Port 1			7.95	13	Pass	
		Antenna Port 4			7.94	13	Pass	







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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	K9193514835				Date:	18-Nov-19	
Customer	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees	John Rattanavong				Humidity:	29.6% RH	
Project	None				Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer		Power: 54VDC		Job Site:	TX09	
TEST SPECIFICAT	IONS		Test Method				
FCC 27:2019			ANSI C63.26:2015				
COMMENTS							
Band 29 PAPR me cycle. Note: 256QA	asurements for 256QAM m M LTE5 BW Mid channel	nodulation type at Low, Mid and High data shown elsewhere in the report.	channels for LTE5 and LTE10 channel bandw	ridths. Tested on high	nest power antenna port (Po	ort 1). EUT is operat	ed at 100% duty
DEVIATIONS FROM	M TEST STANDARD						
None							
Configuration #	2	Signature	Jonathan Kiefer				
					PAPR Value (dB)	Limit (dB)	Results
Band 29							
	256QAM Modulation						
	LTE5 Bandw	idth					
		Low Channel, 720.5 MHz			7.95	13	Pass
		High Channel, 725.5 MHz			8.05	13	Pass
	LTE10 Bandy	width					
		Single Channel, 723.0 MHz			8.1	13	Pass









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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

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 13 dB.

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.



						TbtTx 2019.08.30	0 XMit 2019.09.05
EUT	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number	K9193514835				Date:	18-Nov-19	
Customer	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees	John Rattanavong				Humidity:	29.6% RH	
Project	None				Barometric Pres.:	1019 mbar	
Tested by	Jonathan Kiefer		Power:	54VDC	Job Site:	TX09	
TEST SPECIFICAT	IONS			Test Method			
FCC 27:2019				ANSI C63.26:2015			
COMMENTS							
Band 29 PAPR me	asurements for LTE5 char	nnel bandwidth at Mid channel for fou	r modulation types.	Tested on highest power antenna po	ort (Port 1). EUT is operated at 100% of	uty cycle. Note 2	56QAM modulation
data is shown else	where in the report.			3	· · · · · · · · · · · · · · · · · · ·		
DEVIATIONS FRO	M TEST STANDARD						
None							
			88				
Configuration #	2		Jonathan	Kiefer			
		Signature	0	0			
					PAPR	Limit	
					Value (dB)	(dB)	Results
Band 29							
	QPSK Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 723.0 MHz			7.97	13	Pass
	16QAM Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 723.0 MHz			7.97	13	Pass
	64QAM Modulation						
	LTE5 Bandw	vidth					
		Mid Channel 723.0 MHz			7.96	13	Pass



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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection beteen the RF output of the EUT and a spectrum analyzer. The emissions bandwidth 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 5.4 of ANSI C63.26 was used to make the measurement.

The spectrum analyzer settings were as follows: RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B). VBW=> RBW A peak detector was used. Trace max hold.

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 26 dB emission bandwidth.

Band 12 Emission Designators for Port 1

Band 12 (729MHz to 744MHz) Emission Designators								
Channel	LTE-QPSK	LTE-16QAM	LTE-64QAM	LTE-256QAM				
Bandwidth								
5M	4M86F9W	4M85F9W	4M87F9W	4M88F9W				
10M	9M66F9W	9M66F9W	9M65F9W	9M67F9W				
Note: Based on 26	5dB emission bandwid	ith						



