Test Report

Bureau Veritas Consumer Product Services Inc.

Report No	ET0487-4
Client	Aptiv Services US, LLC
Address	2151 East Lincoln Road Kokomo, Indiana 46902 USA
Phone	(915) 612 8967
Items tested	RADIO GP – AM/FM (Model: DEA731)
FCC ID	L2C0080TR
IC	3432A-0080TR
Equipment Type	Part 15 Spread Spectrum Transmitter
Equipment Code	DSS
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2
Test Dates	April 19 to 24, 2019
Results	As detailed within this report
Prepared by	Christopher Hamel – EMC Engineer
Authorized by	Yunus Faziloglu – Sr. EMC Engineer
Issue Date	5/29/2019
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 18 of this report.

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Report REV Sep-08-2017 - YF

Summary

This test report supports an application for certification of a transmitter operating pursuant to: CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2

The product tested is the Radio GP-AM/FM. It is a frequency hopping spread spectrum transmitter that operates in the 2402 – 2480 MHz frequency range.

Antenna Type: Non-detachable internal PCB trace
Gain: 2.3dBi

We found that the product met the above requirements without modification.

The product tested in this report is provided as representative of the family it belongs to. See the table below for clarification of the specific variations between family models and the relationship between the model tested and the additional model.

Identification			Tuner			USB			Bluetooth		Supply	
Family	Model	Tested	AM/FM	AM/FM/ SXM	AM/FM/ DAB	No USB	Front USB	Rear USB	No BT	BT	12V	24V
DEA731	DEA731	Yes		x			x			x		x
DEA731	DEA711	No	x				x			x		x

Test samples were received in good condition.

Test Methodology

All testing was performed according to the following rules/procedures/documents;
CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2, ISED Canada RSS-Gen Issue 5, FCC KDB 558074 D01 15.247 Measurement Guidance v05r01 and ANSI C63.10-2013

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity.

EUT operating voltage is 24V DC from a vehicle battery, therefore AC line conducted emissions testing is not applicable.

Following bandwidths were used during radiated spurious emissions testing.

Frequency	RBW	VBW
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	T0487		
Company:	Aptiv Services US, LLC		
Company Address:	2151 East Lincoln Road		
	Kokomo, Indiana 46902 USA		
Contact:	Manuel R. Ramirez		
	MN	**PN**	**SN**
EUT:	Radio GP-AM/FM		
EUT Description:	Vehicle infotainment system with Bluetooth		
EUT Max Frequency:	2480 MHz		
EUT Min Frequency:	2480 MHz		

EUT Components	**MN**	**SN**
Head Unit	DEA731	001, 002

Support Equipment	**MN**	**SN**
Saint 2 Box		

Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
AM/FM	other	1	1	Coaxial	Yes	No	2	in	yes	
Harness	other	1	1	other	No	No	1	in	yes	
SXM	other	1	1	Coaxial	Yes	No	2	in	yes	

Operating Mode Description:

Client provided test mode. EUT can transmit different BT packet types on 3 channels. Hopping can be enabled and disabled.

Statement of Conformity

RSS-GEN	RSP-100	RSS 247	Part 15	Comments
6.4			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	3.2		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3.2			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13.2			15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
6.13.1			15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
6.8			15.203	EUT employs a non-detachable internal PCB trace antenna with 2.3dBi gain.
8.10			15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8			15.207	The unit complies with AC line conducted emissions requirements.
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247

Refer to Appendix A of this report for antenna port conducted measurements.

Test Results

Radiated Spurious Emissions

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) and worst case emissions observed in installed orientation. All the results below are for the worst case orientation only.

MEASUREMENTS / RESULTS

Bluetooth DH1 was identified as the worst case packet type.

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
30-1000MHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Low channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
40.249	42.5	-11.2	31.2	40	-8.8	PASS	
47.894	48.2	-16.2	32.1	40	-7.9	PASS	
51.904	50.3	-17.2	33.1	40	-6.9	PASS	
547.538	46.1	-5.8	40.3	46	-5.7	PASS	
550.019	49.1	-5.8	43.4	46	-2.6	PASS	-2.6
552.463	45.3	-5.7	39.6	46	-6.4	PASS	

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: CCH
Notes:
BT TX DH1 Low channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
182.43	35.9	-13.5	22.4	43.5	-21.1	PASS	
482.454	34.1	-6.6	27.5	46	-18.5	PASS	
500.006	40.8	-6.2	34.5	46	-11.5	PASS	
547.56	38.1	-5.8	32.3	46	-13.7	PASS	
550.018	43.5	-5.8	37.7	46	-8.3	PASS	-8.3
552.512	37.9	-5.7	32.2	46	-13.8	PASS	

30-1000MHz Low channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: CCH
Notes:
BT TX DH1 Mid channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
39.917	45.3	-11	34.4	40	-5.6	PASS	-5.6
47.219	46.6	-15.9	30.6	40	-9.4	PASS	
49.266	48	-16.7	31.4	40	-8.6	PASS	
182.49	47.8	-13.5	34.3	43.5	-9.2	PASS	
549.963	45.1	-5.8	39.3	46	-6.7	PASS	
552.415	40.8	-5.7	35.1	46	-10.9	PASS	

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: CCH
Notes:
BT TX DH1 Mid channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
30.839	23.8	-3.9	19.9	40	-20.1	PASS	
62.034	27.6	-17.4	10.1	40	-29.9	PASS	
63.656	24.2	-17.4	6.8	40	-33.2	PASS	
94.168	24.1	-15.9	8.2	43.5	-35.3	PASS	
130.192	23.7	-10.9	12.8	43.5	-30.7	PASS	
549.911	35.6	-5.8	29.8	46	-16.2	PASS	-16.2

