PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% 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 measurements for LTE5 channel bandwidth at Mid channel using 256QAM on all four antenna ports. EUT is operated at 100% duty cycle.

DEVIATIONS FROM TEST STANDARD

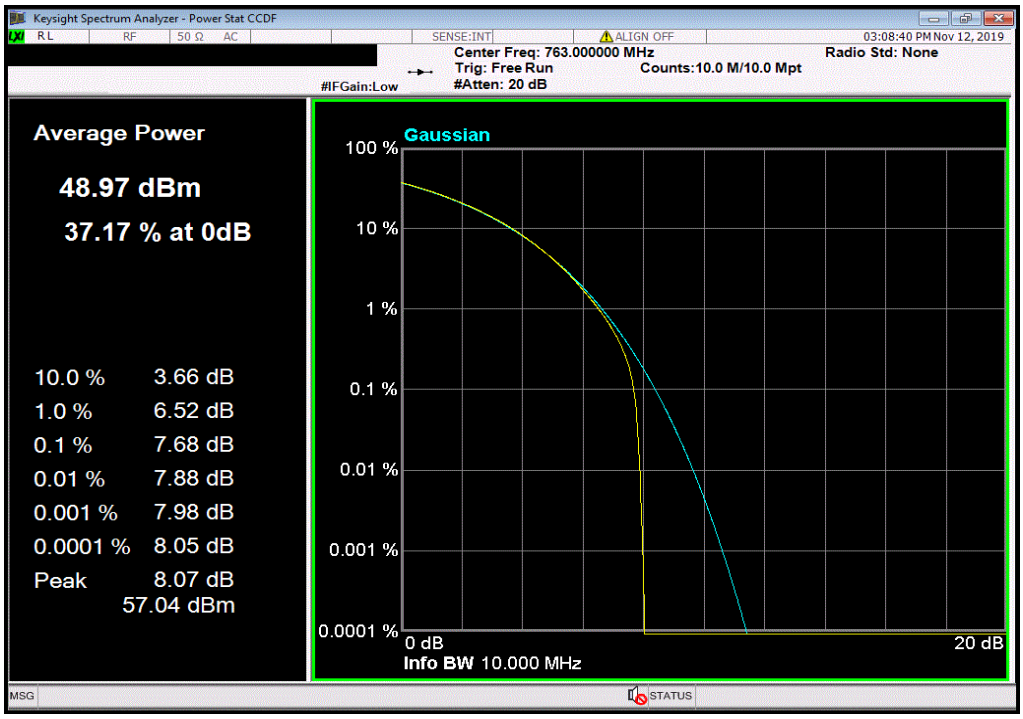
None

Configuration #	**2**	*Signature* Jonathan Kiefer

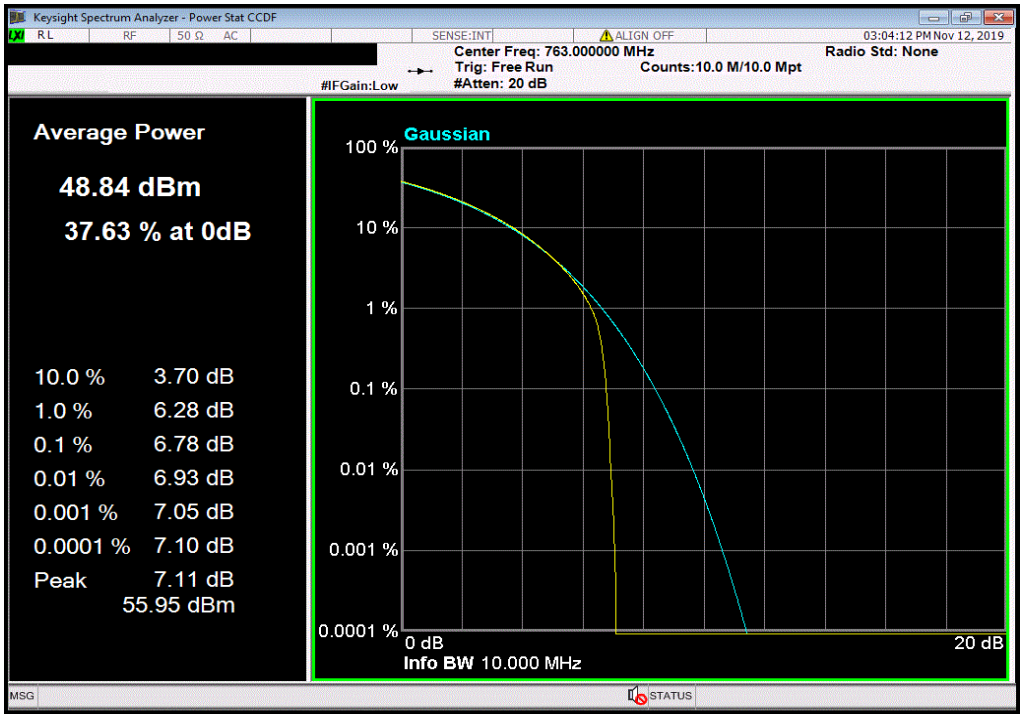
	PAPR Value (dB)	**Limit (dB)**	**Results**
Band 14			
256QAM Modulation			
LTE5 Bandwidth			
Mid Channel, 763.0 MHz			
Antenna Port 1	7.68	13	Pass
Antenna Port 2	6.78	13	Pass
Antenna Port 3	6.79	13	Pass
Antenna Port 4	7.71	13	Pass

PEAK-TO-AVERAGE POWER RATIO (PAPR)

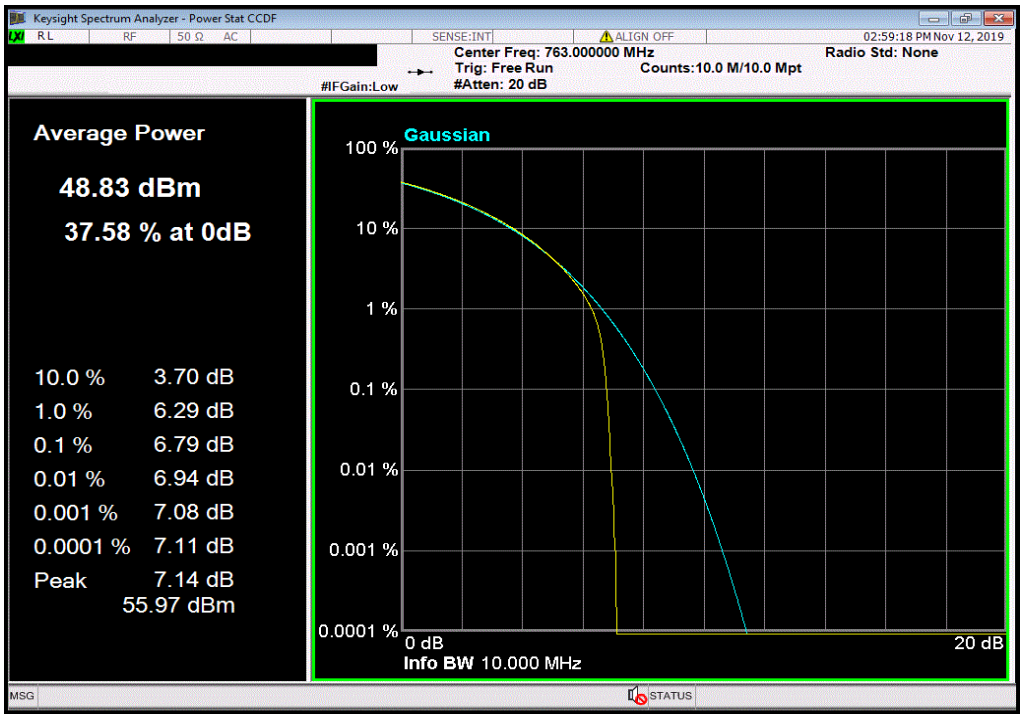
Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz, Antenna Port 1						
				PAPR Value (dB)	Limit (dB)	Results
				7.68	13	Pass



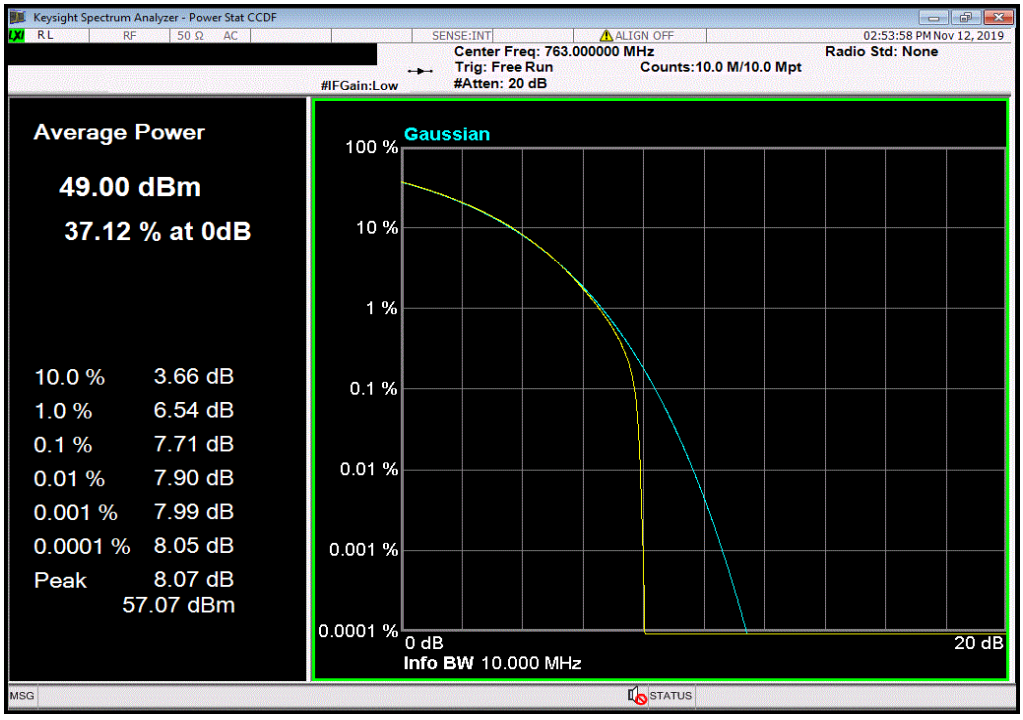
Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz, Antenna Port 2						
				PAPR Value (dB)	Limit (dB)	Results
				6.78	13	Pass



Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz, Antenna Port 3						
				PAPR Value (dB)	Limit (dB)	Results
				6.79	13	Pass



Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz, Antenna Port 4						
				PAPR Value (dB)	Limit (dB)	Results
				7.71	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% 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 measurements for LTE5 channel bandwidth at Mid channel for four modulationt types. Tested on highest power antenna port (Port 1). EUT is operated at 100% duty cycle. Note 256QAM modulation LTE5 Mid channel data is shown elsewhere in this report.

DEVIATIONS FROM TEST STANDARD

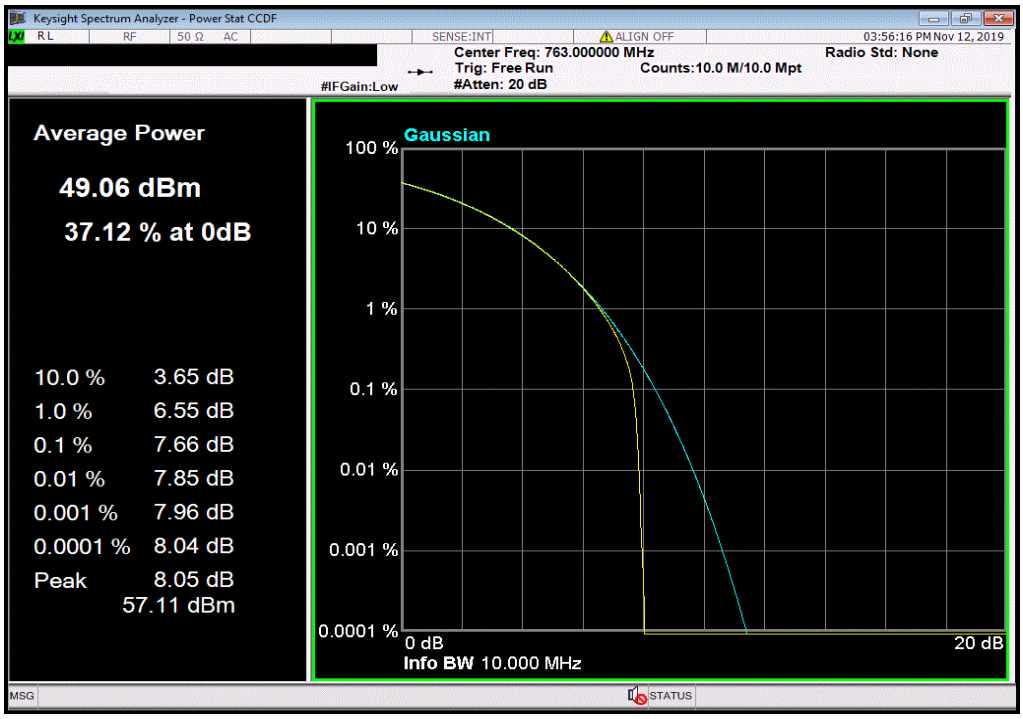
None

Configuration #	**2**	*Signature* Jonathan Kiefer

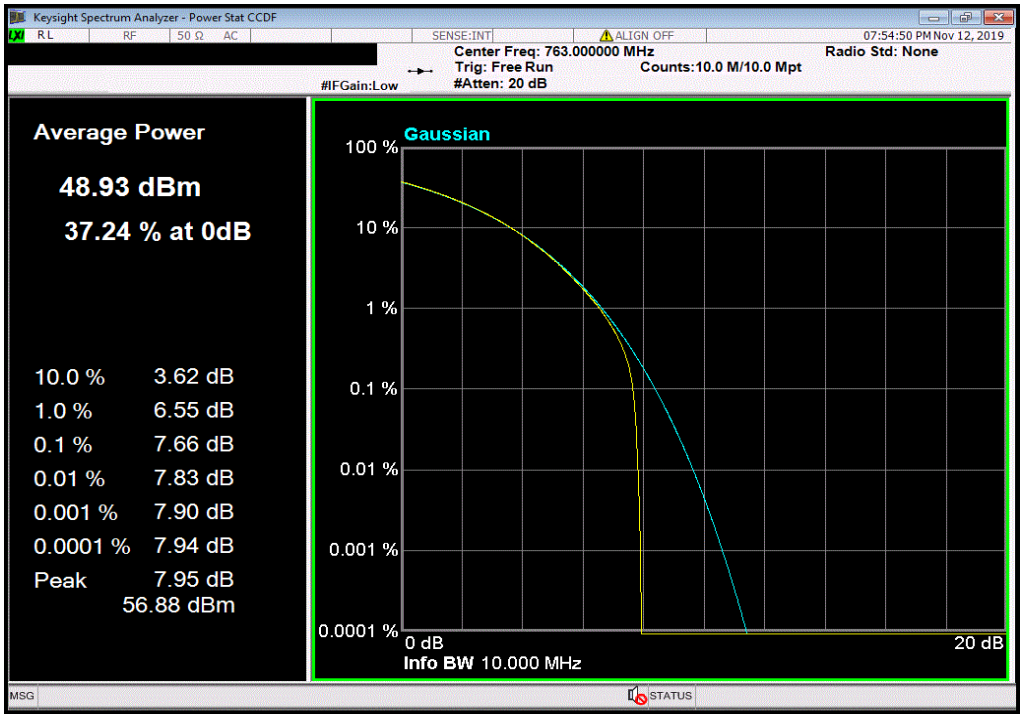
		PAPR Value (dB)	**Limit (dB)**	**Results**
Band 14				
	QPSK Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	7.66	13	Pass
	16QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	7.66	13	Pass
	64QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	7.67	13	Pass

PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 14, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.66	13	Pass



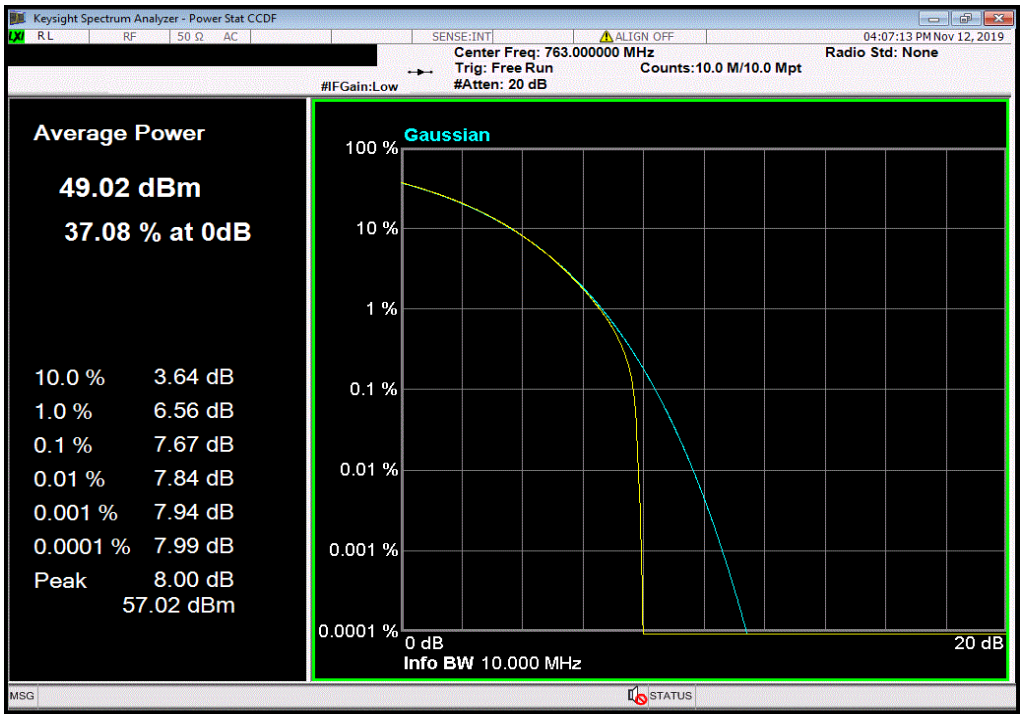
Band 14, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.66	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

TbtTx 2019.08.30.0 XMit 2019.09.05

Band 14, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.67	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% 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 measurements for 256QAM modulation type at Low, Mid and High channels for LTE5 and LTE10 channel bandwidths. Tested on highest power antenna port (Port 1). EUT is operated at 100% duty cycle. Note 256QAM LTE5 BW Mid channel data shown elsewhere in the report.