				IBUX 2019.08.30.0	Ann 2015.05.00
EUT:	AHLBBA RRH		Work Order:	NOKI0004	
Serial Number:	K9193514835		Date:	18-Nov-19	
Customer:	Nokia Solutions and Networks		Temperature:	22.4 °C	
Attendees:	John Rattanavong		Humidity:	29.6% RH	
Project:	None		Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer	Power: 54VDC	Job Site:	TX09	
TEST SPECIFICAT	IONS	Test Method			
FCC 27:2019		ANSI C63.26:2015			
COMMENTS					
Band 12 emission	bandwidth measurements for four modulation types at mid cl	nannel for LTE5 and LTE10 bandwidths. Tested of	on highest power antenna port (Port 1). EUT is o	operated at 100% dut	y cycle.
DEVIATIONS FROM	I TEST STANDARD				
None					
Configuration #	2 Signature	Jonathan Kiefe			
			Value (MHz)	Limit	Result
	QPSK Modulation LTE5 Bandwidth Mid Channel 736 5 MHz			Within Rond	Pass
	I TE10 Pondwidth		4.855 MHZ	Within Danu	
	LTE10 Bandwidth Mid Chappel 736 5 MHz		4.855 MHZ	Within Band	Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth		4.855 MHZ 9.661 MHz	Within Band	Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz		4.855 MHZ 9.661 MHz 4.845 MHz	Within Band	Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth		4.855 MHZ 9.661 MHz 4.845 MHz	Within Band	Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz		4.855 MHZ 9.661 MHz 4.845 MHz 9.658 MHz	Within Band Within Band Within Band	Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 64QAM Modulation LTE5 Bandwidth		4.855 MHZ 9.661 MHz 4.845 MHz 9.658 MHz	Within Band Within Band Within Band	Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 64QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz		4.855 MHZ 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz	Within Band Within Band Within Band Within Band	Pass Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 64QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth		4.855 MHZ 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz	Within Band Within Band Within Band Within Band	Pass Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 64QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz		4.855 MHz 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz 9.648 MHz	Within Band Within Band Within Band Within Band Within Band	Pass Pass Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 64QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz LTE5 Bandwidth		4.855 MHZ 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz 9.648 MHz	Within Band Within Band Within Band Within Band Within Band	Pass Pass Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz 256QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz		4.855 MHz 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz 9.648 MHz 4.884 MHz	Within Band Within Band Within Band Within Band Within Band Within Band	Pass Pass Pass Pass Pass Pass
	LTE10 Bandwidth Mid Channel, 736.5 MHz 16QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz LTE5 Bandwidth Mid Channel, 736.5 MHz 256QAM Modulation LTE5 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth Mid Channel, 736.5 MHz LTE10 Bandwidth		4.855 MHz 9.661 MHz 4.845 MHz 9.658 MHz 4.865 MHz 9.648 MHz 4.884 MHz	Within Band Within Band Within Band Within Band Within Band Within Band	Pass Pass Pass Pass Pass Pass





Total Power

x dB

% of OBW Power

57.9 dBm

99.00 %

S 1 DC Coupled

-26.00 dB

Occupied Bandwidth

Transmit Freq Error

x dB Bandwidth

8.9864 MHz

6.276 kHz

9.661 MHz





#VBW 620 kHz

59.2 dBm

99.00 %

S L DC Coupled

-26.00 dB

Total Power

x dB

% of OBW Power

Center 736.5 MHz #Res BW 200 kHz

Occupied Bandwidth

Transmit Freq Error

x dB Bandwidth

h.h.

9.0243 MHz

1.739 kHz

9.658 MHz

Span 25 MHz Sweep 1.2 ms





	#IFGain:Low	#Atten: 20 dB		Radio Device: BTS
Ref Offset 40.2 dB Ref 48.00 dBm				
			monohaman	
North March Company	a manual and		hannohang	approximation and the set
.5 MHz 00 kHz		#VBW 6201	٢Hz	Span 25 MHz Sweep 1.2 ms
ed Bandwidth		Total Power	57.9 dBm	
8.9	877 MHz			
t Freq Error	886 Hz	% of OBW Pow	ver 99.00 %	
ndwidth	9.648 MHz	x dB	-26.00 dB	
			STATUS ! DC Coup	led
	Ref Offset 40.2 dB Ref 48.00 dBm	Ref Offset 40.2 dB Ref 48.00 dBm	Ref Offset 40.2 dB Ref 48.00 dBm	Ref Offset 40.2 dB Ref 48.00 dBm Image: state of the state of