30-1000MHz Middle channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: CCH
Notes:
BT TX DH1 High channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
39.262	44.5	-10.5	34	40	-6	PASS	
40.169	43.7	-11.2	32.5	40	-7.5	PASS	
48.054	53.1	-16.2	36.9	40	-3.1	PASS	-3.1
51.145	49.5	-17.1	32.4	40	-7.6	PASS	
76.812	32	-17.1	14.9	40	-25.1	PASS	
549.982	42.5	-5.8	36.7	46	-9.3	PASS	

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: CCH
Notes:
BT TX DH1 High channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)
30.433	23.7	-3.6	20	40	-20	PASS	
40.045	29.7	-11.1	18.6	40	-21.4	PASS	
40.25	28.7	-11.2	17.4	40	-22.6	PASS	
259.977	24.8	-12.1	12.7	46	-33.3	PASS	
550.011	43.2	-5.8	37.4	46	-8.6	PASS	-8.6
552.421	38	-5.7	32.3	46	-13.7	PASS	

30-1000MHz High channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: CCH
Notes:
BT TX DH1 Low channel

Work Order - T0487
EUT Power Input - 26.2V DC
Test Site - CH1
Conditions - 23.5°C; 31%RH; 1002mBar
EUT Maximum Frequency - 2480MHz
0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
2171.3	44.2	34.8	-1.2	43	74	-31	PASS		33.6	54	-20.4	PASS	
2879.8	51.9	49	0	51.9	74	-22.1	PASS	-22.1	49	54	-5	PASS	-5
3195.1	44.2	35	-0.5	43.7	74	-30.3	PASS		34.5	54	-19.5	PASS	
4609.2	41.6	33.2	0	41.6	74	-32.4	PASS		33.2	54	-20.8	PASS	
5828.5	41	32.3	1.7	42.6	74	-31.4	PASS		33.9	54	-20.1	PASS	

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
1-6GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Low channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
1255.1	44	35	-7.2	36.8	74	-37.2	PASS		27.8	54	-26.2	PASS	
2160.3	44.3	34.9	-1.3	43	74	-31	PASS		33.7	54	-20.3	PASS	
2880.1	47.6	38.1	0	47.6	74	-26.4	PASS	-26.4	38.1	54	-15.9	PASS	-15.9
4631.7	43.3	33.2	-0.2	43.1	74	-30.9	PASS		33	54	-21	PASS	
5721.1	42.1	32.5	1.6	43.8	74	-30.2	PASS		34.2	54	-19.8	PASS	

1-6GHz Low channel

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
1-6GHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Mid channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
1728.3	48.6	34.5	-5.5	43	74	-31	PASS		29	54	-25	PASS	
2184	43	34.3	-1.1	41.9	74	-32.1	PASS		33.2	54	-20.8	PASS	
2879.9	52.9	50.1	0	52.9	74	-21.1	PASS	-21.1	50.1	54	-3.9	PASS	-3.9
4640.5	42.3	33.2	-0.3	42	74	-32	PASS		32.9	54	-21.1	PASS	
5759.2	43	32.4	1.8	44.8	74	-29.2	PASS		34.2	54	-19.8	PASS	

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
1-6GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Mid channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
1725.9	43.2	34.8	-5.6	37.7	74	-36.3	PASS		29.2	54	-24.8	PASS	
2145.6	42.7	34.7	-1.4	41.2	74	-32.8	PASS		33.2	54	-20.8	PASS	
2880.3	44.5	37.9	0	44.5	74	-29.5	PASS	-29.5	37.9	54	-16.1	PASS	-16.1
4656.3	41.7	33	-0.4	41.2	74	-32.8	PASS		32.6	54	-21.4	PASS	
5872.1	42.1	32.4	1.6	43.8	74	-30.2	PASS		34	54	-20	PASS	

1-6GHz Middle Channel

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
1-6GHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 High channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
2176.6	42.3	34.6	-1.1	41.2	74	-32.8	PASS		33.4	54	-20.6	PASS	
2880.1	51.6	48.8	0	51.6	74	-22.4	PASS	-22.4	48.8	54	-5.2	PASS	-5.2
3969	41.5	32.7	-0.7	40.9	74	-33.1	PASS		32	54	-22	PASS	
5065.9	40.8	32.7	0.7	41.5	74	-32.5	PASS		33.4	54	-20.6	PASS	
5680.7	44.1	32.5	1.5	45.5	74	-28.5	PASS		34	54	-20	PASS	

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 26.2V DC
1-6GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 High channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)
1143.6	46.3	36.2	-8.4	37.9	74	-36.1	PASS		27.8	54	-26.2	PASS	
1263.5	45.5	35.3	-7.1	38.3	74	-35.7	PASS		28.2	54	-25.8	PASS	
2155.4	43.2	34.7	-1.3	41.8	74	-32.2	PASS		33.4	54	-20.6	PASS	
2879.8	49.2	44.9	0	49.2	74	-24.8	PASS	-24.8	44.9	54	-9.1	PASS	-9.1
4609.2	41.6	33.1	0	41.6	74	-32.4	PASS		33.1	54	-20.9	PASS	
5727.4	42.2	32.5	1.7	43.9	74	-30.1	PASS		34.2	54	-19.8	PASS	

1-6GHz High channel

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Low channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
7912.4	41	33	3.9	45	83.5	-38.5	PASS		37	63.5	-26.5	PASS	
10531.6	42.4	33.1	7.1	49.5	83.5	-34	PASS		40.2	63.5	-23.3	PASS	
10590.7	48.7	33.3	6.8	55.5	83.5	-28	PASS		40.2	63.5	-23.3	PASS	
17953.3	43	34.4	14.6	57.6	83.5	-25.9	PASS	-25.9	49	63.5	-14.5	PASS	-14.5