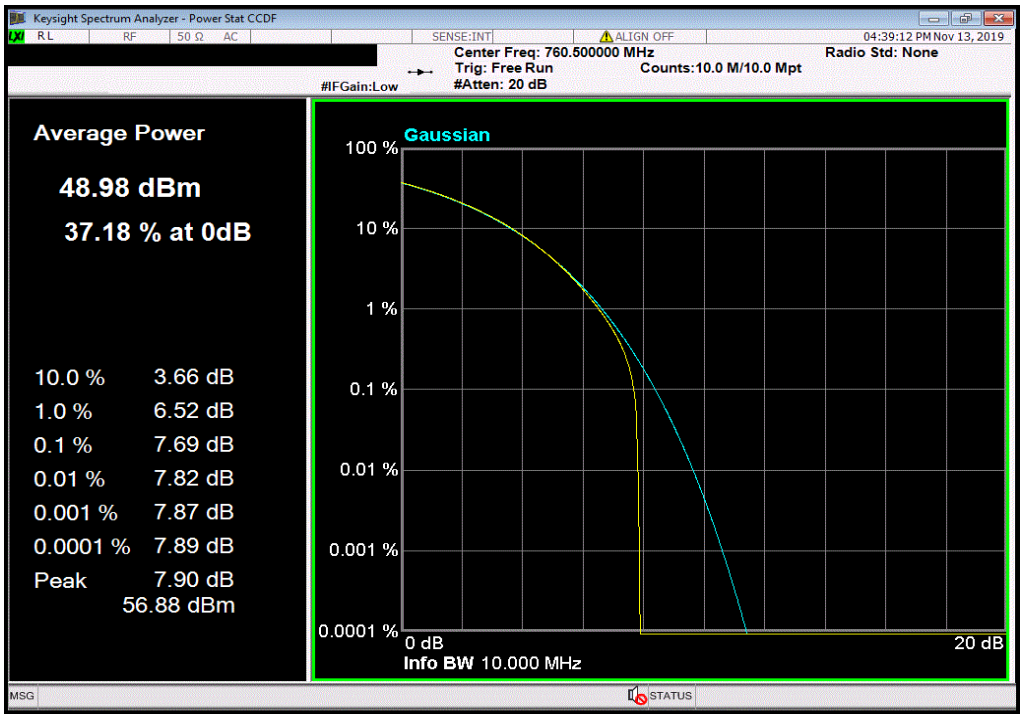
DEVIATIONS FROM TEST STANDARD

None

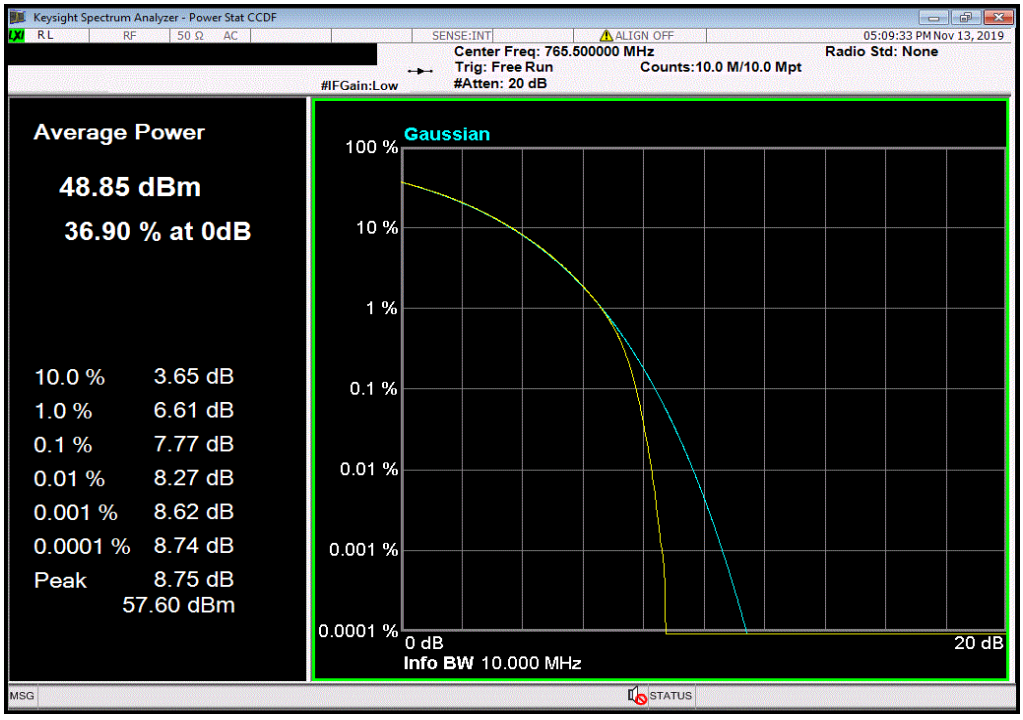
Configuration #	**2**	*Signature* Jonathan Kiefer

	PAPR Value (dB)	Limit (dB)	Results
Band 14			
256QAM Modulation			
LTE5 Bandwidth			
Low Channel, 760.5 MHz	7.69	13	Pass
High Channel, 765.5 MHz	7.77	13	Pass
LTE10 Bandwidth			
Single Channel, 763.0 MHz	7.77	13	Pass

Band 14, 256QAM Modulation, LTE5 Bandwidth, Low Channel, 760.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.69	13	Pass

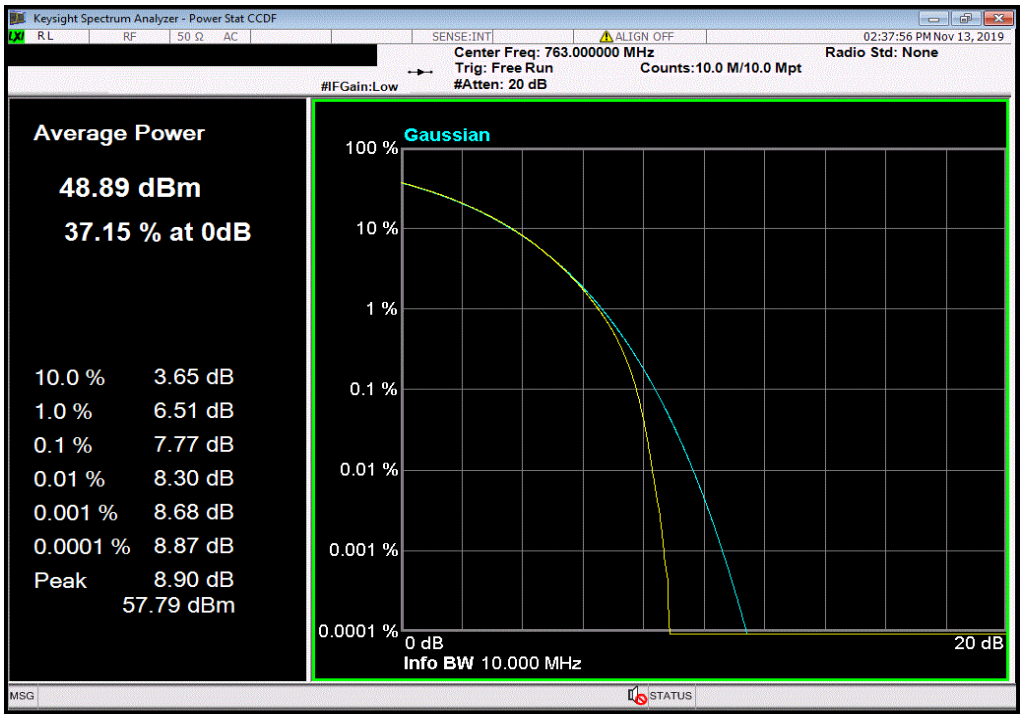


Band 14, 256QAM Modulation, LTE5 Bandwidth, High Channel, 765.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.77	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 14, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.77	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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 SPECIFICATIONS	**Test Method**
FCC 90I:2019	ANSI C63.26:2015

COMMENTS

Band 14 PAPR measurements for LTE5 channel bandwidth at Mid channel for four modulation types. Tested on highest power antenna port (Port 2). EUT is operated at 100% duty cycle.

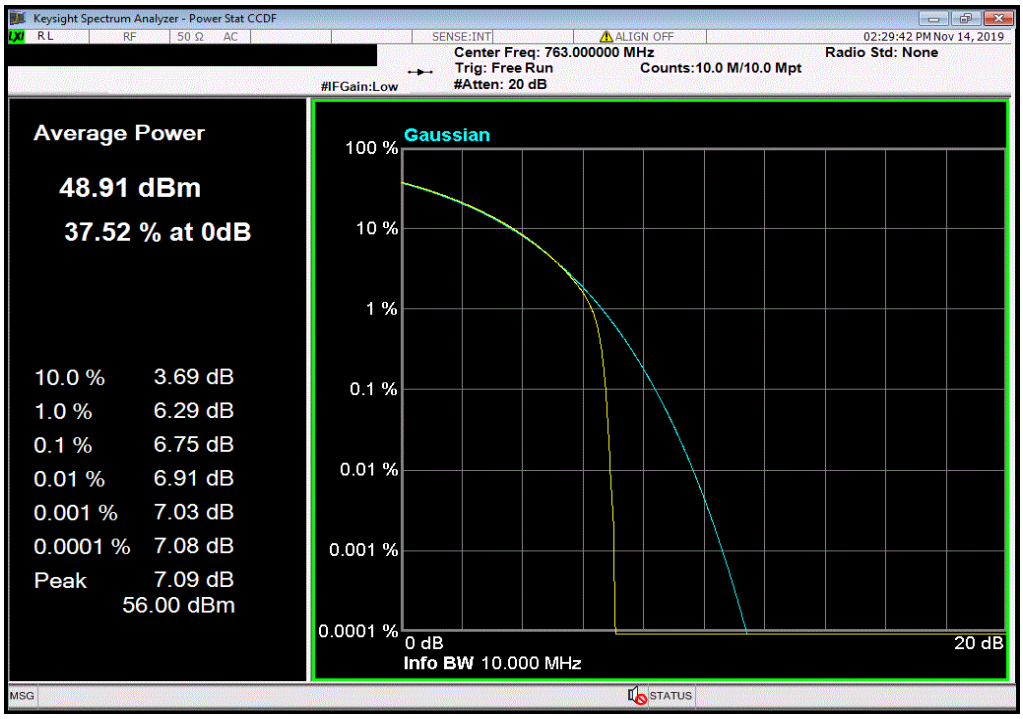
DEVIATIONS FROM TEST STANDARD

None

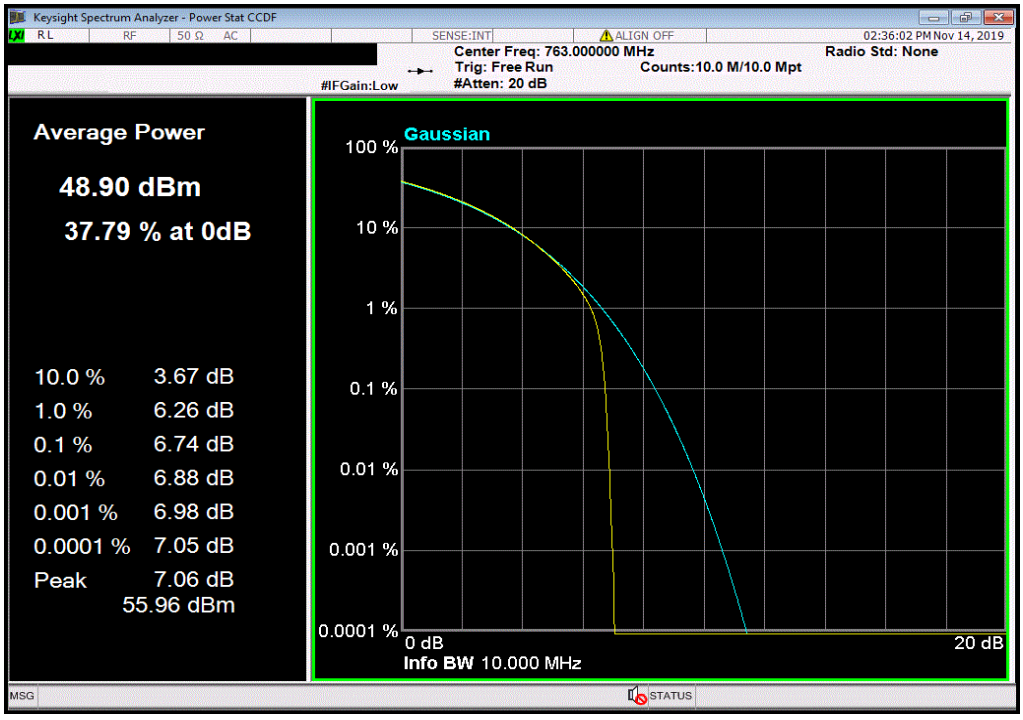
Configuration #	**2**	*Signature* Jonathan Kiefer

		PAPR Value (dB)	**Limit (dB)**	**Results**
Band 14				
	QPSK Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	6.75	13	Pass
	16QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	6.74	13	Pass
	64QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 763.0 MHz	6.75	13	Pass

Band 14, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				6.75	13	Pass

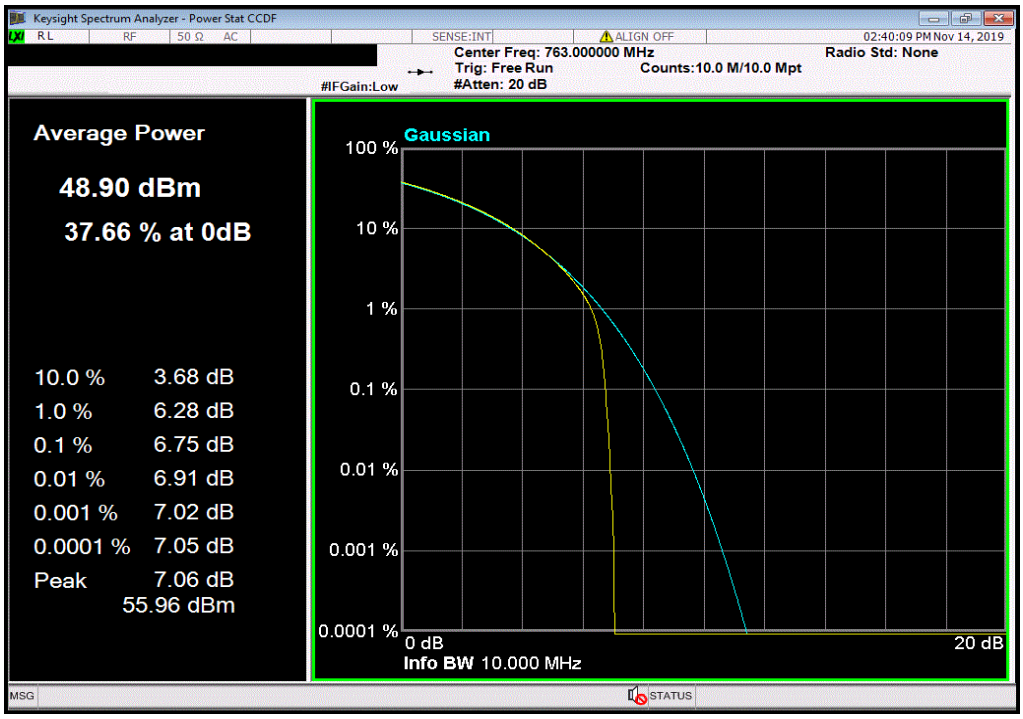


Band 14, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				6.74	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 14, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				6.75	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	
Attendees:	**John Rattanavong**			**Humidity:**	
Project:	**None**			**Barometric Pres.:**	
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 90I:2019	ANSI C63.26:2015

COMMENTS

Band 14 PAPR measurements for 256QAM modulation type at Low, Mid and High channels for LTE5 and LTE10 channel bandwidths. Tested on highest power antenna port (Port 2). EUT is operated at 100% duty cycle. Note: 256QAM LTE5 BW Mid Channel data shown elsewhere in the report.

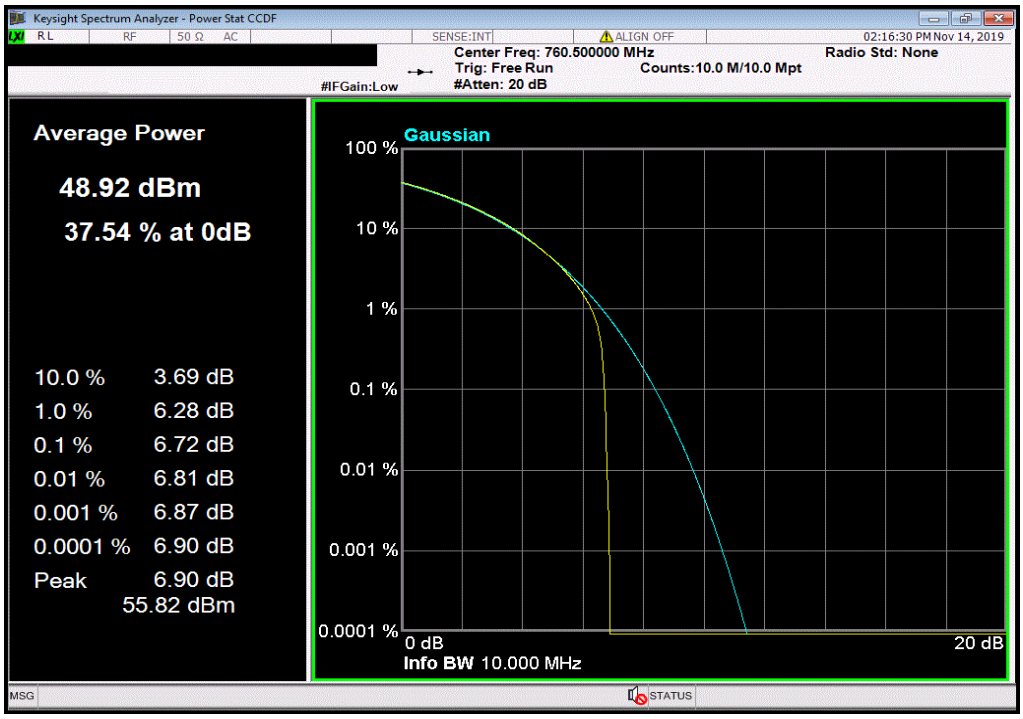
DEVIATIONS FROM TEST STANDARD

None

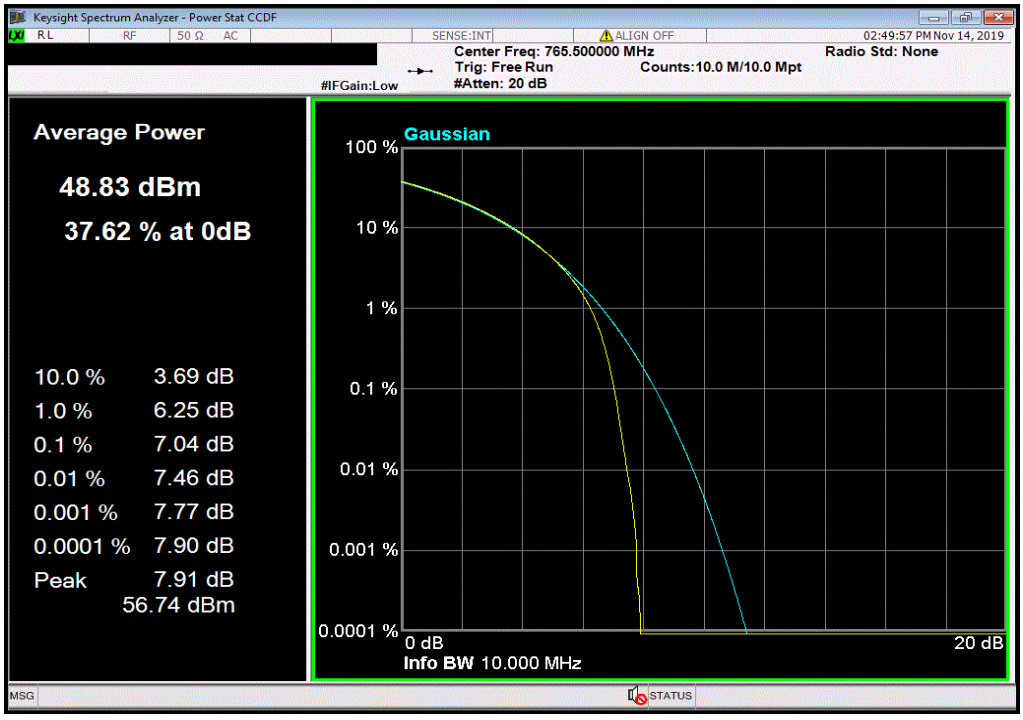
Configuration #	**2**	*Signature* Jonathan Kiefer

	PAPR Value (dB)	**Limit (dB)**	**Results**
Band 14			
256QAM Modulation			
LTE5 Bandwidth			
Low Channel, 760.5 MHz	6.72	13	Pass
High Channel, 765.5 MHz	7.04	13	Pass
LTE10 Bandwidth			
Single Channel, 763.0 MHz	7.24	13	Pass

Band 14, 256QAM Modulation, LTE5 Bandwidth, Low Channel, 760.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				6.72	13	Pass

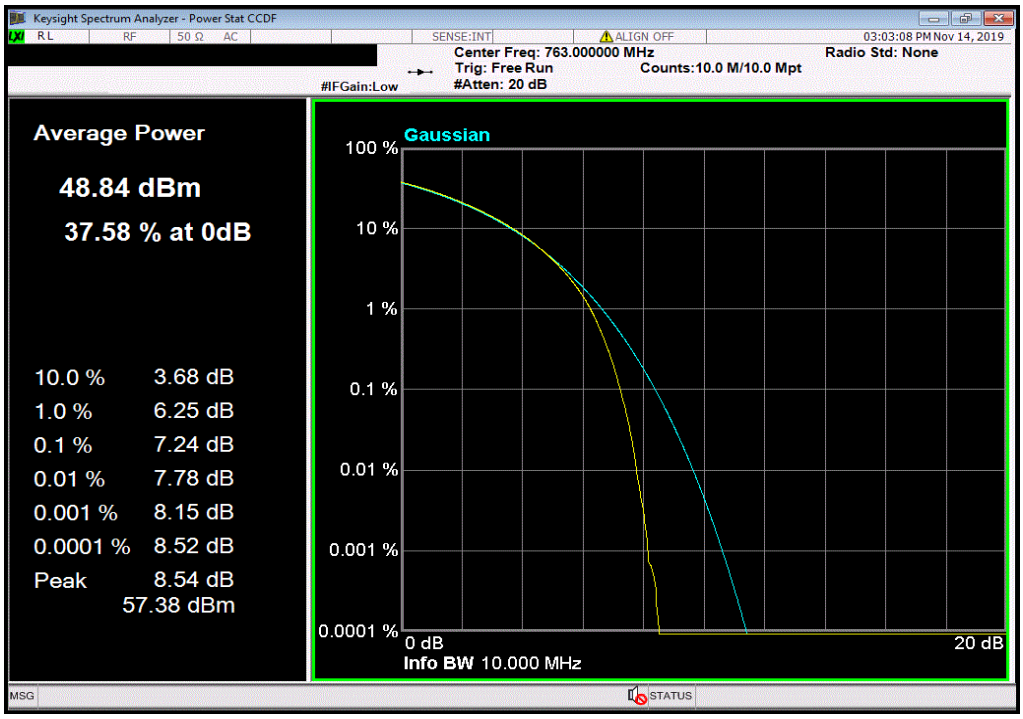


Band 14, 256QAM Modulation, LTE5 Bandwidth, High Channel, 765.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.04	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 14, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.24	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

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.