Ref Offset 40 10 dB/div Ref 48.00	0.2 dB d Bm								
28 0		mm		and well-stary all stars and they					
28.0	/					$\left \right $			
18.0	/								
8.00									
-2.00									
-12.0	at he southerd								
-22.0 Manana Manana Manana							an man with	mannan	mannon
-32.0									
-42.0									
Center 736.5 MHz #Res BW 200 kHz			#VE	3W 620 kH	z			Sµ Swe	oan 25 MHz ep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw	ridth		#VE Total P	3W 620 kH ower	z 58.0	dBn	n	Sr Swe	oan 25 MHz eep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw	^{idth} 8.9764 N	IHz	#VE Total P	3W 620 kH ower	z 58.0	dBn	n	Sp Swe	oan 25 MHz eep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw Transmit Freq Error	ridth 8.9764 N r 8.833	Hz kHz	#VE Total P % of <u>O</u> l	3W 620 kH ower BW Power	z 58.0 - 99.	dBn 00 <u>%</u>	n %	SI Swa	pan 25 MHz pep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw Transmit Freq Error x dB Bandwidth	ridth 8.9764 N r 8.833 9.668	IHz s kHz MHz	#VE Total P % of Ol x dB	8W 620 kH ower BW Power	z 58.0 - 99. -26.0	dBn 00 % 00 dB	n % B	St Swe	oan 25 MHz eep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw Transmit Freq Error x dB Bandwidth	ridth 8.9764 N r 8.833 9.668	IHZ s kHz MHz	#VE Total P % of OI x dB	BW 620 kH ower BW Power	z 58.0 - 99. -26.0	dBn 00 % 0 dB	n % B	Street Swe	oan 25 MHz eep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw Transmit Freq Error x dB Bandwidth	ridth 8.9764 N r 8.833 9.668	IHz s kHz MHz	#VE Total P % of Ol x dB	3W 620 kH ower BW Powei	z 58.0 - 99. -26.0	dBn 00 % 0 dB	n % B	Sp Swe	oan 25 MHz eep 1.2 ms
Center 736.5 MHz #Res BW 200 kHz Occupied Bandw Transmit Freq Error x dB Bandwidth	ridth 8.9764 N r 8.833 9.668	IHz s kHz MHz	#VE Total P % of Ol x dB	3W 620 kH ower BW Power	z 58.0 - 99. -26.0	dBn 00 % 0 dB	n % B	Sp Swe	oan 25 MHz Pep 1.2 ms



XMit 2019.09.05

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection beteen the RF output of the EUT and a spectrum analyzer. The emissions bandwidth 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 5.4 of ANSI C63.26 was used to make the measurement.

The spectrum analyzer settings were as follows: RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B). VBW=> RBW A peak detector was used. Trace max hold.

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 26 dB emission bandwidth.

Band 12 Emission Designators for Port 2

Band 12 (729MHz to 744MHz) Emission Designators								
Channel	LTE-QPSK	LTE-16QAM	LTE-64QAM	LTE-256QAM				
Bandwidth			<u> </u>					
5M	4M86F9W	4M83F9W	4M86F9W	4M89F9W				
10M	9M67F9W	9M67F9W	9M71F9W	9M67F9W				
Note: Based on 26	5dB emission bandwid	lth						



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT:	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	K9193514835				Date:	18-Nov-19	
Customer:	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees:	John Rattanavong				Humidity:	29.7% RH	
Project:	None				Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer		Power: 54VDC		Job Site:	TX09	
TEST SPECIFICAT	IONS		Test Metho	d			
FCC 27:2019			ANSI C63.2	6:2015			
COMMENTS							
Band 12 emission	bandwidth measurements	s for four modulation types at M	id channel for two channel bandwidt	hs. Tested at highest power	antenna port (Port 2). EUT is opera	ated at 100% duty cy	cle.
DEVIATIONS FROM	M TEST STANDARD						
None							
Configuration #	2	Signature	Jonathan Kiefe	n			
		· · ·			Value (MHz)	Limit	Result
Band 12							
	QPSK Modulation						
	LTE5 Bandw	ridth					_
	17540.0	Mid Channel, 736.5 MHz			4.859 MHz	Within Band	Pass
	LIE10 Bandy	Single Channel 726 5 Mile			0.000 MU	Within Dand	Deee
	1COAM Madulation	Single Channel, 736.5 MHz			9.000 IVITI2	within band	Pass
	I TE5 Bandwi	vidth					
	ETES Bandw	Mid Channel 736 5 MHz			4 826 MHz	Within Band	Pass
	LTE10 Bandy	width			1020 11112	Than band	1 400
		Single Channel, 736.5 MHz			9.673 MHz	Within Band	Pass
	64QAM Modulation						
	LTE5 Bandw	vidth					
		Mid Channel, 736.5 MHz			4.859 MHz	Within Band	Pass
	LTE10 Bandy	width					
		Single Channel, 736.5 MHz			9.712 MHz	Within Band	Pass
	256QAM Modulation	vidth					
	LILO Danaw	Mid Channel. 736.5 MHz			4.893 MHz	Within Band	Pass
	LTE10 Bandy	width					