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Low channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
10532.2	42.2	33.2	7.1	49.3	83.5	-34.2	PASS		40.3	63.5	-23.2	PASS	
10590.3	41.9	33.3	6.8	48.7	83.5	-34.8	PASS		40.1	63.5	-23.4	PASS	
12636.5	42.3	33	10.1	52.4	83.5	-31.1	PASS		43.1	63.5	-20.4	PASS	
17968.8	42.4	34.4	14.6	57	83.5	-26.5	PASS	-26.5	49	63.5	-14.5	PASS	-14.5

6-18GHz Low channel

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Mid channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
7908.9	40.5	33	4	44.5	83.5	-39	PASS		37	63.5	-26.5	PASS	
10532.9	43.4	33.2	7.1	50.5	83.5	-33	PASS		40.3	63.5	-23.2	PASS	
12740.8	42.5	32.9	10.2	52.7	83.5	-30.8	PASS		43.2	63.5	-20.3	PASS	
16782.6	42.1	33.7	12.8	54.8	83.5	-28.7	PASS		46.5	63.5	-17	PASS	
17847.2	43.6	34.4	14.5	58.1	83.5	-25.4	PASS	-25.4	49	63.5	-14.5	PASS	-14.5

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 Mid channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
10533.4	42.4	33.2	7.1	49.5	83.5	-34	PASS		40.3	63.5	-23.2	PASS	
12724.5	42	32.9	10.2	52.2	83.5	-31.3	PASS		43.1	63.5	-20.4	PASS	
17945.9	44.8	34.3	14.6	59.5	83.5	-24	PASS	-24	48.9	63.5	-14.6	PASS	-14.6

6-18GHz Middle channel

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Vertical Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 High channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)
10532.2	40.6	33.2	7.1	47.7	83.5	-35.8	PASS		40.3	63.5	-23.2	PASS	
10590.6	44.7	33.3	6.8	51.5	83.5	-32	PASS		40.1	63.5	-23.4	PASS	
12294.5	42	33.7	9.2	51.2	83.5	-32.3	PASS		42.9	63.5	-20.6	PASS	
17953.1	44.1	34.4	14.6	58.7	83.5	-24.8	PASS	-24.8	49	63.5	-14.5	PASS	-14.5

Curtis Straus - a Bureau Veritas Company	Work Order - T0487
Radiated Emissions Electric Field 1m Distance	EUT Power Input - 26.2V DC
6-18GHz Horizontal Data	Test Site - CH1
Operator: CCH	Conditions - 23.5°C; 31%RH; 1002mBar
Notes:	EUT Maximum Frequency - 2480MHz
BT TX DH1 High channel	0

Data Taken at April 24, 2019

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_209_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_209_Average (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)
10534.1	42.2	33.2	7.1	49.3	83.5	-34.2	PASS		40.3	63.5	-23.2	PASS	
10593	46.2	33.3	6.8	53	83.5	-30.5	PASS		40.1	63.5	-23.4	PASS	
12391.1	42.8	33.5	9.5	52.3	83.5	-31.2	PASS		43	63.5	-20.5	PASS	
17920.2	42	33.8	14.7	56.7	83.5	-26.8	PASS	-26.8	48.5	63.5	-15	PASS	-15

6-18GHz High channel

Radiated Emissions Table

Date: 24-Apr-19 **Work Order:** T0487
Engineer: Chris Hamel **EUT Operating Voltage/Frequency:** 24V DC
Temp: 23.5°C **Humidity:** 34% **Pressure:** 1010mBar
Frequency Range: 18-26.5GHz **Measurement Distance:** 0.1 m
Notes: No emissions found. BT high mid and low channels DH1 **EUT Max Freq:** 2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak Limit (dBµV/m)	FCC Class B High Frequency - Peak Margin (dB)	FCC Class B High Frequency - Peak Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	FCC Class B High Frequency - Average Margin (dB)	FCC Class B High Frequency - Average Result (Pass/Fail)
No emissions found				---	---	---	---	---	---	---	---	---	---	---
				---	---	---	---	---	---	---	---	---	---	---

Table Result: Pass by N/A dB ***Worst Freq:*** N/A MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2323 **Cable 2:** --- **Cable 3:** ---
Analyzer: Rental SA#3 **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.214
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

18-26.5GHz

Rev. 4/29/2019

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/21/2019
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	12/7/2020
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/7/2020
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
8449B HF Preamp	1-18GHz	8449B	Agilent	1149055		II	11/26/2019
185710 Rental PA	9KHz-1GHz	310	SONOMA INSTRUMENT	185710		II	4/16/2020
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/24/2019
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/21/2019
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/9/2021
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020
Asset #2657		1235C97	Control Company	181683806	2657	I	4/3/2020
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**
Asset #2456	9KHz-18GHz		MegaPhase			II	10/31/2019
Asset #2467	9KHz-18GHz		MegaPhase			II	10/31/2019
Asset #2606	9KHz-18GHz		MegaPhase			II	4/2/2020
Asset #2323	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 002	2323	II	8/9/2019

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

TEU

Radiated Band Edge

Radiated Emissions Table

Date: 24-Apr-19 **Work Order:** T0487
Engineer: Chris Hamel **EUT Operating Voltage/Frequency:** 24V DC
Temp: 23.5°C **Humidity:** 34% **Pressure:** 1010mBar
Frequency Range: 2.3-2.5GHz **Measurement Distance:** 3 m
Notes: Bluetooth DH1 **EUT Max Freq:** 2480MHz