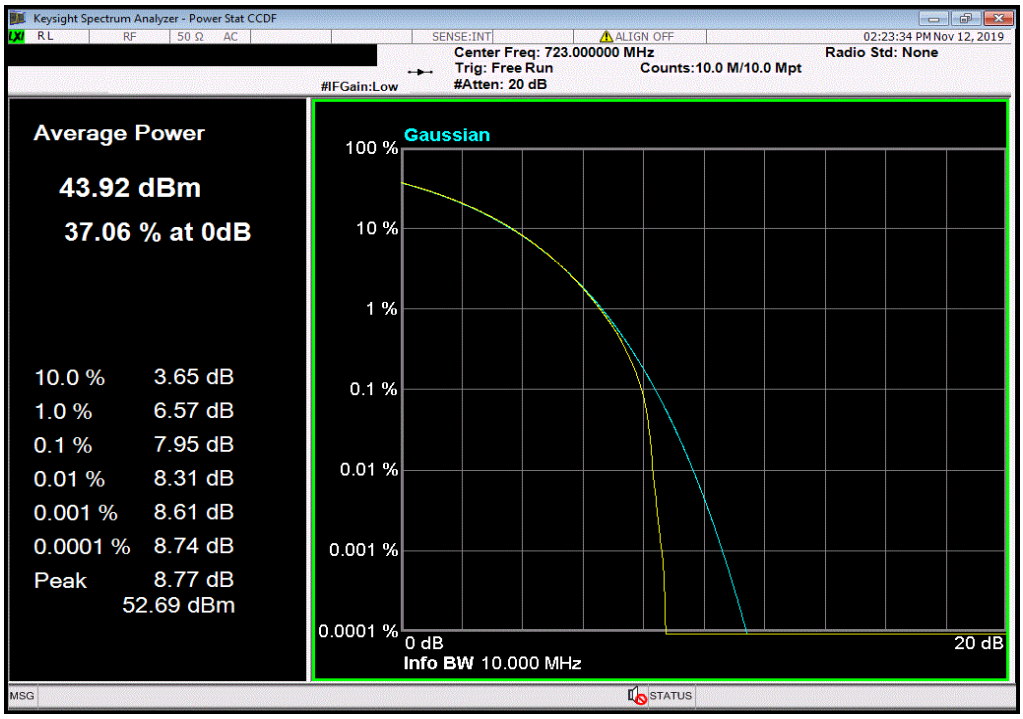
DEVIATIONS FROM TEST STANDARD

None

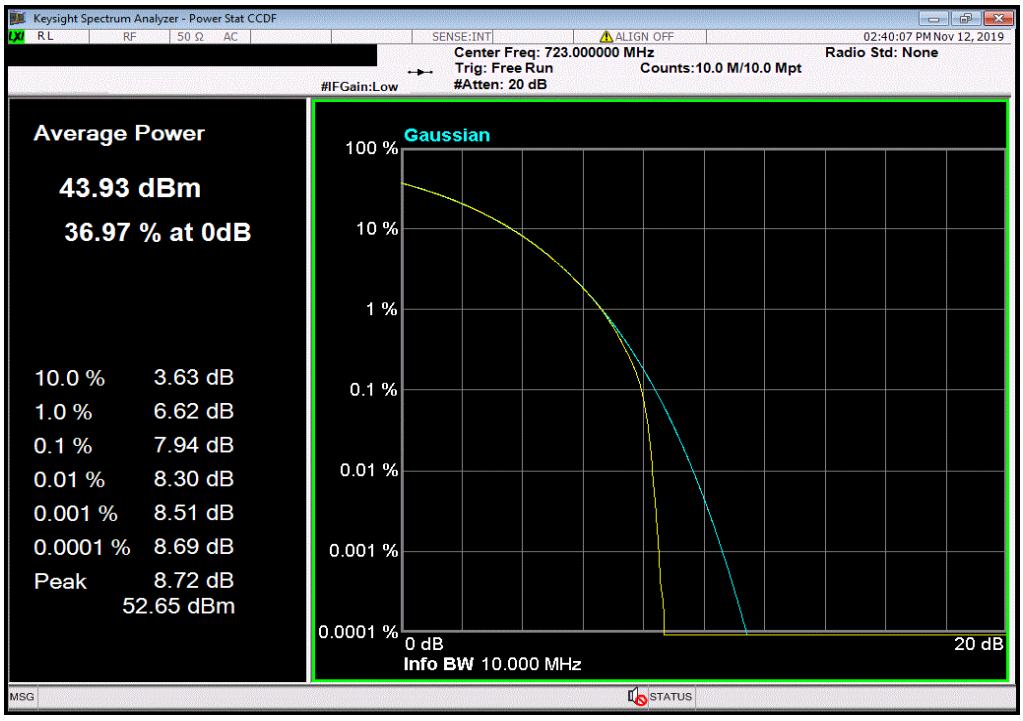
Configuration #	**2**	*Signature* Jonathan Kiefer

		PAPR Value (dB)	**Limit (dB)**	**Results**
Band 29				
256QAM Modulation				
LTE5 Bandwidth				
Mid Channel, 723.0 MHz				
	Antenna Port 1	7.95	13	Pass
	Antenna Port 4	7.94	13	Pass

Band 29, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz, Antenna Port 1						
				PAPR Value (dB)	Limit (dB)	Results
				7.95	13	Pass



Band 29, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz, Antenna Port 4						
				PAPR Value (dB)	Limit (dB)	Results
				7.94	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

Band 29 PAPR measurements for 256QAM modulation type at Low, Mid and High channels for LTE5 and LTE10 channel bandwidths. Tested on highest power antenna port (Port 1). EUT is operated at 100% duty cycle. Note: 256QAM LTE5 BW Mid channel data shown elsewhere in the report.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	**2**	*Signature* Jonathan Kiefer

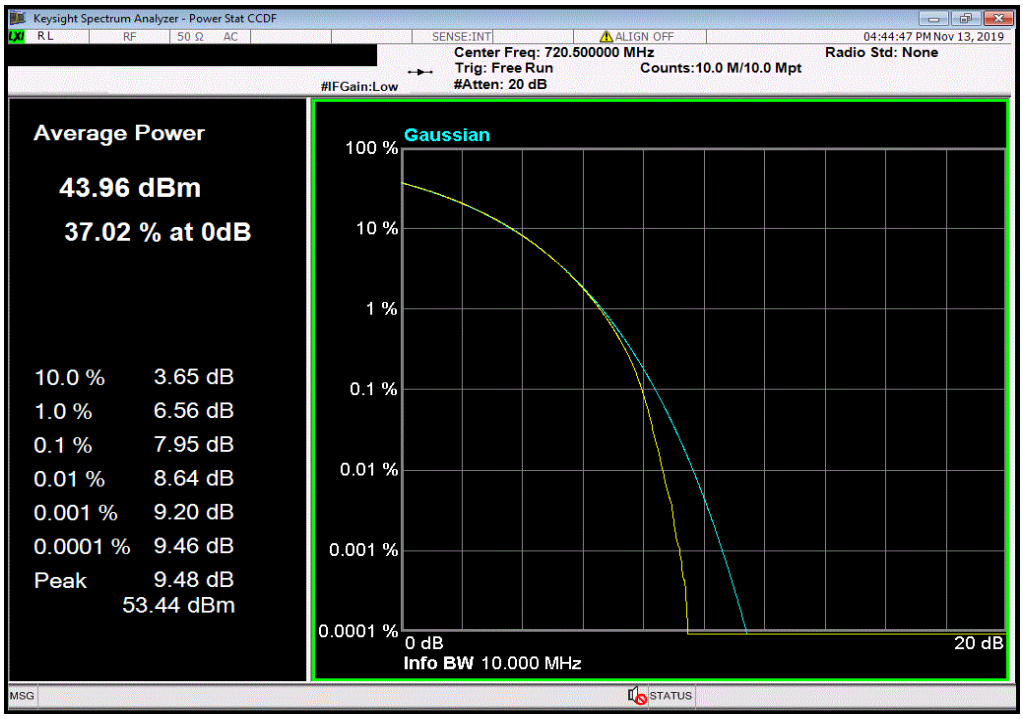
	PAPR Value (dB)	Limit (dB)	Results
Band 29			
256QAM Modulation			
LTE5 Bandwidth			
Low Channel, 720.5 MHz	7.95	13	Pass
High Channel, 725.5 MHz	8.05	13	Pass
LTE10 Bandwidth			
Single Channel, 723.0 MHz	8.1	13	Pass

PEAK-TO-AVERAGE POWER RATIO (PAPR)

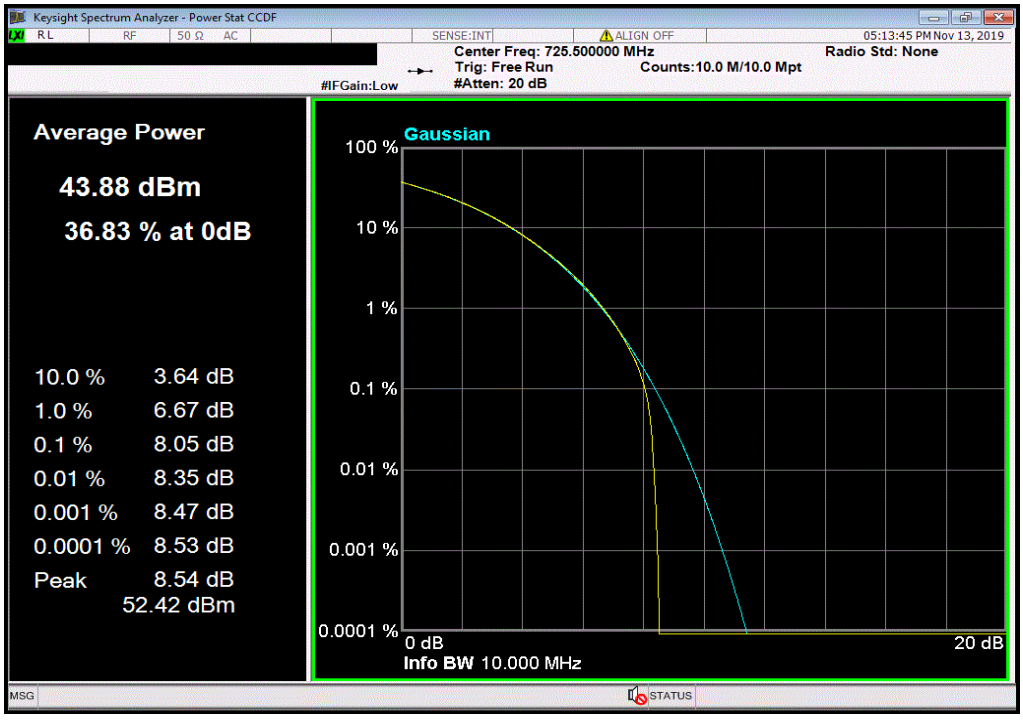
element

TbtTx 2019.08.30.0 XMit 2019.09.05

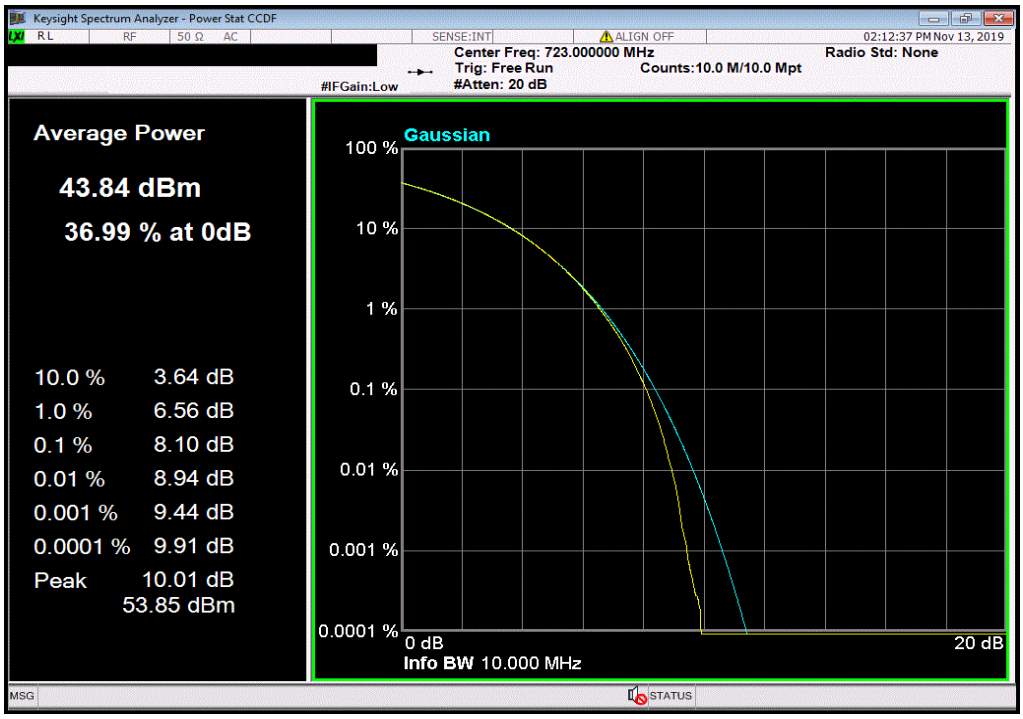
Band 29, 256QAM Modulation, LTE5 Bandwidth, Low Channel, 720.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.95	13	Pass



Band 29, 256QAM Modulation, LTE5 Bandwidth, High Channel, 725.5 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				8.05	13	Pass



Band 29, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 723.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				8.1	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

XMit 2019.09.05

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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.

PEAK-TO-AVERAGE POWER RATIO (PAPR)

element

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:**	**29.6% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

Band 29 PAPR measurements for LTE5 channel bandwidth at Mid channel for four modulation types. Tested on highest power antenna port (Port 1). EUT is operated at 100% duty cycle. Note 256QAM modulation data is shown elsewhere in the report.

DEVIATIONS FROM TEST STANDARD

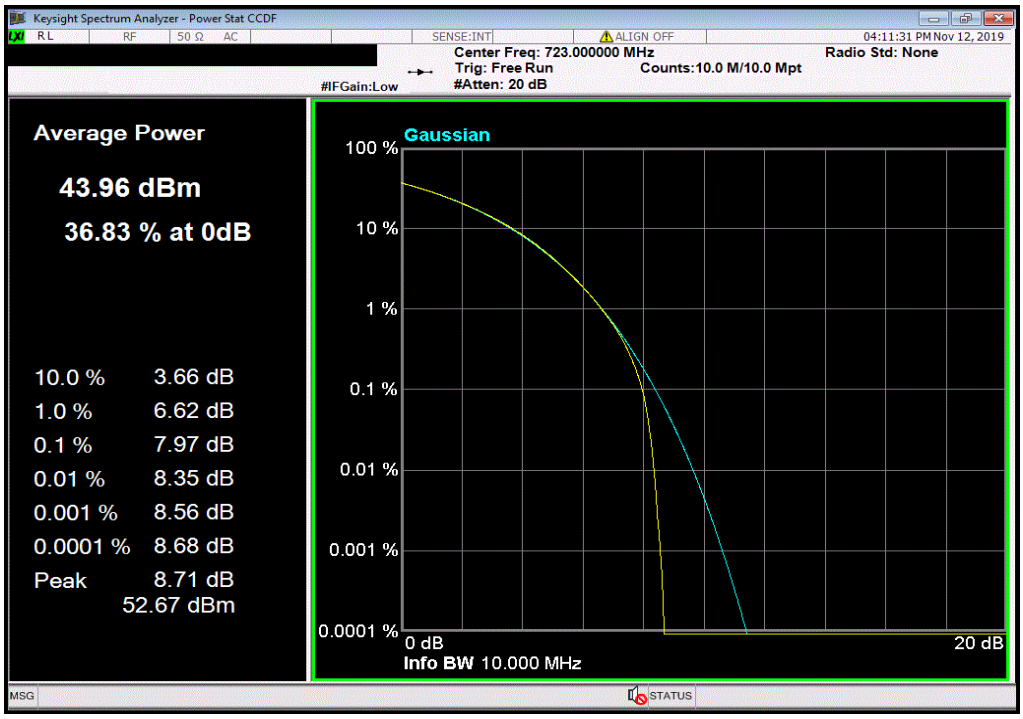
None

Configuration #	**2**	*Signature* Jonathan Kiefer

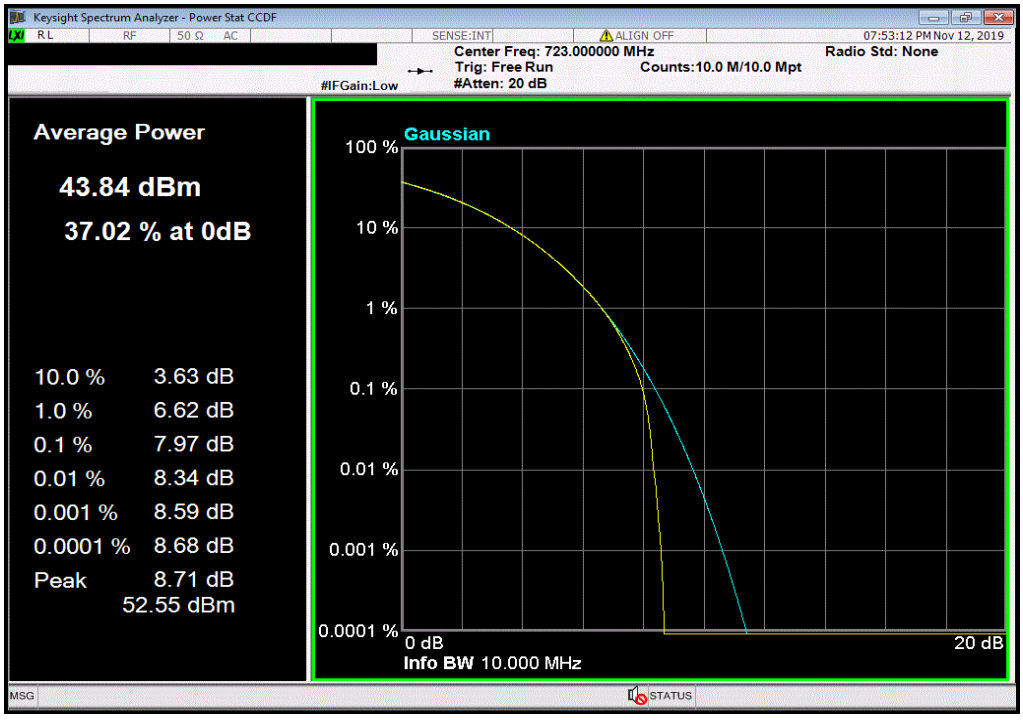
		PAPR Value (dB)	**Limit (dB)**	**Results**
Band 29				
	QPSK Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	7.97	13	Pass
	16QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	7.97	13	Pass
	64QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	7.96	13	Pass

PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 29, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.97	13	Pass

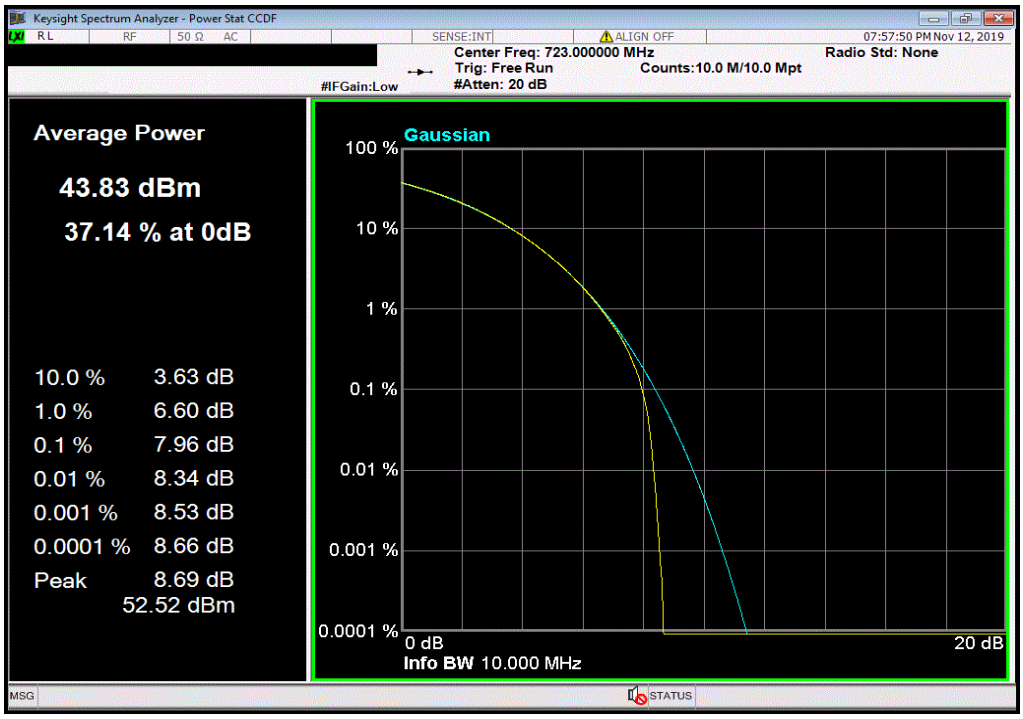


Band 29, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.97	13	Pass



PEAK-TO-AVERAGE POWER RATIO (PAPR)

Band 29, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				PAPR Value (dB)	Limit (dB)	Results
				7.96	13	Pass



OCCUPIED BANDWIDTH

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 1

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

OCCUPIED BANDWIDTH

element

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:**	**29.6% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

Band 12 emission bandwidth measurements for four modulation types at mid channel for LTE5 and LTE10 bandwidths. Tested on highest power antenna port (Port 1). EUT is operated at 100% duty cycle.

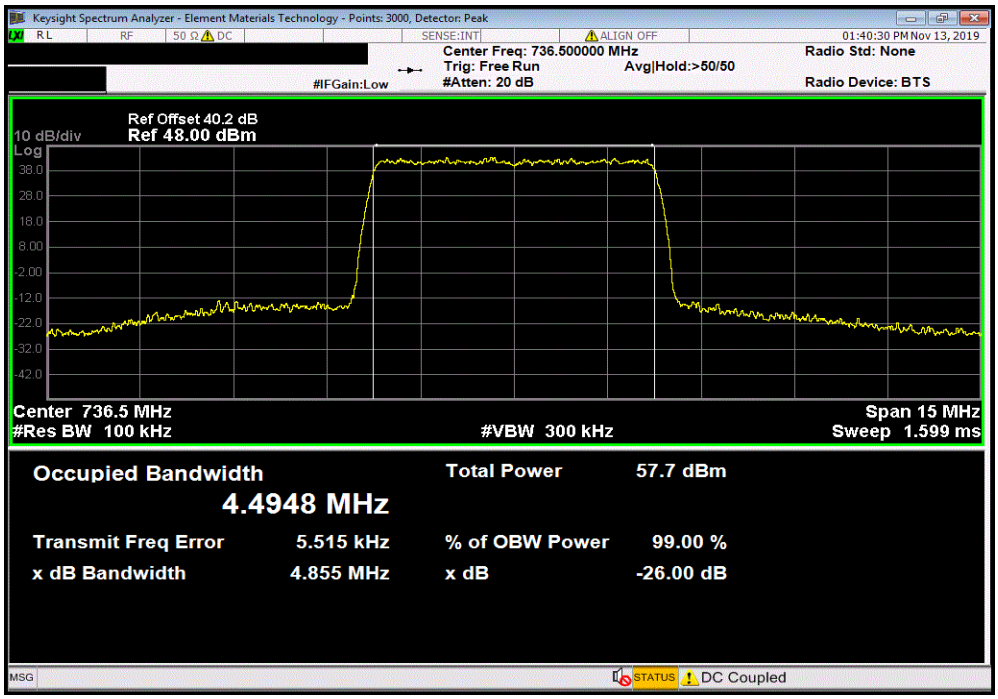
DEVIATIONS FROM TEST STANDARD

None

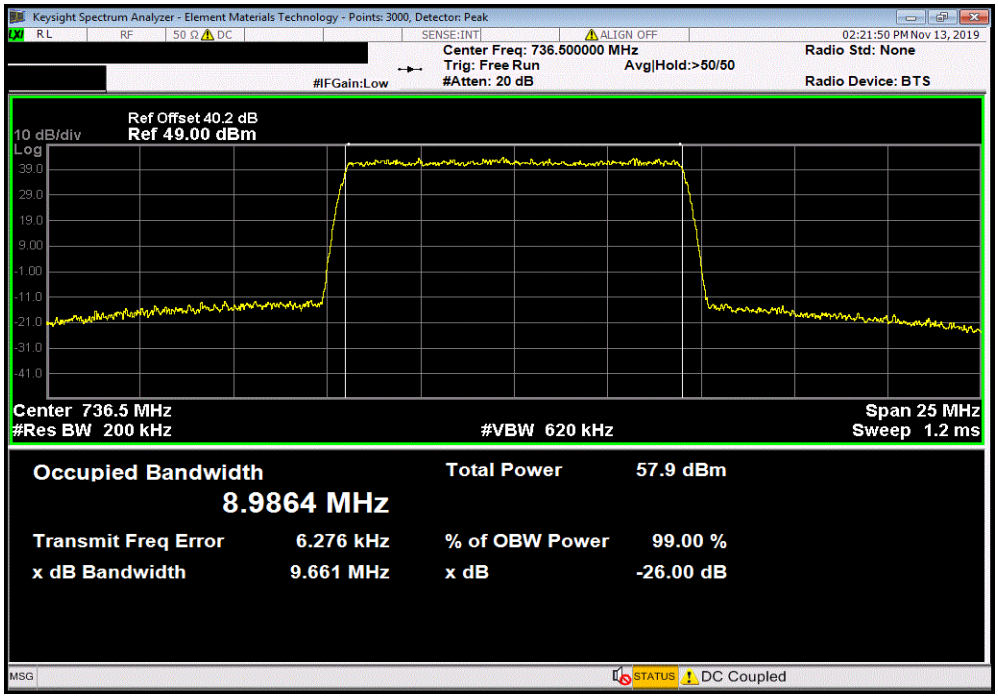
Configuration #	**2**	*Signature* Jonathan Kiefer

	Value (MHz)	Limit	Result
Band 12			
QPSK Modulation			
LTE5 Bandwidth			
Mid Channel, 736.5 MHz	4.855 MHz	Within Band	Pass
LTE10 Bandwidth			
Mid Channel, 736.5 MHz	9.661 MHz	Within Band	Pass
16QAM Modulation			
LTE5 Bandwidth			
Mid Channel, 736.5 MHz	4.845 MHz	Within Band	Pass
LTE10 Bandwidth			
Mid Channel, 736.5 MHz	9.658 MHz	Within Band	Pass
64QAM Modulation			
LTE5 Bandwidth			
Mid Channel, 736.5 MHz	4.865 MHz	Within Band	Pass
LTE10 Bandwidth			
Mid Channel, 736.5 MHz	9.648 MHz	Within Band	Pass
256QAM Modulation			
LTE5 Bandwidth			
Mid Channel, 736.5 MHz	4.884 MHz	Within Band	Pass
LTE10 Bandwidth			
Mid Channel, 736.5 MHz	9.668 MHz	Within Band	Pass

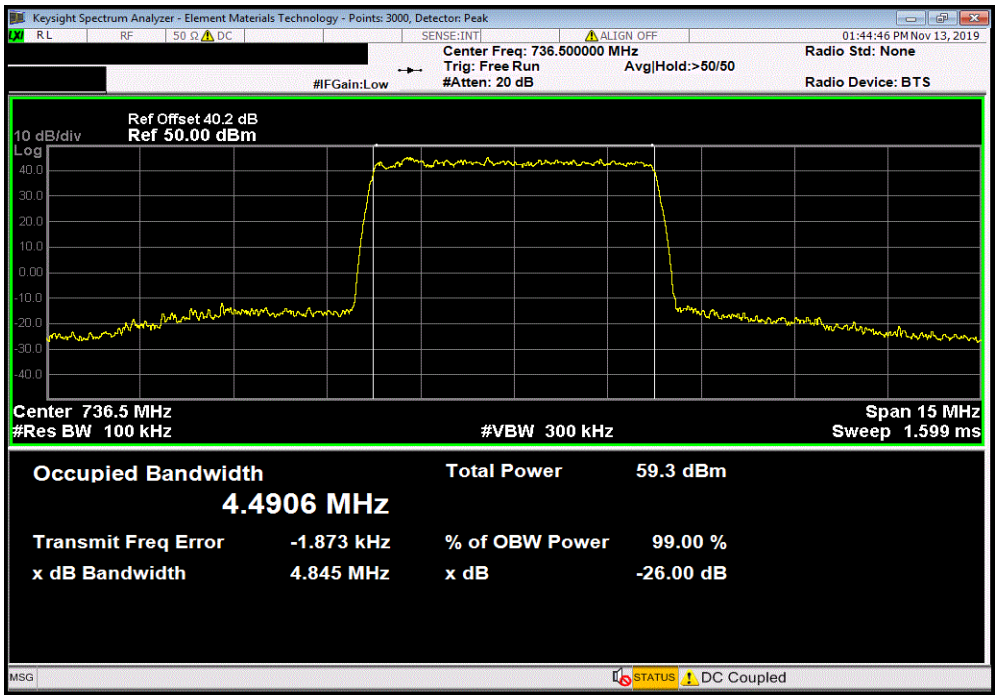
Band 12, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.855 MHz	Within Band	Pass



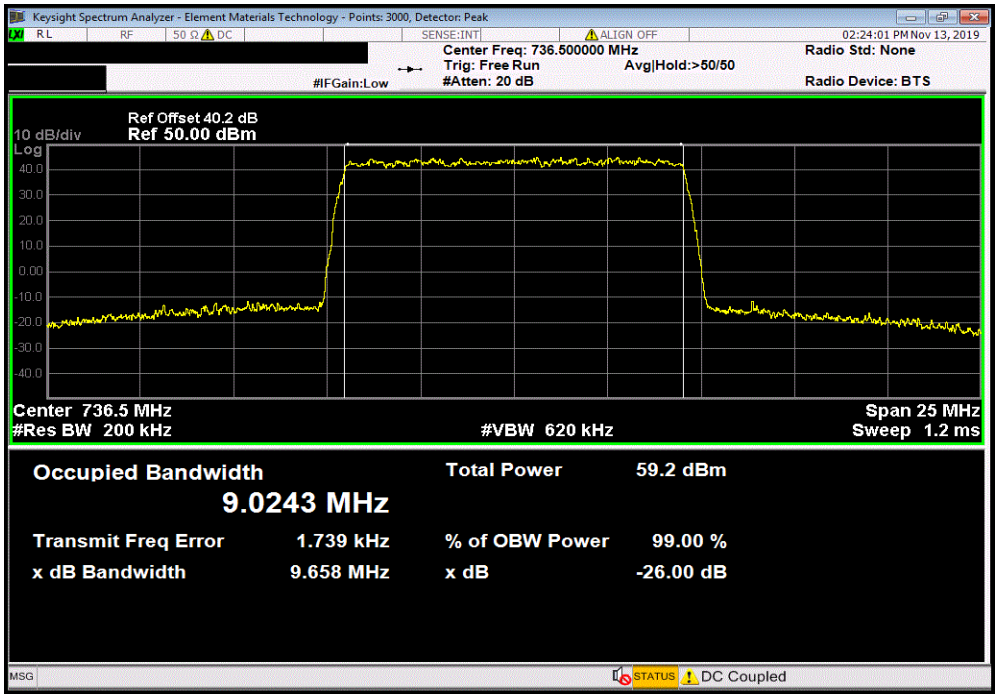
Band 12, QPSK Modulation, LTE10 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.661 MHz	Within Band	Pass



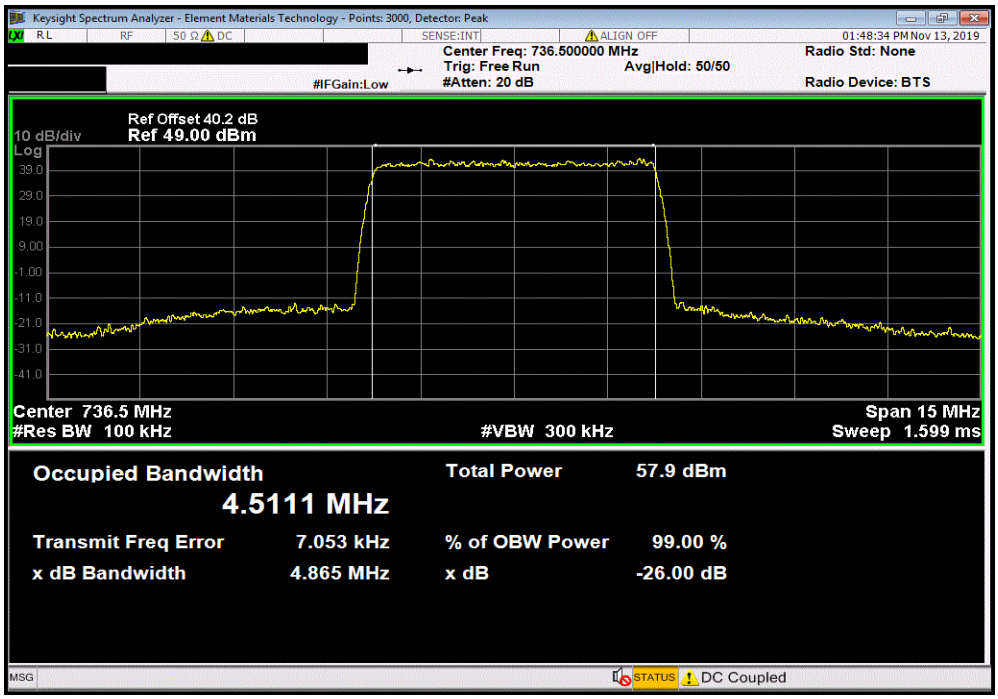
Band 12, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.845 MHz	Within Band	Pass



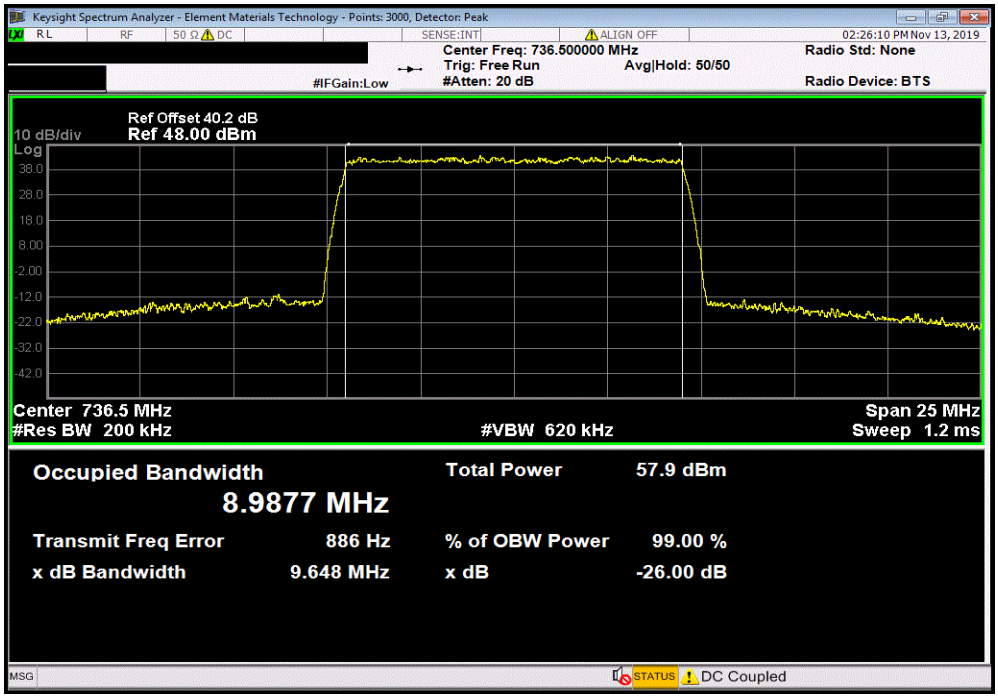
Band 12, 16QAM Modulation, LTE10 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.658 MHz	Within Band	Pass