	#IFG	ain:Low	#Atten: 20	dВ			Radi	io Device: E	115
ef Offset 40.2 dB ef 49.00 dB m	8								
		1 million	Munander March	menon	mmun				
						1			
montherm	Uman Martin					human	monthey	man a long	Annon
and the second se									
/IHz							1	Span	25 M
kHz			#VE	3W 620 kH	z			Sweep	1.2
Bandwidt	h		Total P	ower	57.9	dBm			
8.9	9903 N	ЛНz							
req Error	6.73	0 kHz	% of O	BW Power	99.	00 %			
vidth	9.668	MHz	x dB		-26.0	0_dB			
						DC Co	oupled		
	ef Offset 40.2 dE ef 49.00 dBm Alltz kHz Bandwidth 8.9 req Error vidth	AlfG of Offset 40.2 dB of 49.00 dBm and a state of the	AHZ AHZ KHZ Bandwidth 8.9903 MHZ req Error 6.730 kHZ vidth 9.668 MHZ	Atten: 20 Pf Offiset 40.2 dB Pf 49.00 dBm Atten: 20 Pf 49.00 dBm Atten: 20 Pf 49.00 dBm Pf 49.00 dBm Atten: 20 Pf 49.00 dBm Atten: 20 P	Alter: 20 dB of Offset 40.2 dB of 49.00 dBm and a second secon	Arten: 20 dB of Offset 40.2 dB of 49.00 dBm a a a a a a a a a a a a a a a a a a a	#FGain:Low #Atten: 20 dB of Offset 40.2 dB a of 49.00 dBm a a a b a b b b a b a b b b	#FGain:Low #Atten: 20 dB of Offset 40.2 dB of 49.00 dBm of 0 offset 40.2 dB of 0 of 0 of 0 b of 0 of 0 b	#IFGain:Low #Atten: 20 dB Radio Device: E of Offset 40.2 dB off offset 40.0 dBm off offset 40.0 dBm off offset 40.0 dBm off offset 40.0 dBm off offset 40.0 dBm off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off offset 40.2 dB off of





-20.0 -30.0 -40.0								alar and a character	to restrict for the stars
Center 736.5 MHz #Res BW 200 kHz			#VB	W 620 kHz				Sp Swe	an 25 MH ep 1.2 m
Occupied Bandwidt	th 0182 N	IHz	Total P	ower	59.2	dE	3m		
9.					00	00	0/		
9.					00	2	0/		





RL	RF 50 Ω 🚹 DC		SENSE:INT	ALIGN OFF	01:58:30 PM Nov 14, 2019
		#IFGain:Low	Center Freq: 736.50000 Trig: Free Run #Atten: 20 dB	0 MHz Avg Hold: 50/50	Radio Std: None Radio Device: BTS
I0 dB/div	Ref Offset 40.2 dB Ref 49.00 dBm				
. og 39.0				ber have the second second	
29.0		A			
9.00					
1.00					
21.0	and the second s			hitematicup	and the second and th
31.0					
Contor 7	26 5 MILI-				Spop 25 MH
#Res BW	200 kHz		#VBW 620 ki	Hz	Sweep 1.2 ms
Occu	pied Bandwidth	1	Total Power	57.9 d B m	
	9.0)199 MHz			
Transr	nit Freq Error	8.777 kHz	% of OBW Powe	er 99.00 %	
x dB B	andwidth	9.712 MHz	x dB	-26.00 dB	
150					od
194				No Coup	