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak Limit (dBµV/m)	FCC Class B High Frequency - Peak Margin (dB)	FCC Class B High Frequency - Peak Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	FCC Class B High Frequency - Average Margin (dB)	FCC Class B High Frequency - Average Result (Pass/Fail)
Low Channel														
V	2390.0	14.7	4.1	0.0	32.2	0.8	47.7	37.1	74.0	-26.3	Pass	54.0	-16.9	Pass
V	2326.2	16.5	4.4	0.0	31.9	0.7	49.1	37.0	74.0	-24.9	Pass	54.0	-17.0	Pass
V	2356.7	18.6	4.8	0.0	32.0	0.8	51.4	37.6	74.0	-22.6	Pass	54.0	-16.4	Pass
				---	---	---	---	---	---	---	---	---	---	---
Low edge hopping														
V	2390.0	14.7	4.1	0.0	32.2	0.8	47.7	37.1	74.0	-26.3	Pass	54.0	-16.9	Pass
V	2383.8	16.0	4.2	0.0	32.2	0.8	49.0	37.2	74.0	-25.0	Pass	54.0	-16.8	Pass
				---	---	---	---	---	---	---	---	---	---	---
High Channel														
V	2483.5	16.1	5.3	0.0	32.4	0.8	49.3	38.5	74.0	-24.7	Pass	54.0	-15.5	Pass
V	2490.2	16.8	5.4	0.0	32.4	0.8	50.0	38.6	74.0	-24.0	Pass	54.0	-15.4	Pass
				---	---	---	---	---	---	---	---	---	---	---
High edge hopping														
V	2483.5	16.2	5.2	0.0	32.4	0.8	49.4	38.4	74.0	-24.6	Pass	54.0	-15.6	Pass
V	2491.4	16.6	5.4	0.0	32.4	0.8	49.8	38.6	74.0	-24.2	Pass	54.0	-15.4	Pass
				---	---	---	---	---	---	---	---	---	---	---

Table Result: Pass by -15.4 dB ***Worst Freq:*** 2490.2 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2456 **Cable 2:** Asset #2606 **Cable 3:** ---
Analyzer: Rental SA#3 **Preamp:** None **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.214

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 4/29/2019

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/21/2019
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/7/2020
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/9/2021
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020
Asset #2657		1235C97	Control Company	181683806	2657	I	4/3/2020
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**
Asset #2456	9KHz-18GHz		MegaPhase			II	10/31/2019
Asset #2606	9KHz-18GHz		MegaPhase			II	4/2/2020

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

TEU

Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz) NIST CISPR	 5.6dB 4.6dB	 N/A 5.2dB (Ucispr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions NIST CISPR	 3.9dB 3.6dB	 N/A 3.6dB (Ucispr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation: • Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	 3.4% 0.3dB	 5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		

Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and BUREAU VERITAS CONSUMER PRODUCT SERVICES INC.** (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.
14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

The complete list of the Approved Subcontractors Bureau Veritas Consumer Product Services Inc. may use to delegate the performance of work can be provided upon request.

Rev.160009121(2)_#684340 v14CS

Appendix A

CFR Title 47 FCC Part §15.247 and ISED Canada RSS-247 Issue 2

DUT Information

Model Number:	DEA731
Manufacturer:	Aptiv Services US, LLC.
Serial Number:	0012

79 channels are provided for Bluetooth BR/EDR:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	**2402**	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	**78**	**2480**
19	2421	**39**	**2441**	59	2461		

Notes: Channels 0, 39 and 78 were selected as representative test channels.

Modulation	Data Rate	Packet Types
GFSK	1Mbps	BR: DH1, DH3, DH5
π/4-DQPSK	2Mbps	EDR: 2-DH1, 2-DH3, 2-DH5
8DPSK	3Mbps	EDR: 3-DH1, 3-DH3, 3-DH5

Antenna type	Non-detachable internal PCB trace
Antenna gain	2.3dBi Peak
Number of transmit chains	1
Equipment type	Frequency Hopping Spread Spectrum

Test Equipment Used

Rev. 04/10/2019								
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
FSV40 Signal/Spectrum Analyzer	10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	10/1/2019	10/1/2018
Signal Generators/Comparaison Noise Emitter	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
SMBV100A Vector Signal Generator	9KHz-6GHz	SMBV100A	ROHDE & SCHWARZ	261919	2201	I	10/1/2019	10/1/2018
SMB100A Signal Generator	100kHz-40GHz	SMB100A	ROHDE & SCHWARZ	179884	2557	I	10/1/2019	10/1/2018
Power/Noise Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
OSP - open switch and control platform	30MHz-18GHz	OSP-B157W8	ROHDE & SCHWARZ	1527.1144.02-100955-Ck	2558	I	3/14/2020	3/14/2019
Cables	**Range**		**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
DUT1	30MHz-40GHz		Micro-Coax	UFB142A-1-0787-200200	2593	I	3/13/2020	3/13/2019
DUT2	30MHz-40GHz		Micro-Coax	UFB142A-1-0787-200200	2594	I	3/13/2020	3/13/2019
DUT3	30MHz-40GHz		Micro-Coax	UFB142A-1-0787-200200	2595	I	3/13/2020	3/13/2019
DUT4	30MHz-40GHz		Micro-Coax	UFB142A-1-0787-200200	2596	I	3/13/2020	3/13/2019
Attenuators / Couplers	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
10dB Attenuator-01 Brown	30MHz-18GHz		Mini Curcuits	BW-S10W2+		I	3/13/2020	3/13/2019
10dB Attenuator-02 Yellow	30MHz-18GHz		Mini Curcuits	BW-S10W2+		I	3/13/2020	3/13/2019
10dB Attenuator-03 Red	30MHz-18GHz		Mini Curcuits	BW-S10W2+		I	3/13/2020	3/13/2019
10dB Attenuator-04 orange	30MHz-18GHz		Mini Curcuits	BW-S10W2+		I	3/13/2020	3/13/2019
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	II	3/23/2020	3/23/2019
Directional Coupler	0.5GHz-18GHz	UDC	AA MCS	001040	2434	I	8/8/2019	8/9/2018
Communication Tester	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
CMW270 Wideband Radio Communication Tester	DC to 6GHz	CMW270	ROHDE & SCHWARZ	1201.0002K75-101066-MV	2559	I	2/14/2020	2/14/2019
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Temp/Humidity Chamber #18		EPX-2H	Espec	137664	1645	I	1/2/2020	1/2/2019
Weather Clock (Pressure only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2086		HTC-1	HDE		2086	II	3/23/2020	3/23/2019
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.								