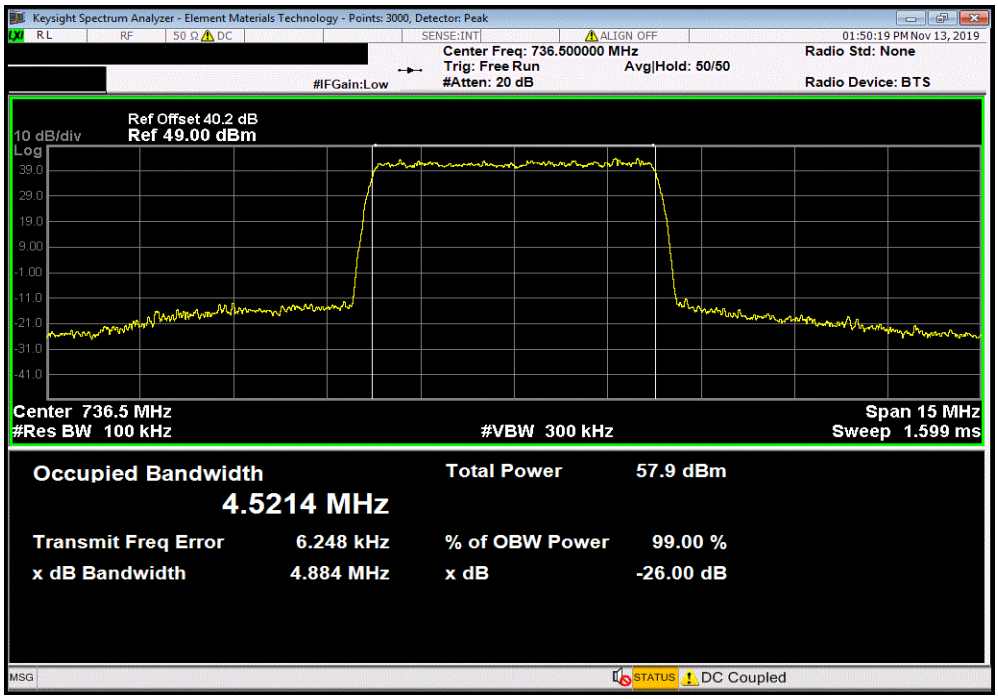
Band 12, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.865 MHz	Within Band	Pass



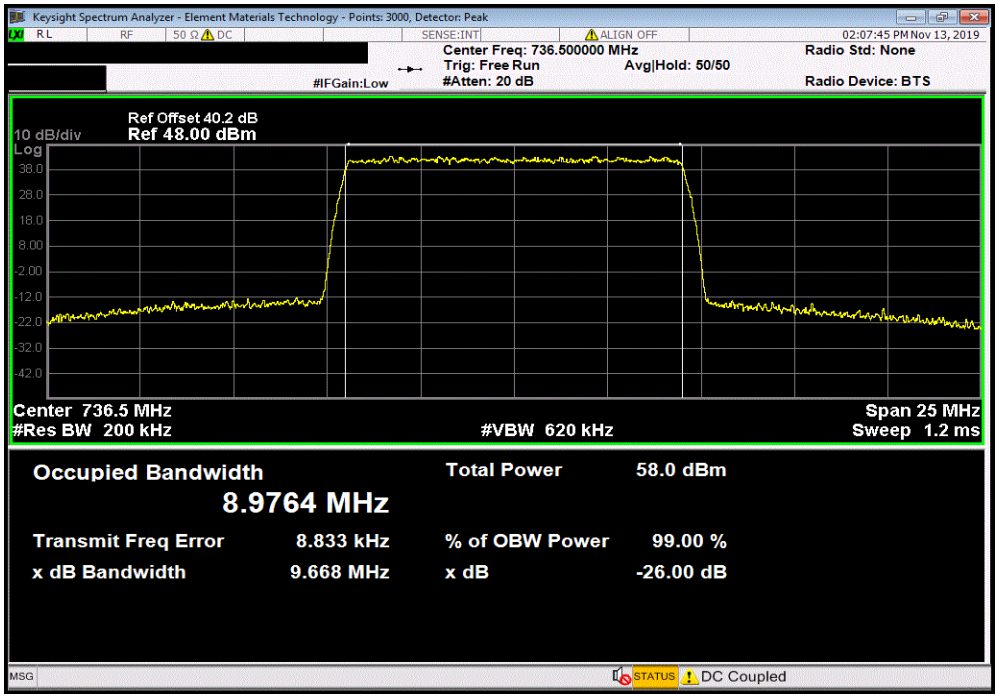
Band 12, 64QAM Modulation, LTE10 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.648 MHz	Within Band	Pass



Band 12, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.884 MHz	Within Band	Pass



Band 12, 256QAM Modulation, LTE10 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.668 MHz	Within Band	Pass



OCCUPIED BANDWIDTH

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 Bandwidth	**LTE-QPSK**	**LTE-16QAM**	**LTE-64QAM**	**LTE-256QAM**
5M	4M86F9W	4M83F9W	4M86F9W	4M89F9W
10M	9M67F9W	9M67F9W	9M71F9W	9M67F9W
Note: Based on 26dB emission bandwidth				

OCCUPIED BANDWIDTH

element

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 SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

Band 12 emission bandwidth measurements for four modulation types at Mid channel for two channel bandwidths. Tested at highest power antenna port (Port 2). EUT is operated at 100% duty cycle.

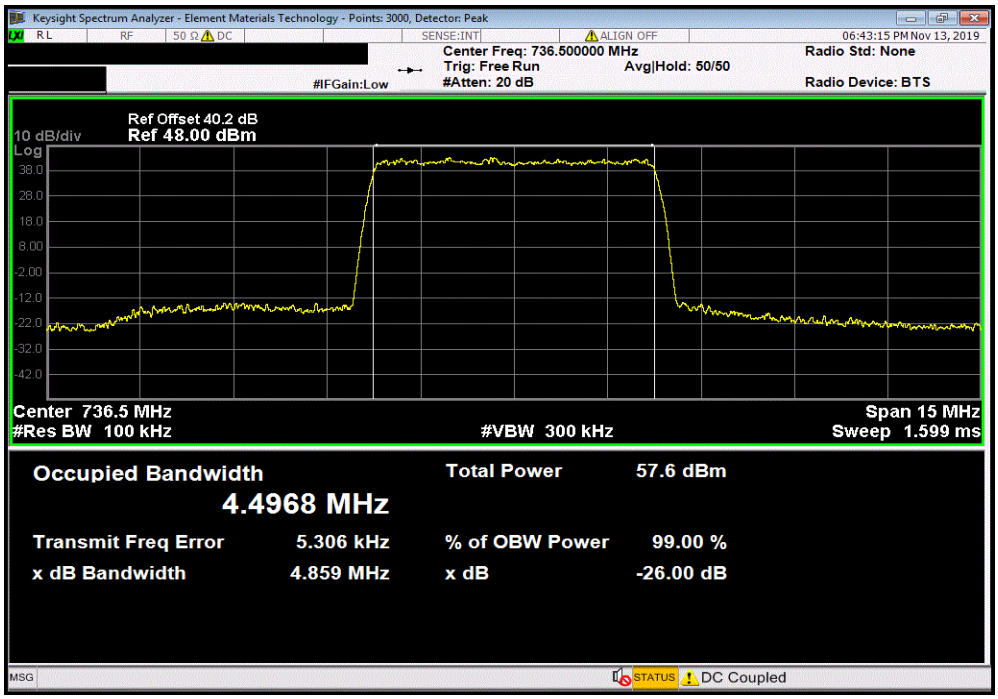
DEVIATIONS FROM TEST STANDARD

None

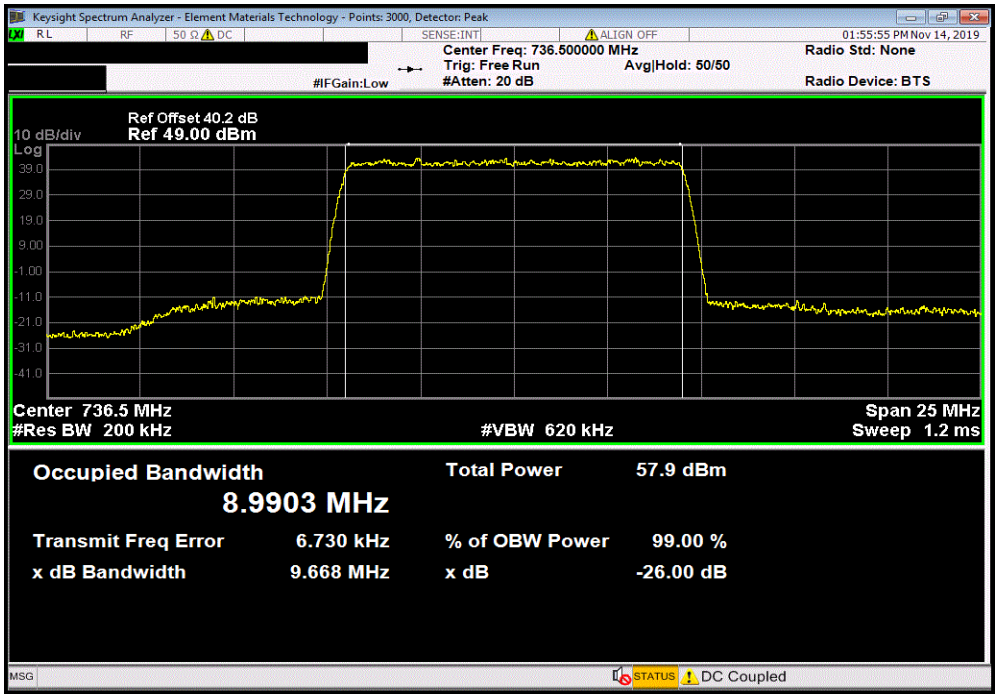
Configuration #	**2**	*Signature* Jonathan Kiefer

		Value (MHz)	**Limit**	**Result**
Band 12				
	QPSK Modulation			
	LTE5 Bandwidth			
	Mid Channel, 736.5 MHz	4.859 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 736.5 MHz	9.668 MHz	Within Band	Pass
	16QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 736.5 MHz	4.826 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 736.5 MHz	9.673 MHz	Within Band	Pass
	64QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 736.5 MHz	4.859 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 736.5 MHz	9.712 MHz	Within Band	Pass
	256QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 736.5 MHz	4.893 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 736.5 MHz	9.668 MHz	Within Band	Pass

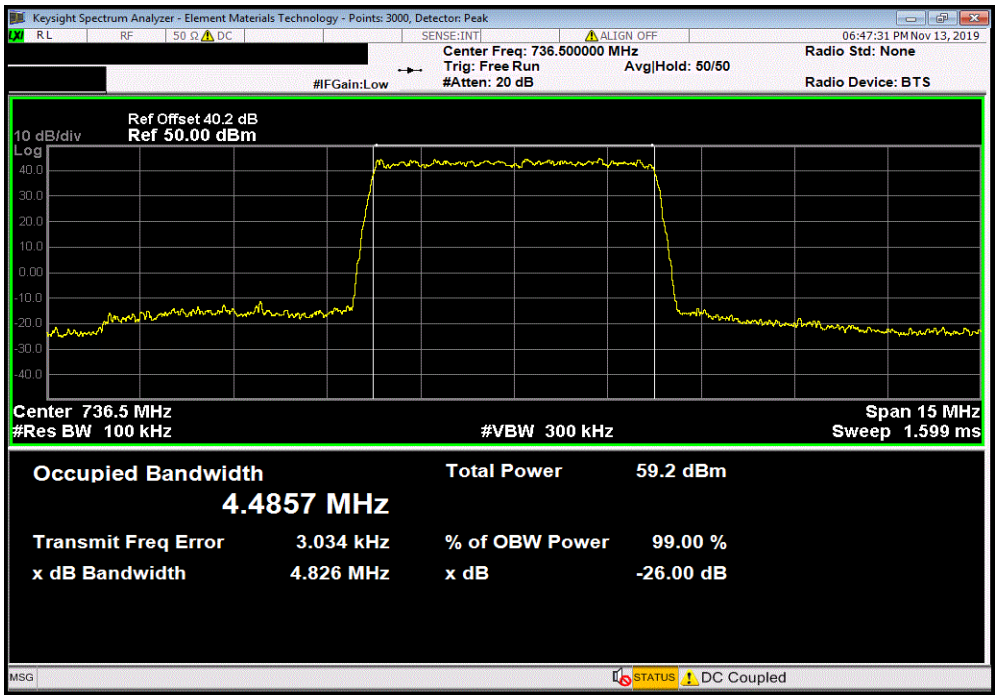
Band 12, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.859 MHz	Within Band	Pass



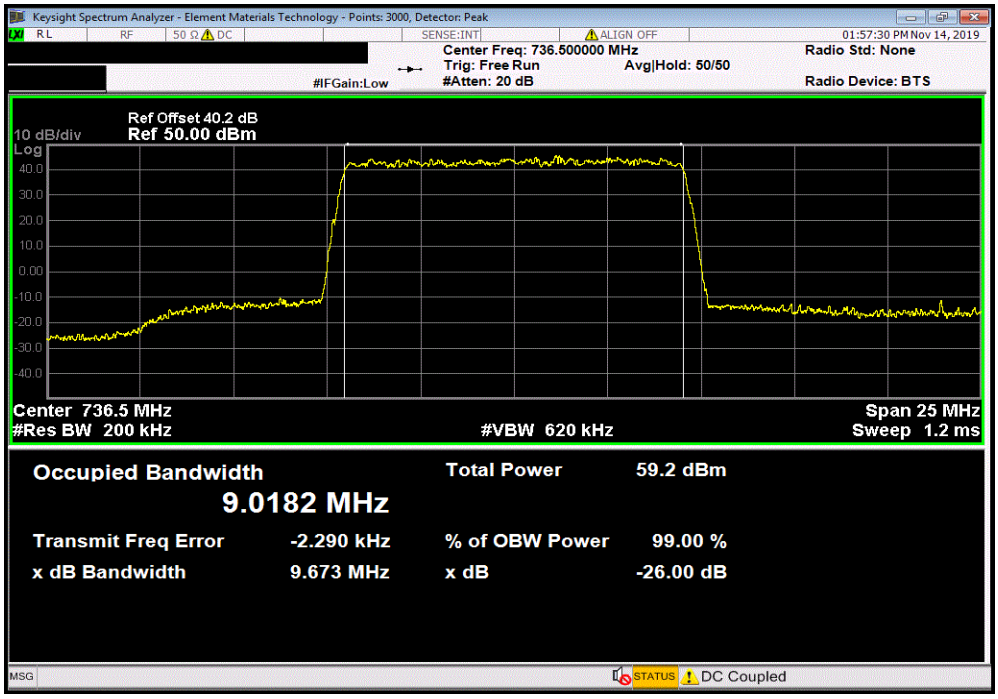
Band 12, QPSK Modulation, LTE10 Bandwidth, Single Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.668 MHz	Within Band	Pass



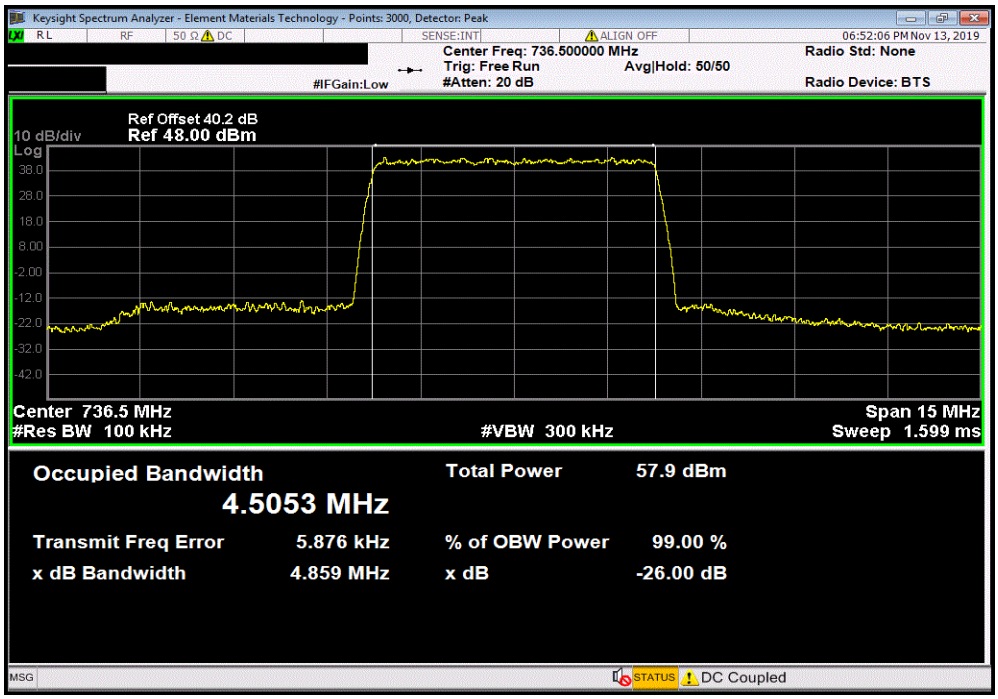
Band 12, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.826 MHz	Within Band	Pass



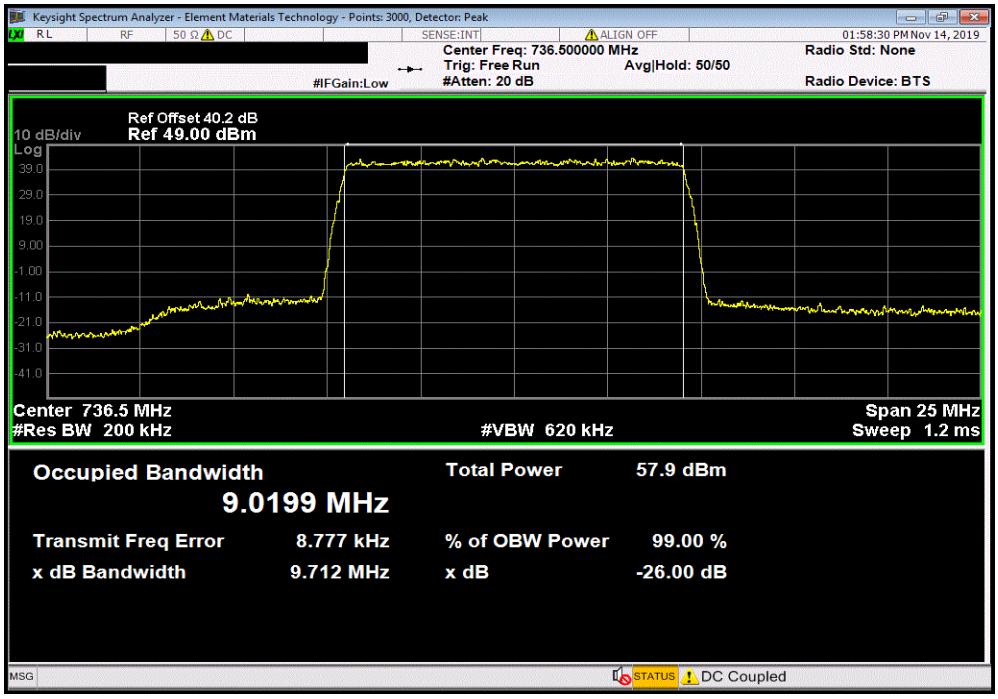
Band 12, 16QAM Modulation, LTE10 Bandwidth, Single Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.673 MHz	Within Band	Pass



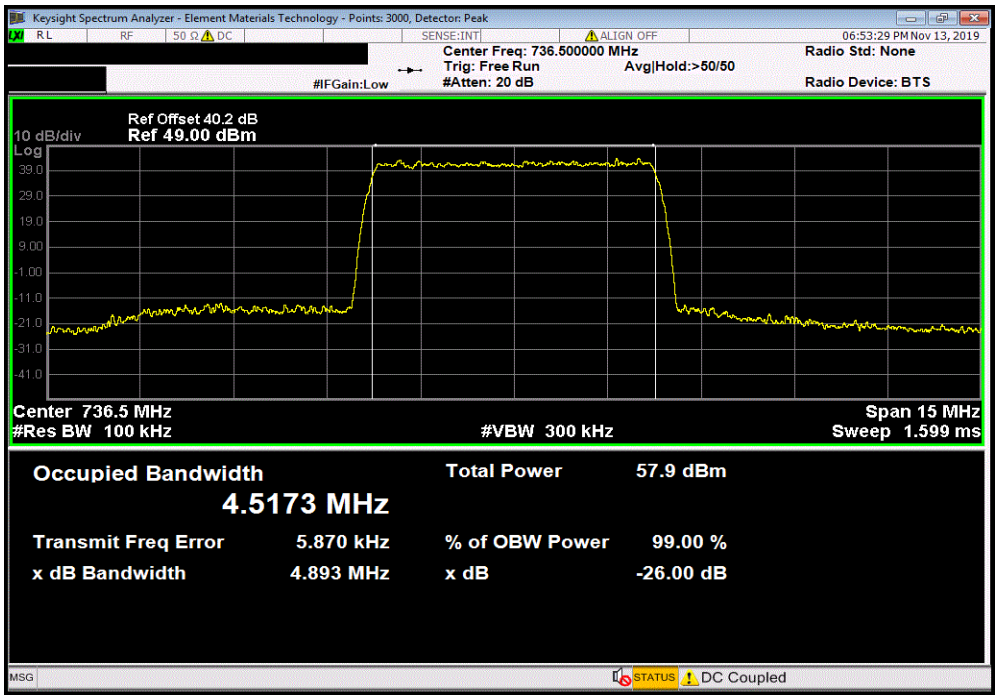
Band 12, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.859 MHz	Within Band	Pass