		#IFGa	⊶⊷ ain:Low	Trig: Free #Atten: 20	Run dB	Avg Hold	1:>50/50	Radio Device:	втя
15 dB/div	Ref Offset 40.2 dE Ref 48.00 dBm	3							
Log 33.0									
18.0		/					1		
3.00									
-12.0	and	mannes					hanne	······································	manne
-27.0	and the second								
-42.0									
-57.0									
-87.0									
Contor 70									
#Res BW	200 kHz			#VE	3W 620 kH	z		Swee	p 1.2 ms
Occup	ied Bandwidt	h		Total P	ower	58.1	dBm		
	8.9	9874 N	IHz						
Transm	nit Freq Error	11.443	kHz	% of O	BW Power	99.	00 %		
x dB Ba	andwidth	9.668	MHz	x dB		-26.0	0 dB		
MSG							DC Couple	ed	
International Social Distances of the International						and the second s			



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection beteen the RF output of the EUT and a spectrum analyzer. The emissions bandwidth 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 5.4 of ANSI C63.26 was used to make the measurement.

The spectrum analyzer settings were as follows: RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B). VBW=> RBW A peak detector was used. Trace max hold.

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 26 dB emission bandwidth.

Band 14 Emission Designators for Port 1

	Band 14 (758MHz to 768MHz) Emission Designators								
Channel	LTE-QPSK	LTE-64QAM	LTE-256QAM						
Bandwidth									
5M	4M86F9W	4M83F9W	4M85F9W	4M86F9W					
10M	9M58F9W	9M59F9W	9M57F9W	9M55F9W					
Note: Based on 26	5dB emission bandwid	lth							



						TbtTx 2019.08.30.0	XMit 2019.09.05
EUT:	AHLBBA RRH				Work Order:	NOKI0004	
Serial Number:	K9193514835				Date:	18-Nov-19	
Customer:	Nokia Solutions and Net	works			Temperature:	22.4 °C	
Attendees:	: John Rattanavong				Humidity:	29.6% RH	
Project:	None				Barometric Pres.:	1019 mbar	
Tested by:	: Jonathan Kiefer		Power: 54VD	C	Job Site:	TX09	
TEST SPECIFICAT	TIONS		Test	Method			
FCC 90I:2019			ANSI	C63.26:2015			
COMMENTS							
Band 14 emission	bandwidth measurements	s for four modulation types at N	id chanel for two channel band	lwidths. Tested at highest p	ower antenna port (Port 1). EUT is operat	ed at 100% duty cyc	le.
DEVIATIONS FROM	M TEST STANDARD						
None							
Configuration #	2	Signature	Jonathan Ki	iefer			
					Value (MHz)	Limit	Result
Band 14	OPSK Modulation						
	LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz			4.855 MHz	Within Band	Pass
	LTE10 Bandy	width					
		Single Channel, 763.0 MHz			9.581 MHz	Within Band	Pass
	16QAM Modulation LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz			4.828 MHz	Within Band	Pass
	LTE10 Bandy	width					
		Single Channel, 763.0 MHz			9.588 MHz	Within Band	Pass
	64QAM Modulation LTE5 Bandw	idth					
		Mid Channel, 763.0 MHz			4.853 MHz	Within Band	Pass
	LTE10 Bandy	width					
		Single Channel, 763.0 MHz			9.565 MHz	Within Band	Pass
	256QAM Modulation LTE5 Bandw	idth					
		Mid Channel 762 0 MHz			4 856 MHz	Within Band	Pass
		WILD GHAILITEL, 703.0 WILLZ			4.000 Mil 12		
	LTE10 Bandy	width			4.000 10112		