Rohde&Schwarz Test System TS8997					
Test Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Firmware Version**	**Software Version**
Spectrum Analyzer	Rohde&Schwarz	FSV40	101551	3.40	N/A
Signal Generator	Rohde&Schwarz	SMB100A	179884	3.20.390.24 / Drv:Rev 2.21.0, 07/2016, CVI 2015	N/A
Vector Signal Generator	Rohde&Schwarz	SMBV100A	261919	3.1.19.15 - 3.50.082.47	N/A
Switching Platform	Rohde&Schwarz	OSP-B157W	100955	1.23.0.2	N/A
Wireless Connectivity Tester	Rohde&Schwarz	CMW270	101066	3.7	N/A
Test Software	Rohde&Schwarz	WMS32	N/A	N/A	V10.50.00

Summary

Test	Frequency (MHz)	DH1 Result	DH3 Result	DH5 Result	2-DH1 Result	2-DH3 Result	2-DH5 Result	3-DH1 Result	3-DH3 Result	3-DH5 Result
Hopping Frequencies	(hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Band Edge (during hopping)	(hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Carrier Frequency Separation	2402.000 (hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Carrier Frequency Separation	2480.000 (hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Time of Channel Occupancy	2402.000 (hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Time of Channel Occupancy	2441.000 (hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Time of Channel Occupancy	2480.000 (hopping)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Emission Bandwidth 20 dB	2402.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	2402.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Band Edge low	2402.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Peak output power	2402.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Conducted Spurious Emissions	2402.000 (single)	------	PASS	------	------	------	------	------	------	------
Emission Bandwidth 20 dB	2441.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	2441.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Peak output power	2441.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Conducted Spurious Emissions	2441.000 (single)	------	PASS	------	------	------	------	------	------	------
Emission Bandwidth 20 dB	2480.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	2480.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Band Edge high	2480.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Peak output power	2480.000 (single)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Conducted Spurious Emissions	2480.000 (single)	------	PASS	------	------	------	------	------	------	------