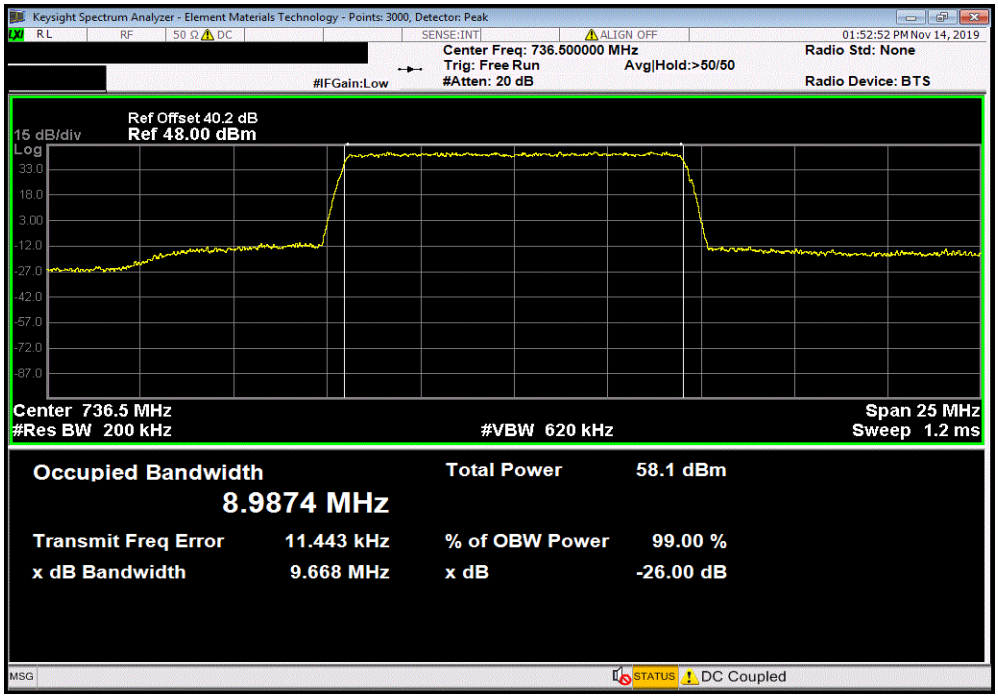
Band 12, 64QAM Modulation, LTE10 Bandwidth, Single Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.712 MHz	Within Band	Pass



Band 12, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				4.893 MHz	Within Band	Pass



Band 12, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 736.5 MHz						
				Value (MHz)	Limit	Result
				9.668 MHz	Within Band	Pass



OCCUPIED BANDWIDTH

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 14 Emission Designators for Port 1

Band 14 (758MHz to 768MHz) Emission Designators				
Channel Bandwidth	**LTE-QPSK**	**LTE-16QAM**	**LTE-64QAM**	**LTE-256QAM**
5M	4M86F9W	4M83F9W	4M85F9W	4M86F9W
10M	9M58F9W	9M59F9W	9M57F9W	9M55F9W
Note: Based on 26dB emission bandwidth				

OCCUPIED BANDWIDTH

element

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:**	**29.6% 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 emission bandwidth measurements for four modulation types at Mid chanel for two channel bandwidths. Tested at highest power antenna port (Port 1). EUT is operated at 100% duty cycle.

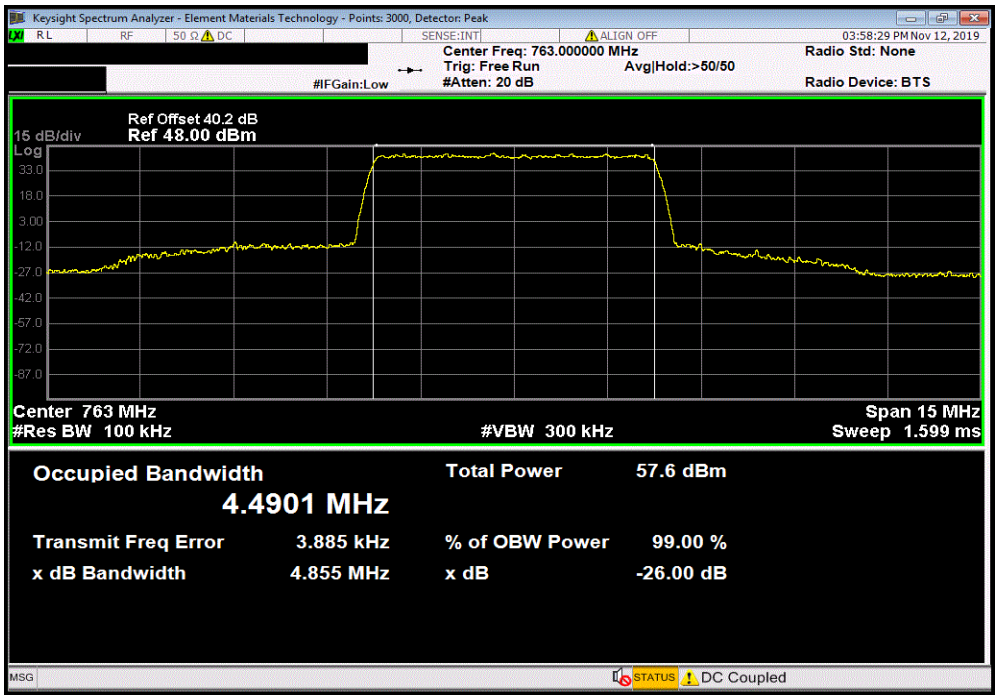
DEVIATIONS FROM TEST STANDARD

None

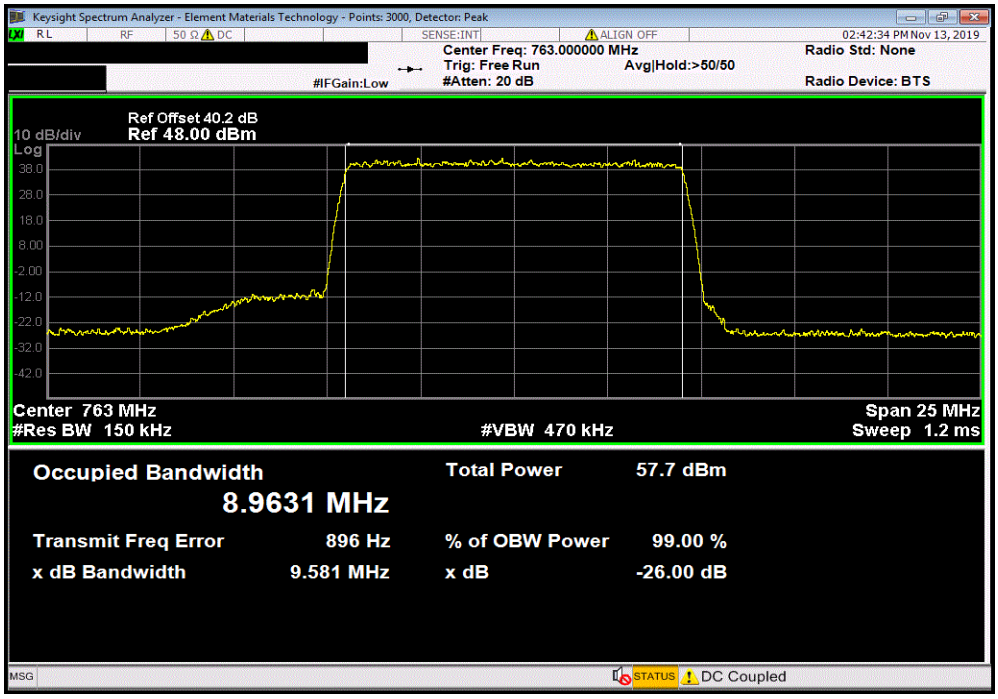
Configuration #	**2**	*Signature* Jonathan Kiefer

		Value (MHz)	**Limit**	**Result**
Band 14				
QPSK Modulation				
LTE5 Bandwidth				
	Mid Channel, 763.0 MHz	4.855 MHz	Within Band	Pass
LTE10 Bandwidth				
	Single Channel, 763.0 MHz	9.581 MHz	Within Band	Pass
16QAM Modulation				
LTE5 Bandwidth				
	Mid Channel, 763.0 MHz	4.828 MHz	Within Band	Pass
LTE10 Bandwidth				
	Single Channel, 763.0 MHz	9.588 MHz	Within Band	Pass
64QAM Modulation				
LTE5 Bandwidth				
	Mid Channel, 763.0 MHz	4.853 MHz	Within Band	Pass
LTE10 Bandwidth				
	Single Channel, 763.0 MHz	9.565 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	9.554 MHz	Within Band	Pass

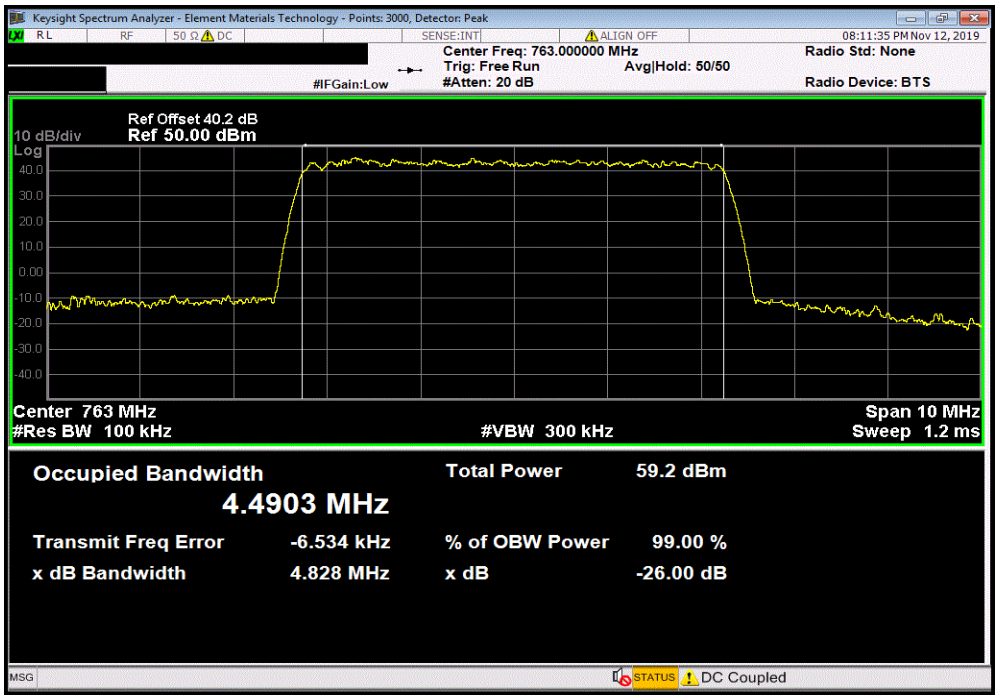
Band 14, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.855 MHz	Within Band	Pass



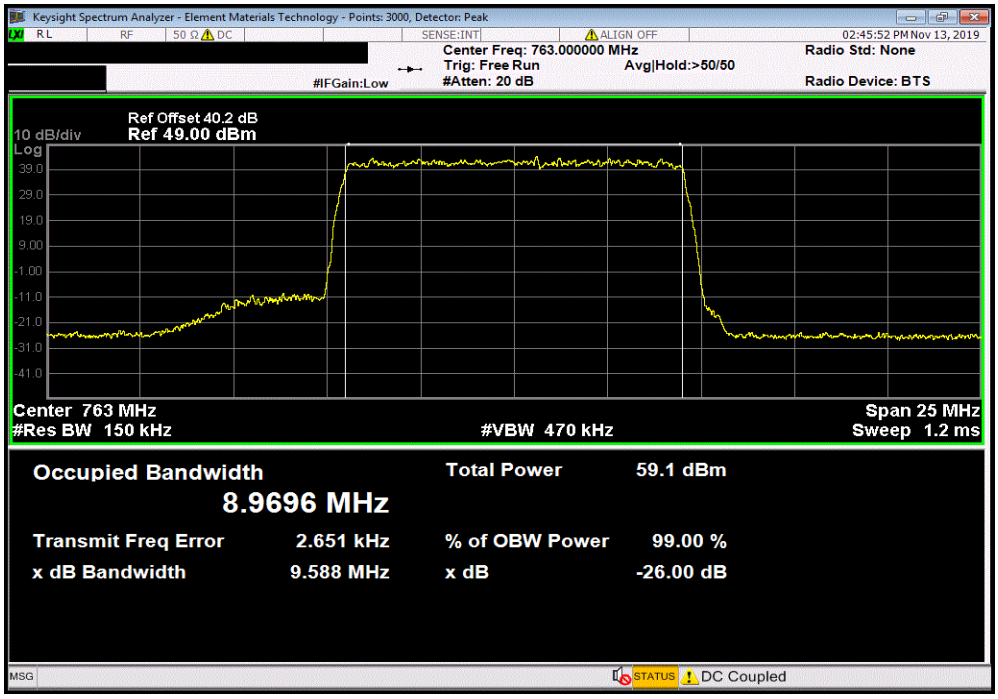
Band 14, QPSK Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.581 MHz	Within Band	Pass



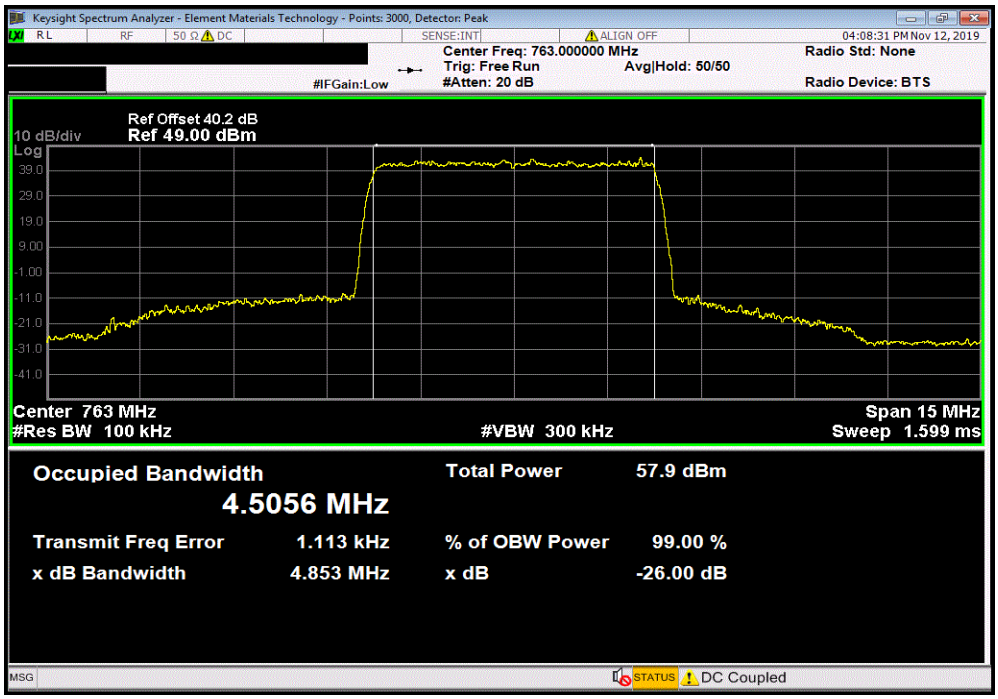
Band 14, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.828 MHz	Within Band	Pass



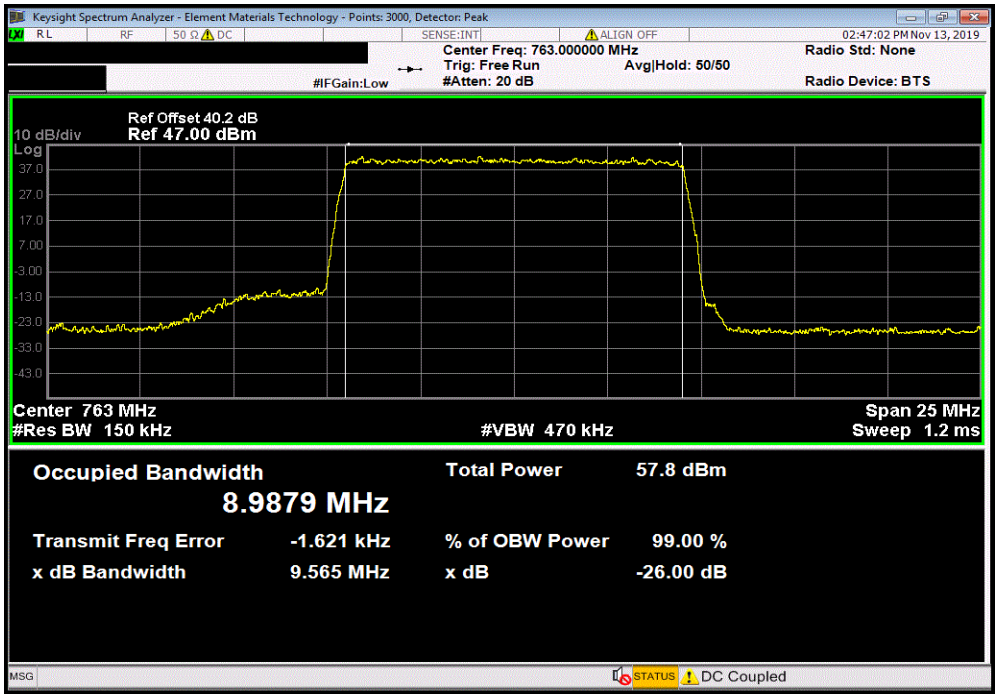
Band 14, 16QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.588 MHz	Within Band	Pass



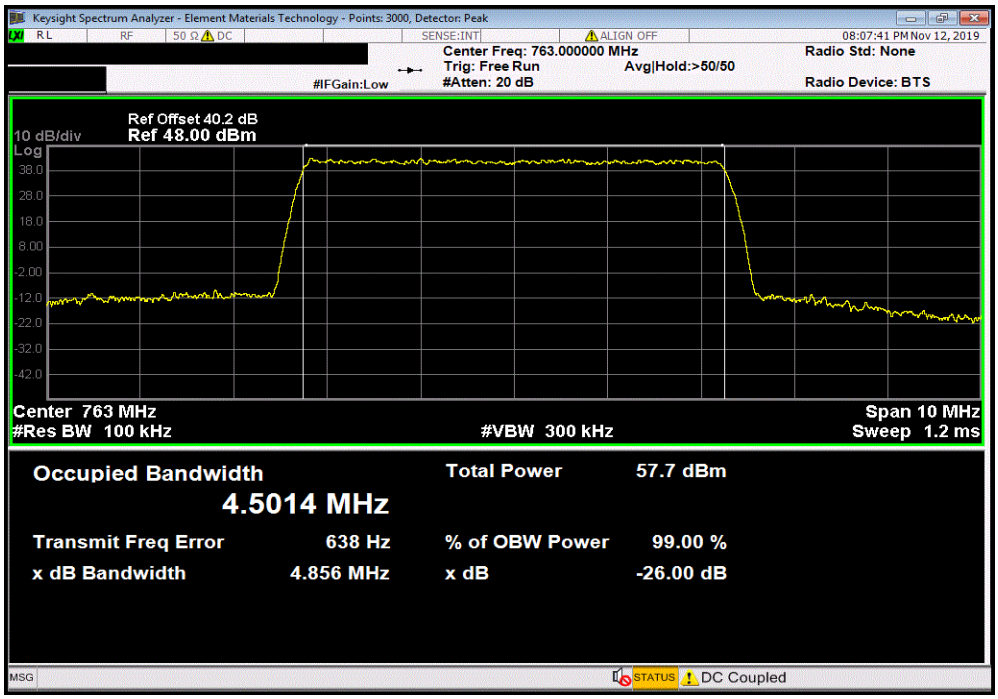
Band 14, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.853 MHz	Within Band	Pass