Log				
38.0	marin		~~~~	
28.0	/			
18.0	/			
8.00				
-2.00				
-12.0	month			
22.0			m m	
22.0 March and a second			Lander	www.where where we want where we want where where we want where we want where we want where we want where we w
-32.0				
-42.0				
Center 763 MHz				Span 25 MHz
#Res BW 150 kHz		#VBW 470 kHz		Sweep 1.2 ms
#Res BW 150 kHz Occupied Bandwid	th	#VBW 470 kHz Total Power	57.7 dBm	Sweep 1.2 ms
#Res BW 150 kHz Occupied Bandwid 8	th .9631 MHz	#VBW 470 kHz Total Power	57.7 dBm	Sweep 1.2 ms
#Res BW 150 kHz Occupied Bandwid 8 Transmit Freq Error	th .9631 MHz 896 Hz	#VBW 470 kHz Total Power % of OBW Power	57.7 dBm 99.00 %	Sweep 1.2 ms
#Res BW 150 kHz Occupied Bandwid 8 Transmit Freq Error x dB Bandwidth	th .9631 MHz 896 Hz 9.581 MHz	#VBW 470 kHz Total Power % of OBW Power x dB	57.7 dBm 99.00 % -26.00 dB	Sweep 1.2 ms
#Res BW 150 kHz Occupied Bandwid 8 Transmit Freq Error x dB Bandwidth	th . 9631 MHz 896 Hz 9.581 MHz	#VBW 470 kHz Total Power % of OBW Power x dB	57.7 dBm 99.00 % -26.00 dB	Sweep 1.2 ms





#Res BW 150 kHz		#VBW 470 kHz		Sweep 1.2 ms
Occupied Bandwidt	^h 9696 MHz	Total Power	59.1 dBm	
Transmit Freq Error	2.651 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	9.588 MHz	x dB	-26.00 dB	
MSG		г	STATUS & DC Coupled	





	+∔ #IFGain:Low	Center Freq: 763.00000 Trig: Free Run #Atten: 20 dB	0 MHz Avg Hold: 50/50	Radio Std: None Radio Device: BTS
Ref Offset 40.2 dE 10 dB/div Ref 47.00 dBm	3 1			
27 D	mon		many	
27.0				
17.0				
7.00				
3 00				
-13.0	monor			
-23.0			h	
-33.0			Junear	una waran gara an
-43.0				
Center 763 MHz #Res BW 150 kHz		#VBW 470 k	Hz	Span 25 MHz Sweep 1.2 ms
Occupied Bandwidt	h	Total Power	57.8 dBm	
8.9	9879 MHz			
Transmit Freq Error	-1.621 kHz	% of OBW Powe	er 99.00 %	
x dB Bandwidth	9.565 MHz	x dB	-26.00 dB	
MSG			To Coupl	ed





-13.0 -23.0 -33.0			hanner	n han an a
Center 763 MHz #Res BW 150 kHz		#VBW 470 kHz		Span 25 MHz Sweep 1.2 ms
Occupied Bandwidt 8.	^h 9475 MHz	Total Power	58.0 dBm	
Transmit Freq Error	-1.922 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	9.554 MHz	x dB	-26.00 dB	



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection beteen the RF output of the EUT and a spectrum analyzer. The emissions bandwidth 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 5.4 of ANSI C63.26 was used to make the measurement.

The spectrum analyzer settings were as follows: RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B). VBW=> RBW A peak detector was used. Trace max hold.

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 26 dB emission bandwidth.

Band 14 Emission Designators for Port 2

Band 14 (758MHz to 768MHz) Emission Designators									
Channel	Channel LTE-QPSK LTE-16QAM LTE-64QAM LTE-256QAM								
Bandwidth									
5M	?F9W	4M83F9W	4M86F9W	4M86F9W					
10M	9M44F9W	9M55F9W	9M62F9W	9M59F9W					
Note: Based on 2f	Note: Based on 26dB emission bandwidth								