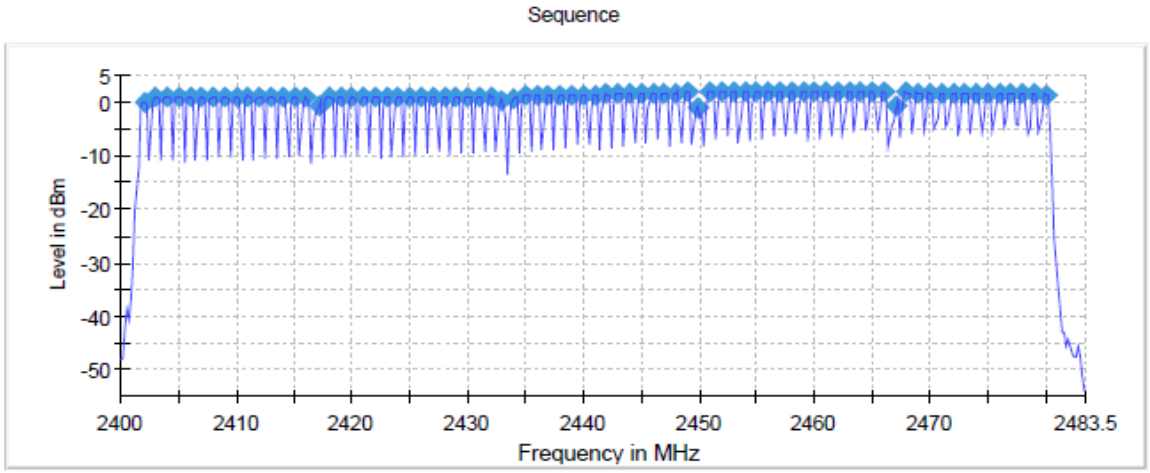
Number of Hopping Frequencies

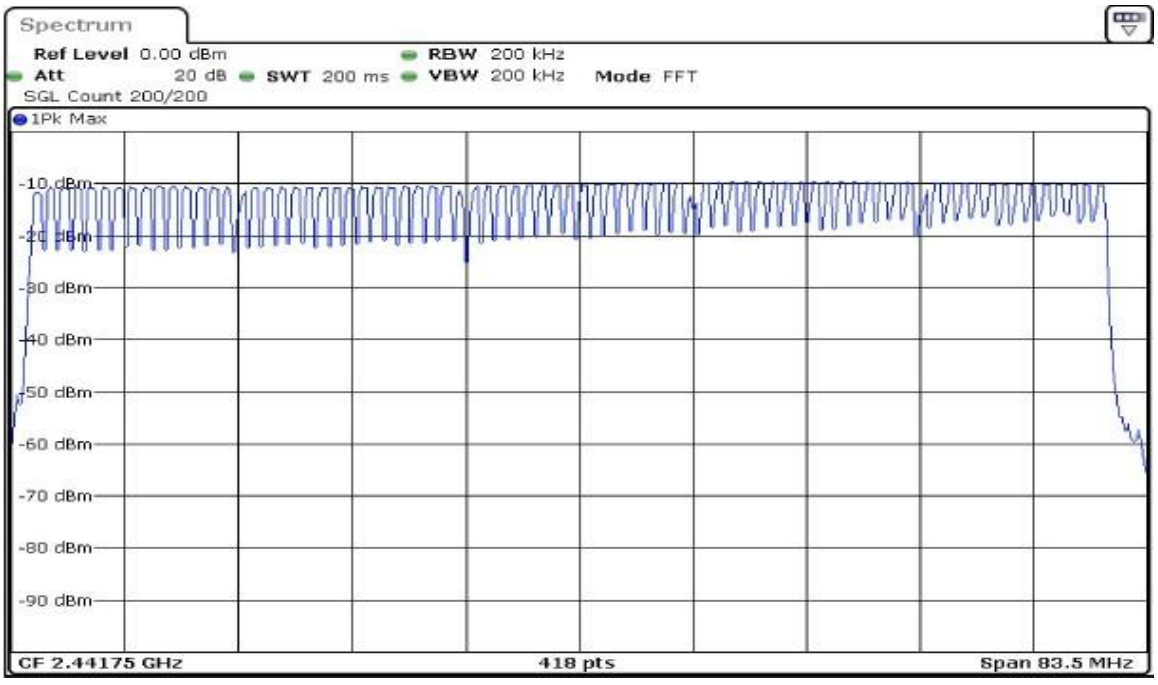
Test procedure in accordance with ANSI C63.10-2013

Channels

Channels	Limit Min	Result
79	15	PASS

Plot for packet type DH3 shown below.





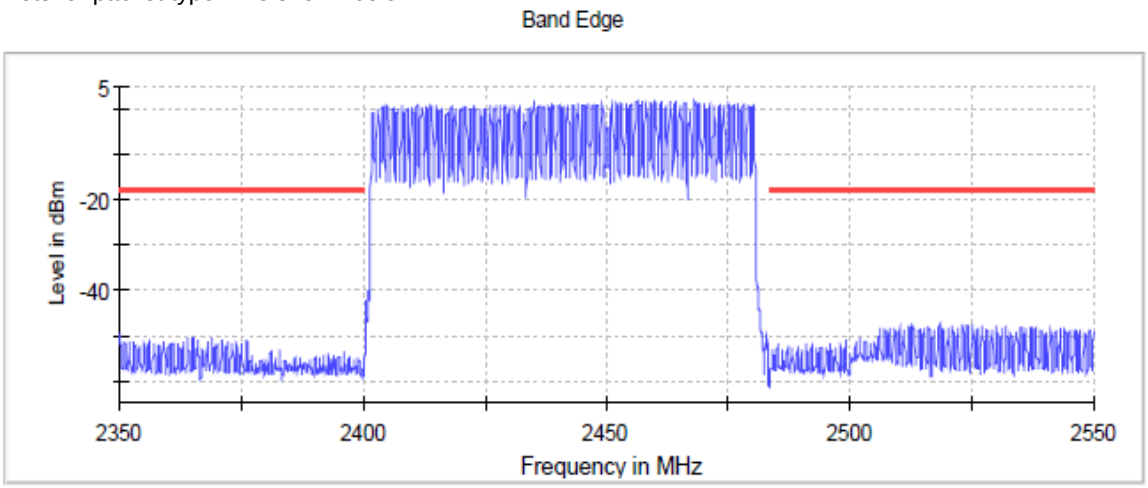
Band Edge (during hopping)

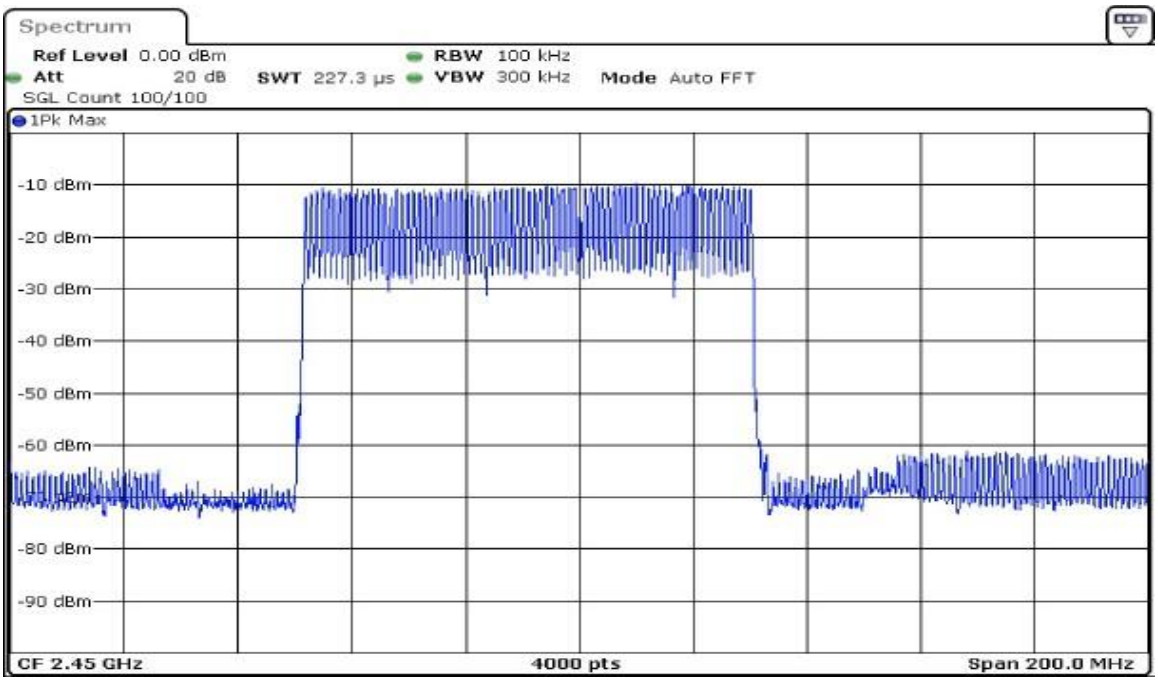
Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 0.8 dB