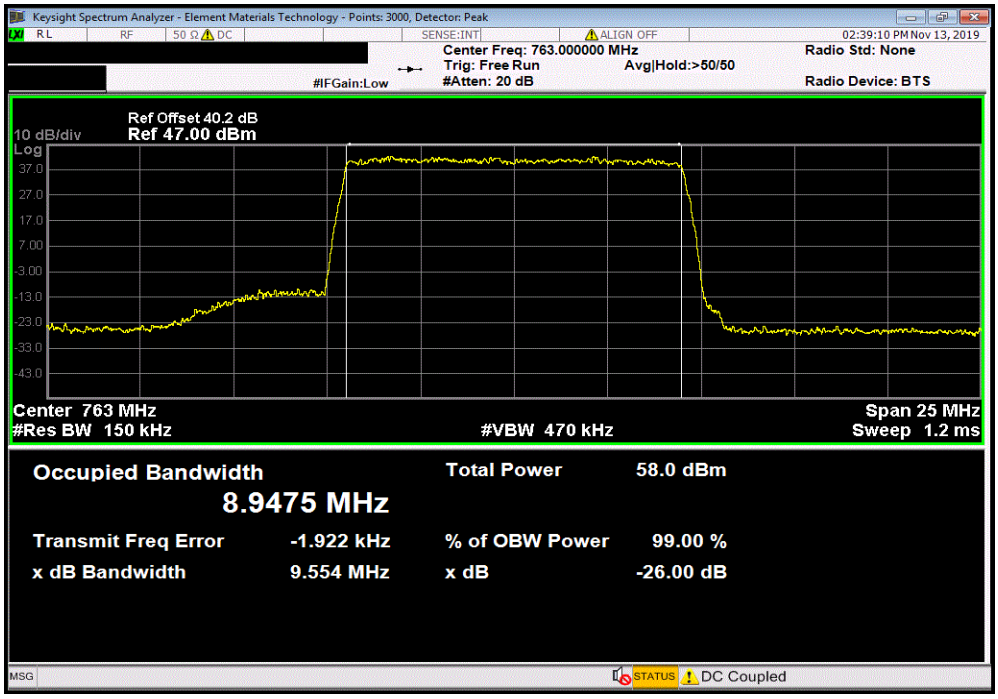
Band 14, 64QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.565 MHz	Within Band	Pass



Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.856 MHz	Within Band	Pass



Band 14, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.554 MHz	Within Band	Pass



OCCUPIED BANDWIDTH

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 14 Emission Designators for Port 2

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

OCCUPIED BANDWIDTH

element

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 SPECIFICATIONS	**Test Method**
FCC 90I:2019	ANSI C63.26:2015

COMMENTS

Band 14 emission bandwidth measurements for four modulation types at Mid chanel for two channel bandwidths. Tested at highest power antenna port (Port 2). EUT is operated at 100% duty cycle.

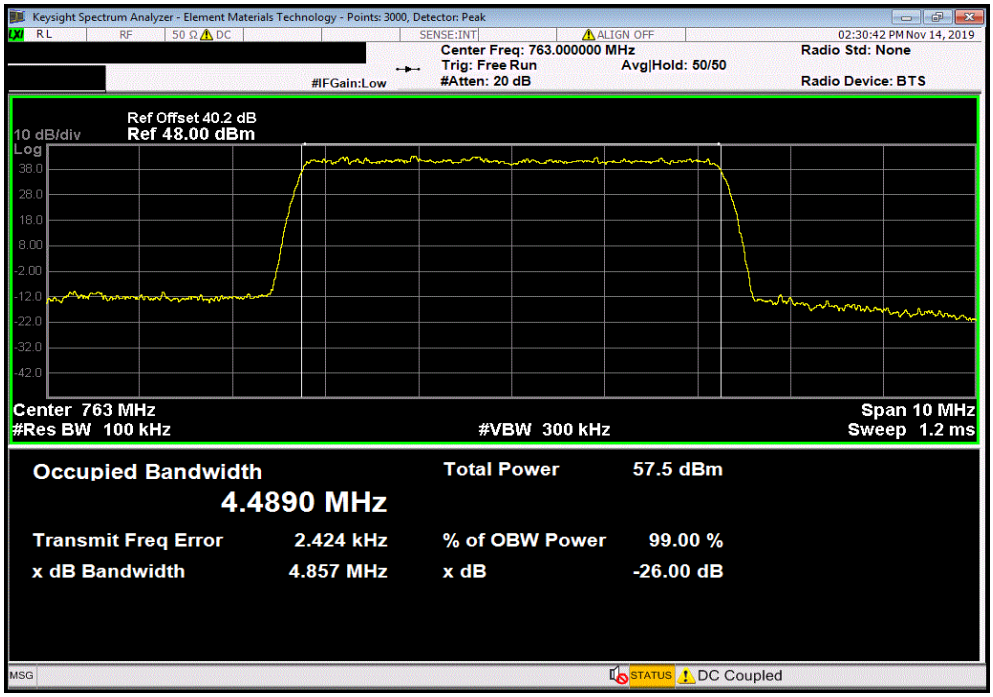
DEVIATIONS FROM TEST STANDARD

None

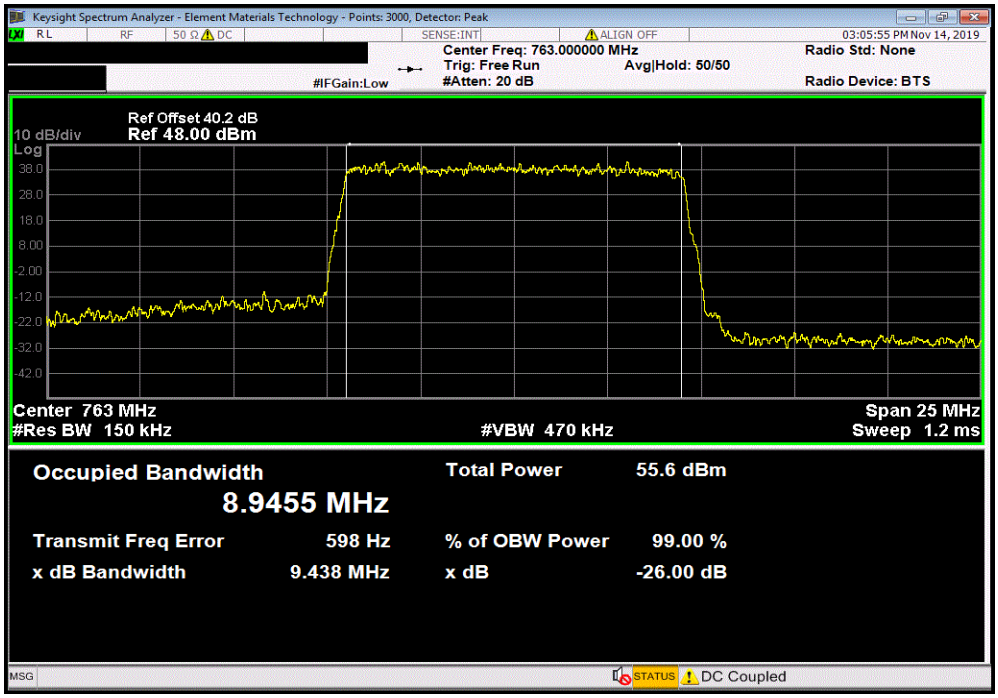
Configuration #	**2**	*Signature* Jonathan Kiefer

		Value (MHz)	**Limit**	**Result**
Band 14				
QPSK Modulation				
LTE5 Bandwidth				
	Mid Channel, 763.0 MHz	4.857 MHz	Within Band	Pass
LTE10 Bandwidth				
	Single Channel, 763.0 MHz	9.438 MHz	Within Band	Pass
16QAM Modulation				
LTE5 Bandwidth				
	Mid Channel, 763.0 MHz	4.833 MHz	Within Band	Pass
LTE10 Bandwidth				
	Single Channel, 763.0 MHz	9.554 MHz	Within Band	Pass
64QAM Modulation				
LTE5 Bandwidth				
	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

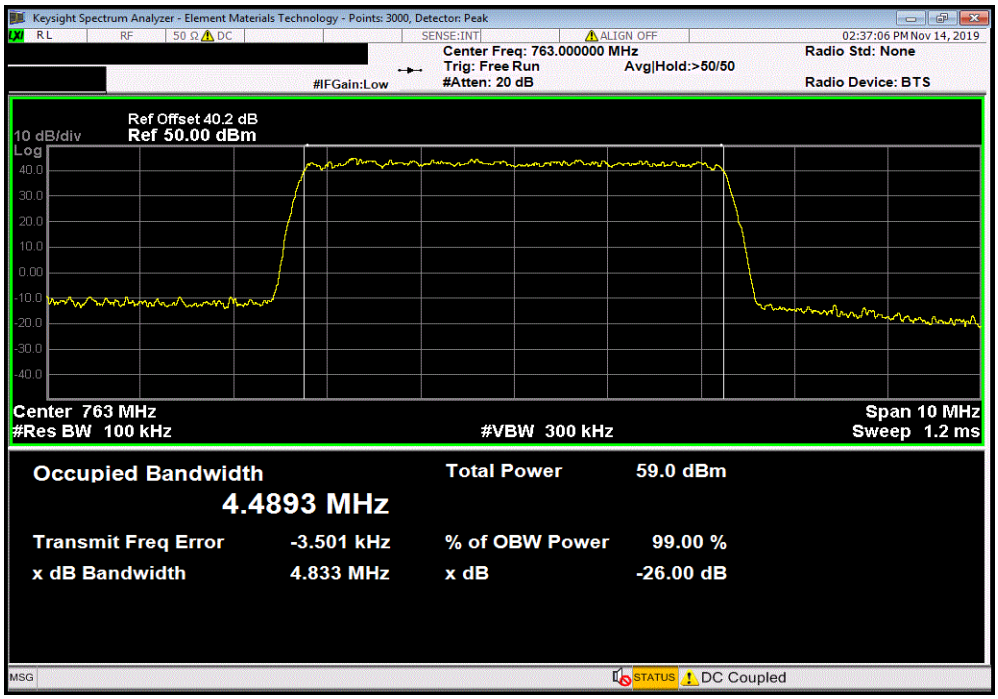
Band 14, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.857 MHz	Within Band	Pass



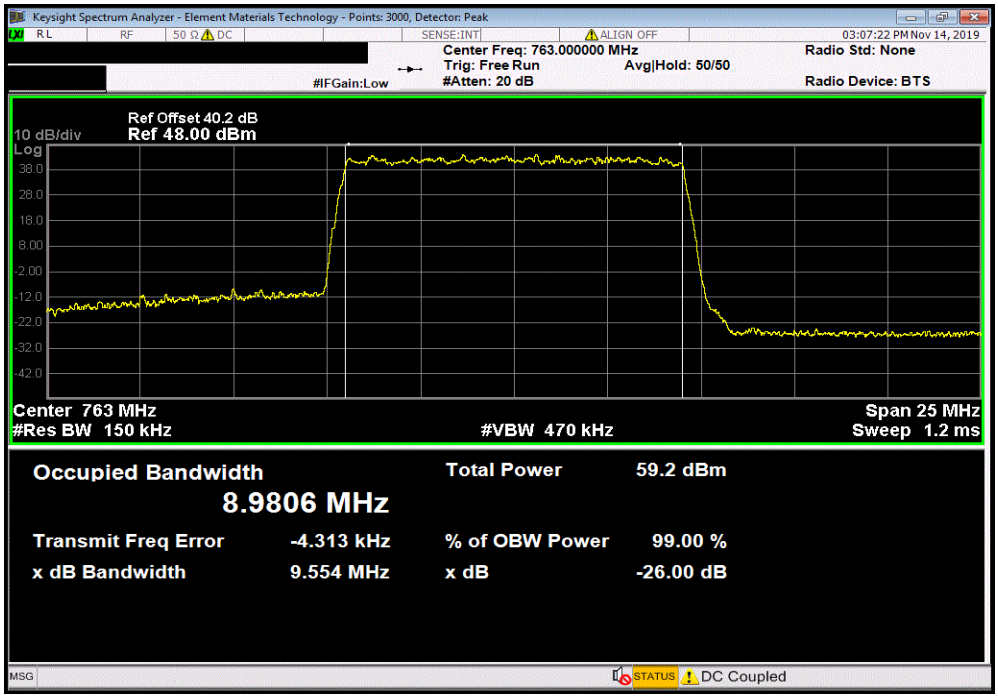
Band 14, QPSK Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.438 MHz	Within Band	Pass



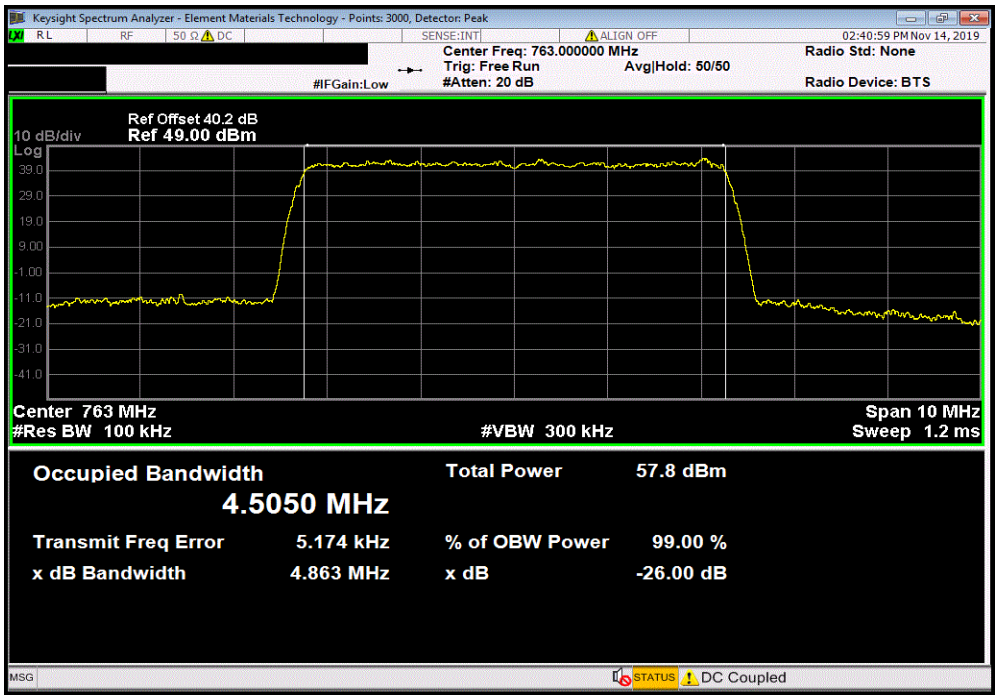
Band 14, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.833 MHz	Within Band	Pass



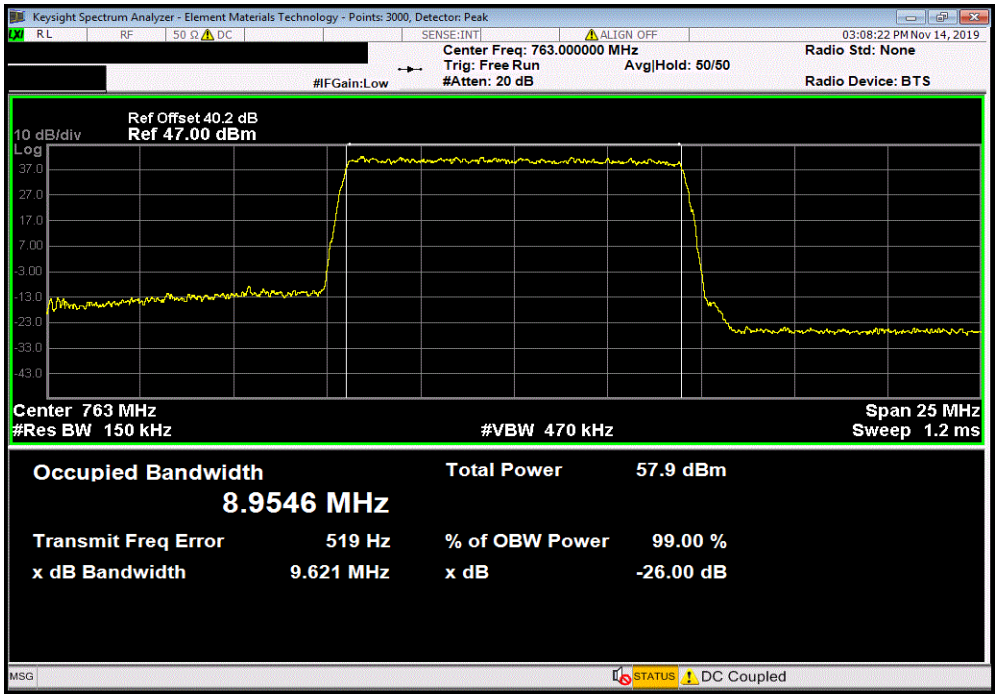
Band 14, 16QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.554 MHz	Within Band	Pass



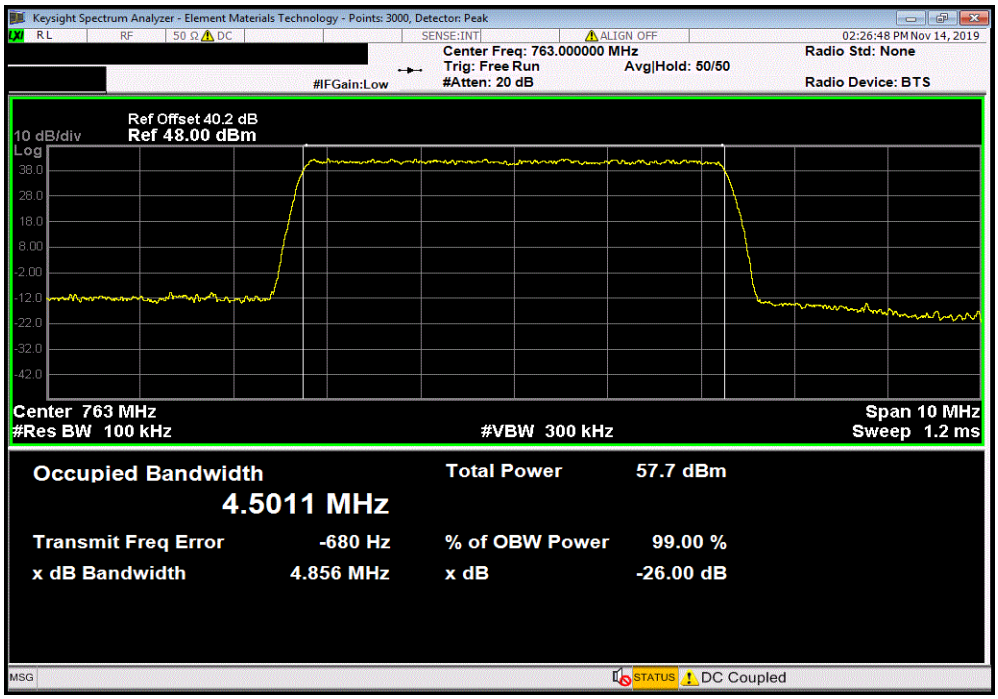
Band 14, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.863 MHz	Within Band	Pass



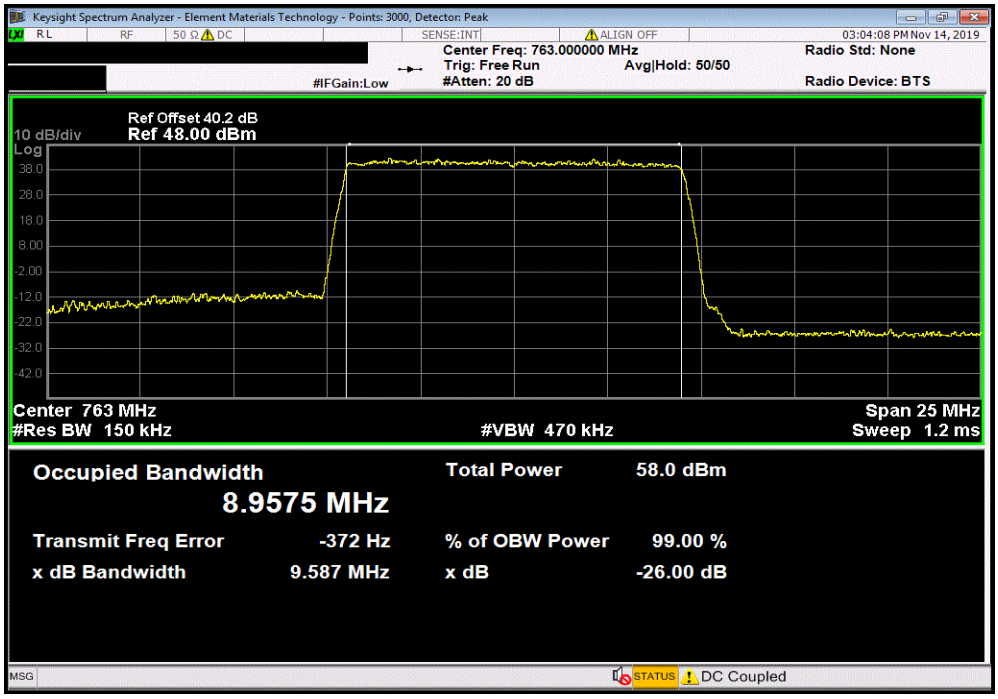
Band 14, 64QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.621 MHz	Within Band	Pass



Band 14, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				4.856 MHz	Within Band	Pass



Band 14, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 763.0 MHz						
				Value (MHz)	Limit	Result
				9.587 MHz	Within Band	Pass



OCCUPIED BANDWIDTH

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 29 Emission Designators for Port 1

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

OCCUPIED BANDWIDTH

element

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:**	**29.6% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Jonathan Kiefer**	**Power:**	**54VDC**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 27:2019	ANSI C63.26:2015

COMMENTS

Band 29 emission bandwidth measurements for four modulation types at Mid channel for two channel bandwidths. Tested at highest power antenna port (Port 1). EUT is operated at 100% duty cycle.