				TbtTx 2019.08.30.0	XMit 2019.09.05
EUT:	AHLBBA RRH		Work Order:	NOKI0004	
Serial Number:	K9193514835		Date:	18-Nov-19	
Customer:	Nokia Solutions and Networks		Temperature:	22.4 °C	
Attendees:	John Rattanavong		Humidity:	29.7% RH	
Project:	None		Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer	Power: 54VDC	Job Site:	TX09	
TEST SPECIFICAT	IONS	Test Method			
FCC 90I:2019		ANSI C63.26:2015			
COMMENTS					
Band 14 emission	bandwidth measurements for four modulation types at Mid cha	nel for two channel bandwidths. Tested at highe	st power antenna port (Port 2). EUT is operat	ed at 100% duty cycle	<u>).</u>
DEVIATIONS FROM	I TEST STANDARD				
None					
Configuration #	2 Signature	Jonathan Kiefer			
			Value (MHz)	Limit	Result
Band 14	QPSK Modulation LTE5 Bandwidth Mid Channel 763 0 MHz		4 857 MHz	Within Band	Pass
	LTE10 Bandwidth		1007 11112	Than Bana	1 400
	Single Channel, 763.0 MHz		9.438 MHz	Within Band	Pass
	16QAM Modulation LTE5 Bandwidth			Than Daild	1 400
	Mid Channel, 763.0 MHz LTE10 Bandwidth		4.833 MHz	Within Band	Pass
	Single Channel, 763.0 MHz 64QAM Modulation LTE5 Bandwidth		9.554 MHz	Within Band	Pass
	Mid Channel, 763.0 MHz		4.863 MHz	Within Band	Pass
	LTE10 Bandwidth				
	Single Channel, 763.0 MHz		9.621 MHz	Within Band	Pass
	256QAM Modulation LTE5 Bandwidth				
	Mid Channel, 763.0 MHz		4.856 MHz	Within Band	Pass
	LTE10 Bandwidth				
	Single Channel, 763.0 MHz		9.587 MHz	Within Band	Pass





CONTRACTOR OF A CONTRACTOR A CON			1 0111031 50000, 1	Detector: Peak					
KL	RF 50 Ω 🛕 DC			SENSE:INT	<u>A</u>	LIGN OFF		03:05:	55 PM Nov 14, 20
		#IFGa	ain:Low	Center Fre . Trig: Free #Atten: 20	q: 763.000000 Run dB	MHz Avg Hold	d: 50/50	Radio Std: Radio Devi	None ce: BTS
) dB/div	Ref Offset 40.2 di Ref 48.00 dBm	3 1							
9 9 8.0			and way and	gondation and the second s	haven and and	no hand and the	۱		
8.0		/							
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.0							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Whathallow
								s	pan 25 M
enter 76 Res BW	63 MHz 150 kHz			#VE	3W 470 kH	z		Sw	eep 1.2 n
enter 76 Res BW Occup	63 MHz 150 kHz Died Bandwidt 8.	^h 9455 N	IHz	#VE Total P	3W 470 kH: ower	55.6	dBm	Sw	eep 1.2 n
enter 76 Res BW Occur Transn	^{63 MHz} 150 kHz Died Bandwidt 8. nit Freq Error	h 9455 N 59	IHz 98 Hz	#VE Total P % of Ol	3W 470 kH: 'ower BW Power	55.6 - 99.	dBm 00 %	Sw	eep 1.2 n
enter 76 Res BW Occur Transn x dB B	63 MHz 150 kHz Died Bandwidt 8.1 nit Freq Error andwidth	h 9455 N ⁵⁹ 9.438	IHZ 08 Hz MHz	#VE Total P % of OI x dB	ower BW Power	z 55.6 - 99. -26.0	dBm 00 % 0 dB	Sw	eep 1.2 r





x dB Bandwidth

9.554 MHz

x dB

-26.00 dB

S 1 DC Coupled





-26.00 dB

S 1 DC Coupled

9.621 MHz

x dB

x dB Bandwidth





-26.00 dB

S 1 DC Coupled

x dB Bandwidth

9.587 MHz

x dB



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection beteen the RF output of the EUT and a spectrum analyzer. The emissions bandwidth 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 5.4 of ANSI C63.26 was used to make the measurement.

The spectrum analyzer settings were as follows: RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B). VBW=> RBW A peak detector was used. Trace max hold.