In-band Peak

Data Rate	Frequency (MHz)	Level (dBm)
DH1	2454.825000	2.1
DH3	2459.825000	2.1
DH5	2455.175000	1.9
2-DH1	2453.975000	-0.7
2-DH3	2455.025000	-0.7
2-DH5	2460.825000	-0.5
3-DH1	2456.825000	-0.6
3-DH3	2453.175000	-0.8
3-DH5	2453.975000	-0.7

Plots for packet type DH3 shown below.




Spectrum
Ref Level 0.00 dBm
RBW 100 kHz
Att 20 dB
SWT 227.3 µs
VBW 300 kHz
Mode Auto FFT
SGL Count 100/100
1Pk Max
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-80 dBm
-90 dBm
CF 2.45 GHz
4000 pts
Span 200.0 MHz

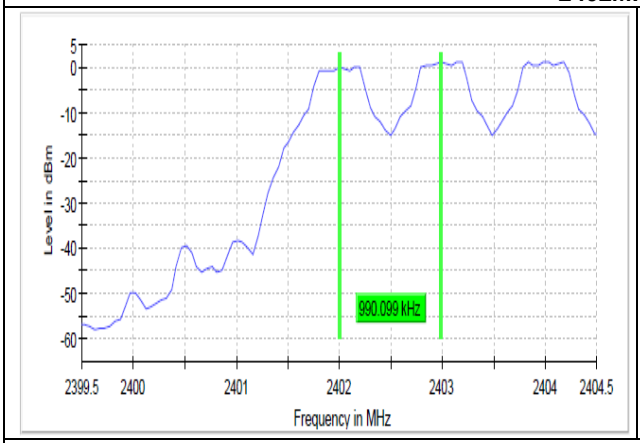
Carrier Frequency Separation

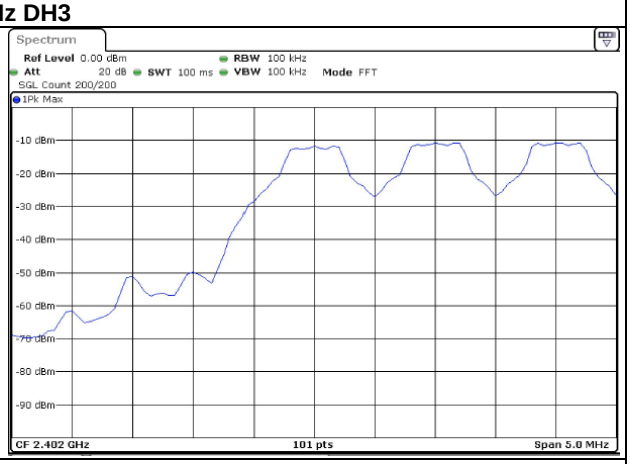
Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (k = 2) < 1%

Hopping Mode				
Packet Type	2402MHz		2480MHz	
	Frequency Separation (MHz)	Minimum Limit (MHz)	Frequency Separation (MHz)	Minimum Limit (MHz)
DH1	0.990099	0.653465	0.990099	0.613862
DH3	0.990099	0.653465	0.990099	0.673267
DH5	0.990099	0.673267	0.990099	0.673267
2-DH1	0.990099	0.871287	0.990099	0.871287
2-DH3	0.990099	0.910891	0.990099	0.910891
2-DH5	0.990099	0.910891	0.990099	0.910891
3-DH1	0.990099	0.871287	0.990099	0.871287
3-DH3	0.990099	0.891089	0.990099	0.891089
3-DH5	0.990099	0.891089	0.990099	0.910891

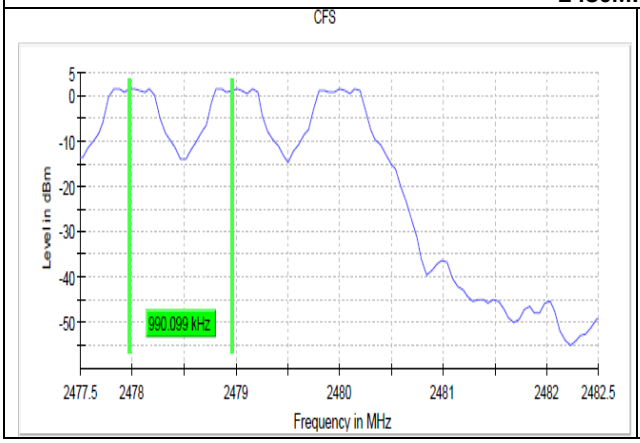
*Limit is 2/3 of the widest 20dB bandwidth of the corresponding packet type.