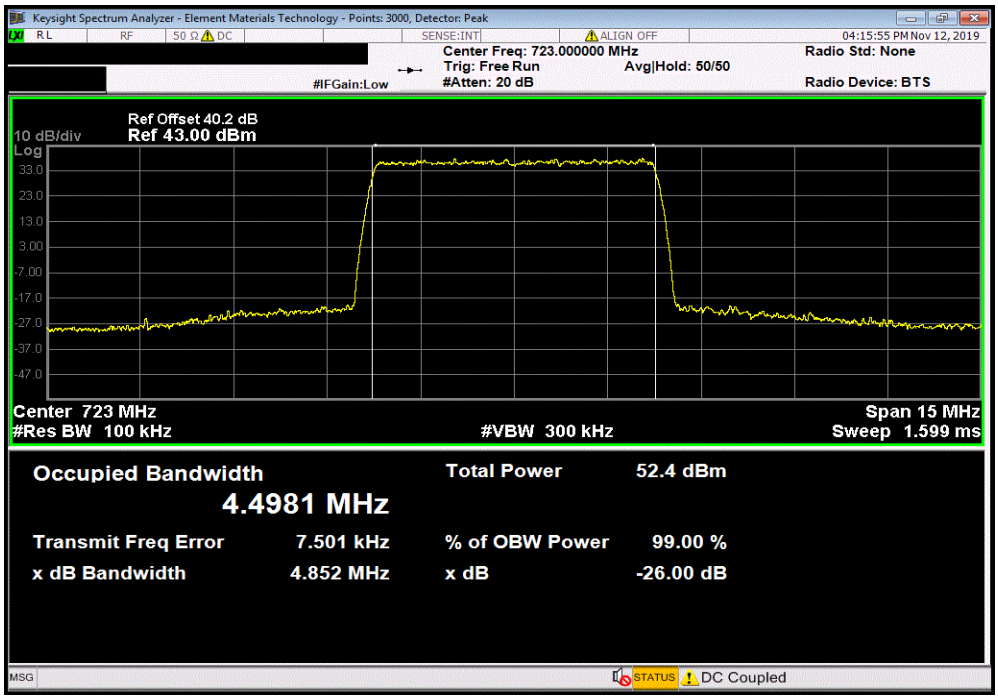
DEVIATIONS FROM TEST STANDARD

None

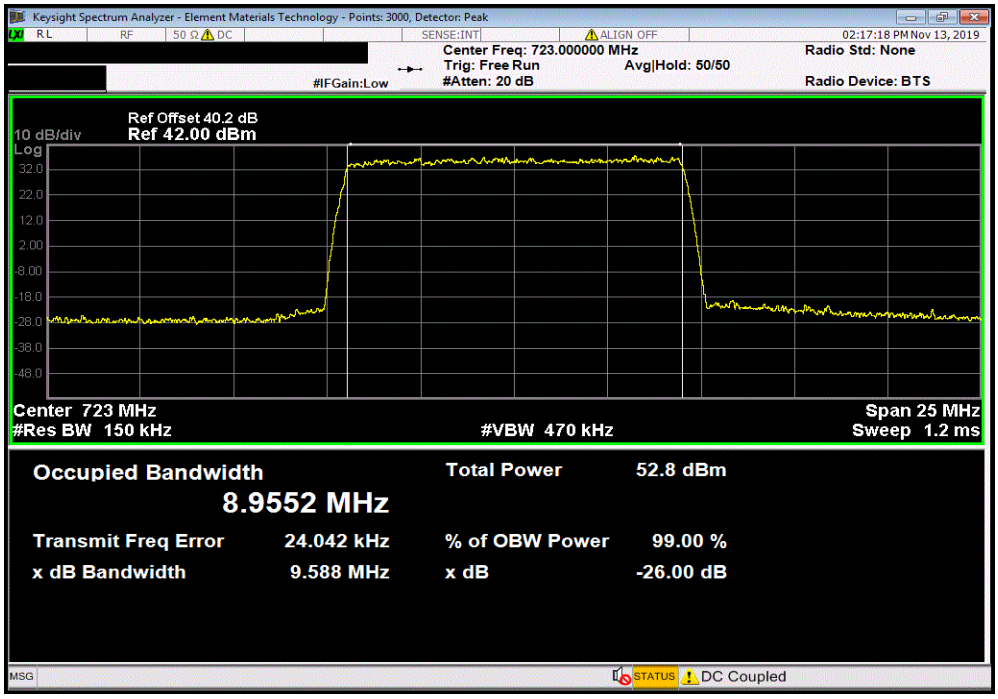
Configuration #	**2**	*Signature* Jonathan Kiefer

		Value (MHz)	**Limit**	**Result**
Band 29				
	QPSK Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	4.852 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 723.0 MHz	9.588 MHz	Within Band	Pass
	16QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	4.809 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 723.0 MHz	9.597 MHz	Within Band	Pass
	64QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	4.848 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 723.0 MHz	9.611 MHz	Within Band	Pass
	256QAM Modulation			
	LTE5 Bandwidth			
	Mid Channel, 723.0 MHz	4.857 MHz	Within Band	Pass
	LTE10 Bandwidth			
	Single Channel, 723.0 MHz	9.57 MHz	Within Band	Pass

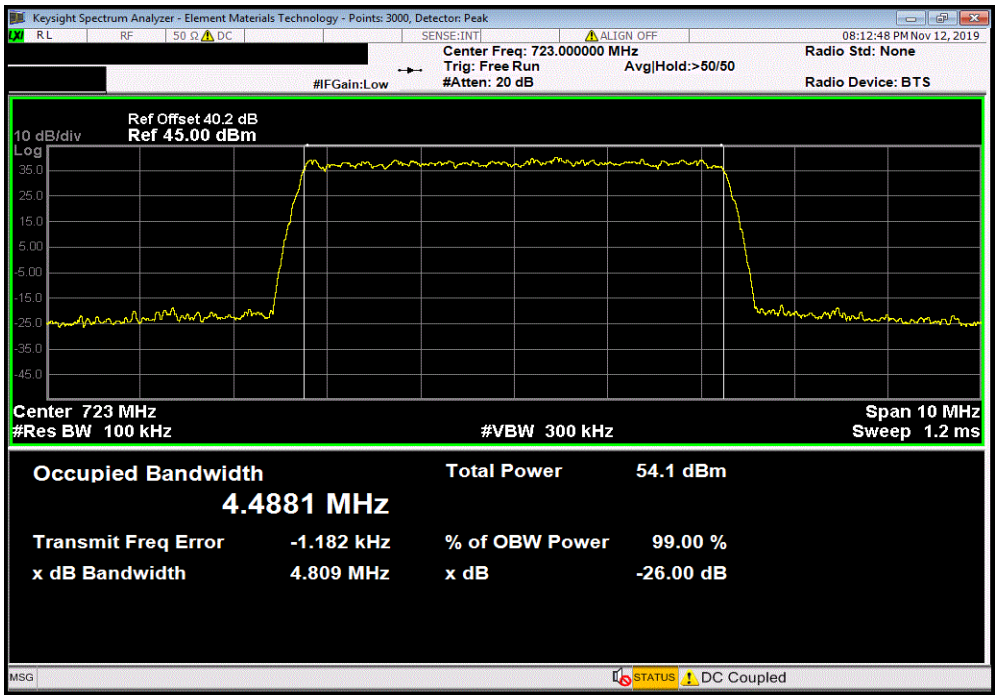
Band 29, QPSK Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				4.852 MHz	Within Band	Pass



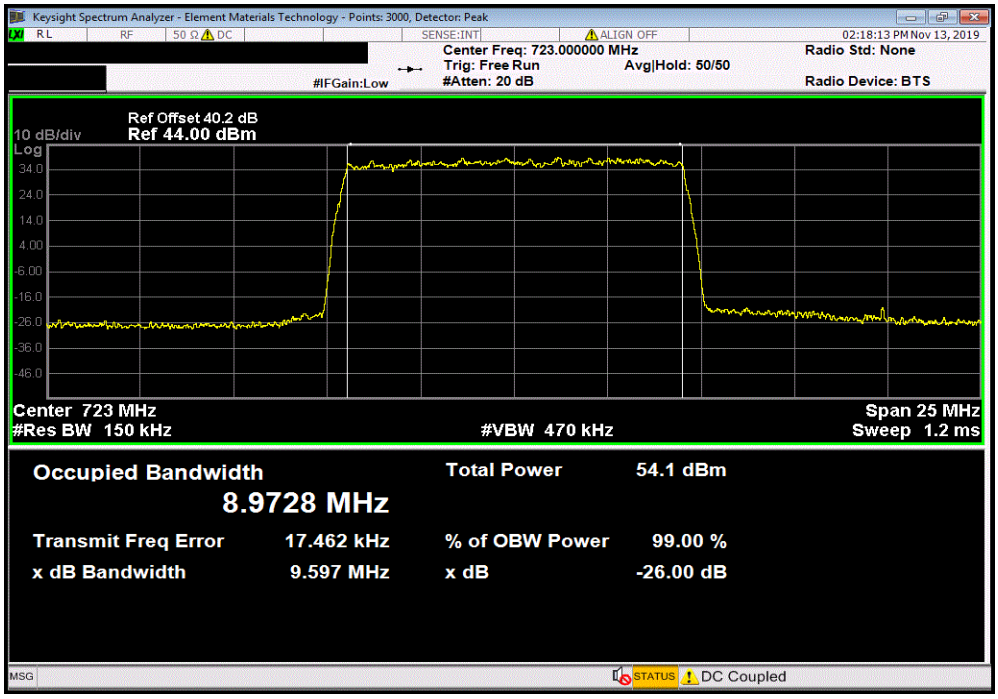
Band 29, QPSK Modulation, LTE10 Bandwidth, Single Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				9.588 MHz	Within Band	Pass



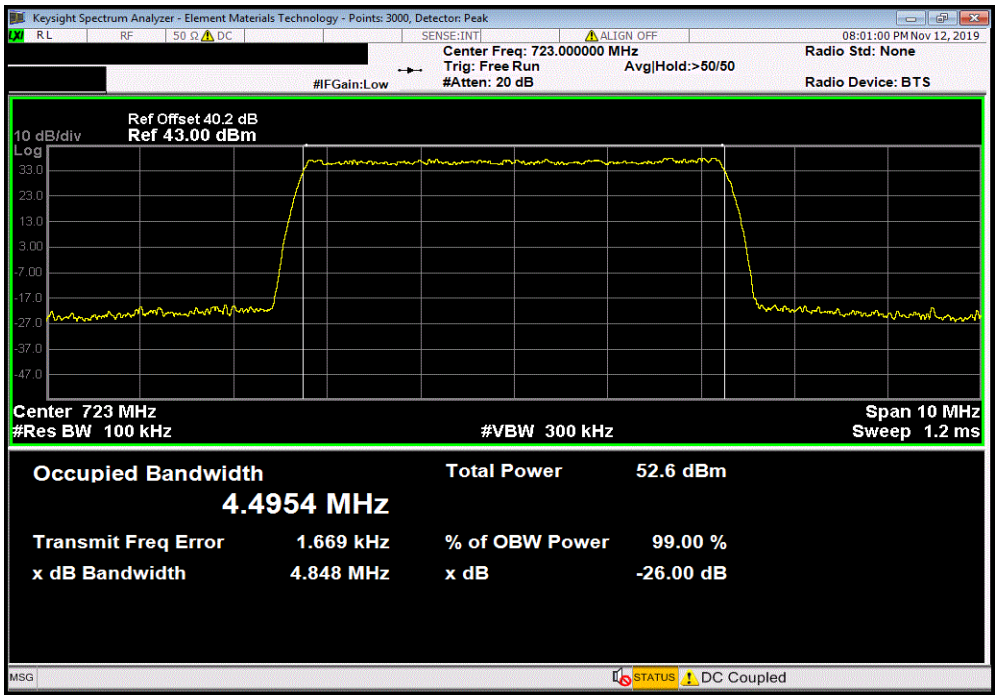
Band 29, 16QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				4.809 MHz	Within Band	Pass



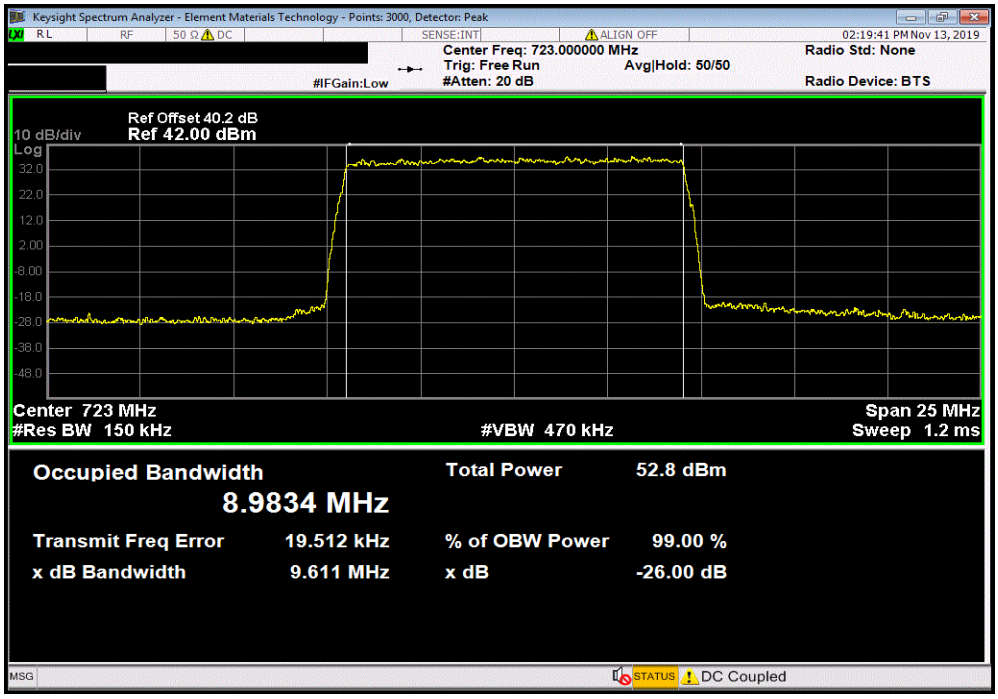
Band 29, 16QAM Modulation, LTE10 Bandwidth, Single Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				9.597 MHz	Within Band	Pass



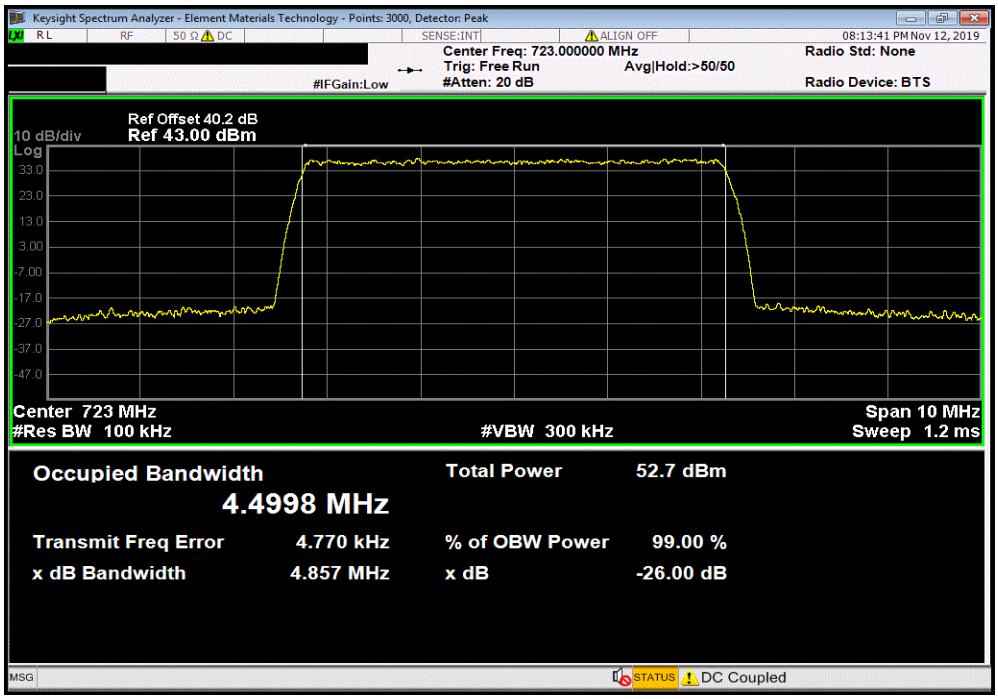
Band 29, 64QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				4.848 MHz	Within Band	Pass



Band 29, 64QAM Modulation, LTE10 Bandwidth, Single Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				9.611 MHz	Within Band	Pass



Band 29, 256QAM Modulation, LTE5 Bandwidth, Mid Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				4.857 MHz	Within Band	Pass



Band 29, 256QAM Modulation, LTE10 Bandwidth, Single Channel, 723.0 MHz						
				Value (MHz)	Limit	Result
				9.57 MHz	Within Band	Pass