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 26 dB emission bandwidth.

Band 29 Emission Designators for Port 1

Band 29 (718MHz to 728MHz) Emission Designators									
Channel	Channel LTE-QPSK LTE-16QAM LTE-64QAM LTE-256QAM								
Bandwidth									
5M	4M85F9W	4M81F9W	4M85F9W	4M86F9W					
10M	9M59F9W	9M60F9W	9M61F9W	9M57F9W					
Note: Based on 26dB emission bandwidth									



							TbtTx 2019.08.30.0	XMit 2019.09.05
EUT:	AHLBBA RRH					Work Order:	NOKI0004	
Serial Number:	K9193514835					Date:	18-Nov-19	
Customer:	Nokia Solutions and Net	works				Temperature:	22.4 °C	
Attendees:	John Rattanavong					Humidity:	29.6% RH	
Project:	None					Barometric Pres.:	1019 mbar	
Tested by:	Jonathan Kiefer		Power:	54VDC		Job Site:	TX09	
TEST SPECIFICAT	IONS			Test Method				
FCC 27:2019				ANSI C63.26:2015				
COMMENTS								
Band 29 emission	bandwidth measurements	s for four modulation types at M	lid channel for two channe	el bandwidths. Tested	at highest power antenna port	(Port 1). EUT is opera	ated at 100% duty cy	cle.
DEVIATIONS FROM	M TEST STANDARD							
None								
Configuration #	2	Signature	Jonathan	Kiefer				
		• • • •				Value (MHz)	Limit	Result
Band 29								
	QPSK Modulation							
	LTE5 Bandw	idth						
		Mid Channel, 723.0 MHz				4.852 MHz	Within Band	Pass
	LTE10 Bandy	width						
		Single Channel, 723.0 MHz				9.588 MHz	Within Band	Pass
	16QAM Modulation	idth						
	ETEO Ballan	Mid Channel, 723.0 MHz				4.809 MHz	Within Band	Pass
	LTE10 Bandy	width						
		Single Channel, 723.0 MHz				9.597 MHz	Within Band	Pass
	64QAM Modulation	idth						
	LTES Barldw	Mid Channel 723.0 MHz				4 848 MHz	Within Band	Pass
	I TE10 Bandy	width				4.040 10112	Within Dang	1 835
	LIL TO Dandy	Single Channel 723 0 MHz				9.611 MHz	Within Band	Pass
	256QAM Modulation					0.01111112	Thum Band	1 400
	LTE5 Bandw	ridth						_
		Mid Channel, 723.0 MHz				4.857 MHz	Within Band	Pass
	1 77 16 7	1.14						
	LTE10 Bandy	width				0.57.141		-





32.0	monorman	mannen	
22.0			
22.0			
12.0			
2.00			
-8.00			
-18.0			wheth is to be be
-28.0 Manhanen hammathanathan			a the second and the
-38.0			
-48.0			
Center 723 MHz			Span 25 MHz
#Res BW 150 kHz	#VE	W 470 kHz	Sweep 1.2 ms
Occupied Bandwidth	Total P	ower 52.8 dB	m
8.9552	MHz		
Transmit Freq Error 24.0	42 kHz % of Ol	BW Power 99.00	%
x dB Bandwidth 9.5	88 MHz x dB	-26.00 c	1B
MSG			DC Coupled









% of OBW Power

x dB

99.00 %

S 1 DC Coupled

-26.00 dB

8.9834 MHz

19.512 kHz

9.611 MHz

Transmit Freq Error

x dB Bandwidth





-18.0 -26.0 -36.0 -48.0				May Mang Marine Marine Son and Son
Center 723 MHz #Res BW 150 kHz		#VBW 470 kHz	#VBW 470 kHz	
Occupied Bandwidt	^h 9563 MHz	Total Power	52.9 dBm	
Transmit Freq Error	28.483 kHz	% of OBW Power	99.00 %	
x dB Bandwidth 9.570 MHz		x dB	-26.00 dB	
MSG		I	STATUS L DC COU	upled