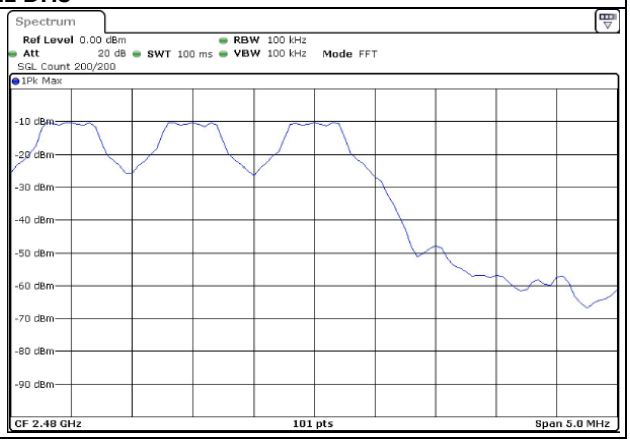
2402MHz DH3





2480MHz DH3





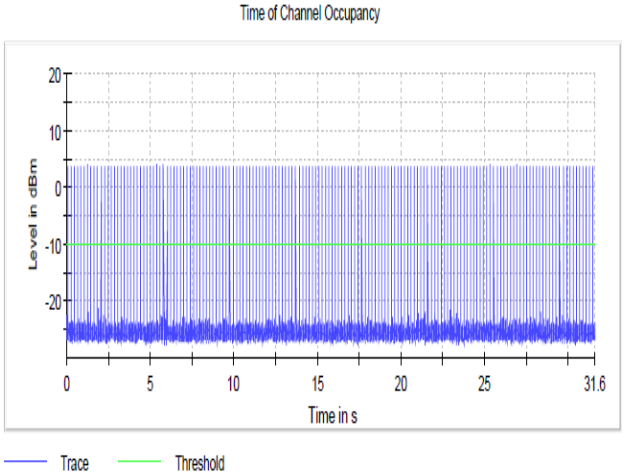
Time of Channel Occupancy (Dwell Time)

Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1%

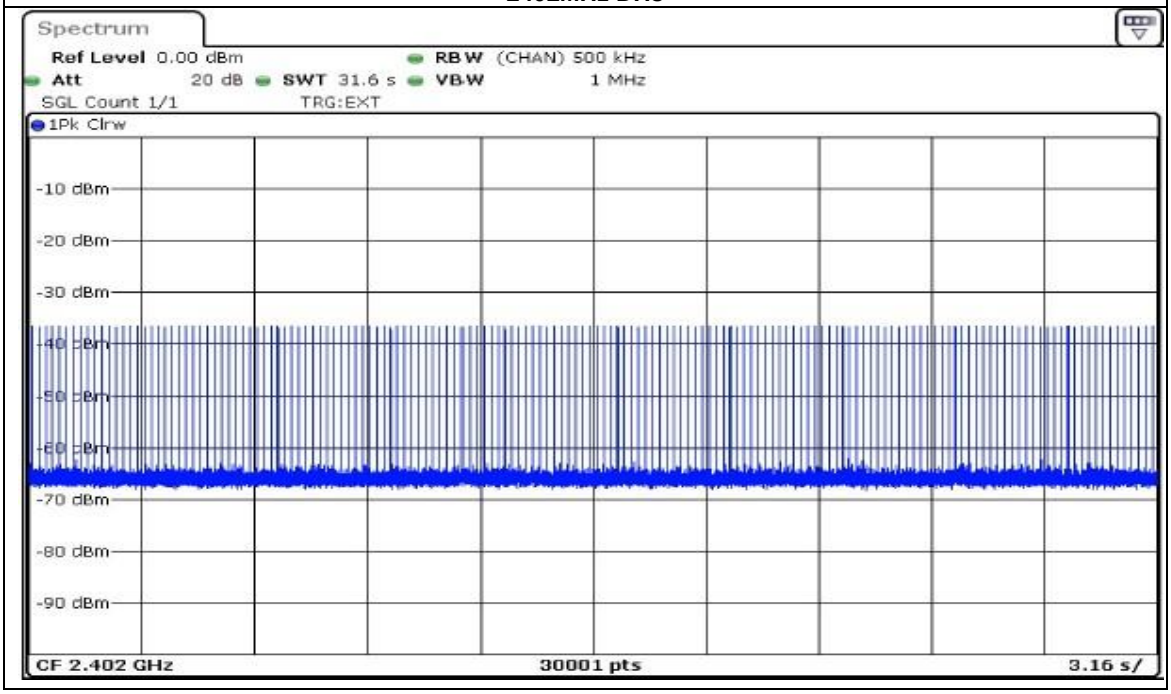
2402MHz

Data Rate	Time (ms)	Limit Max (ms)	Result
DH1	128.460	400.000	PASS
DH3	265.150	400.000	PASS
DH5	310.850	400.000	PASS
2-DH1	127.130	400.000	PASS
2-DH3	255.740	400.000	PASS
2-DH5	295.970	400.000	PASS
3-DH1	125.680	400.000	PASS
3-DH3	253.190	400.000	PASS
3-DH5	292.880	400.000	PASS

2402MHz DH3



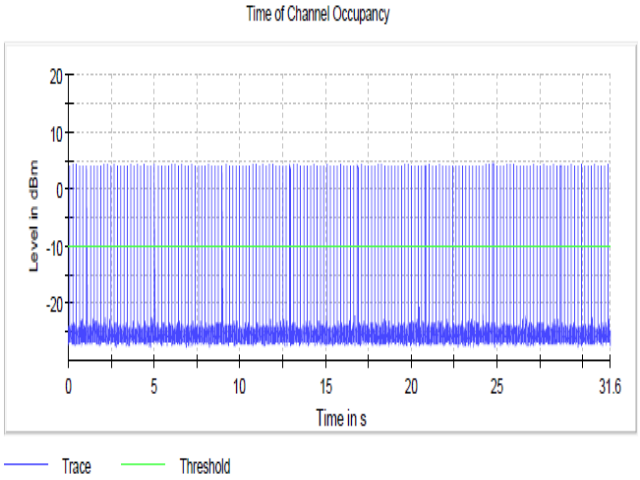
2402MHz DH3



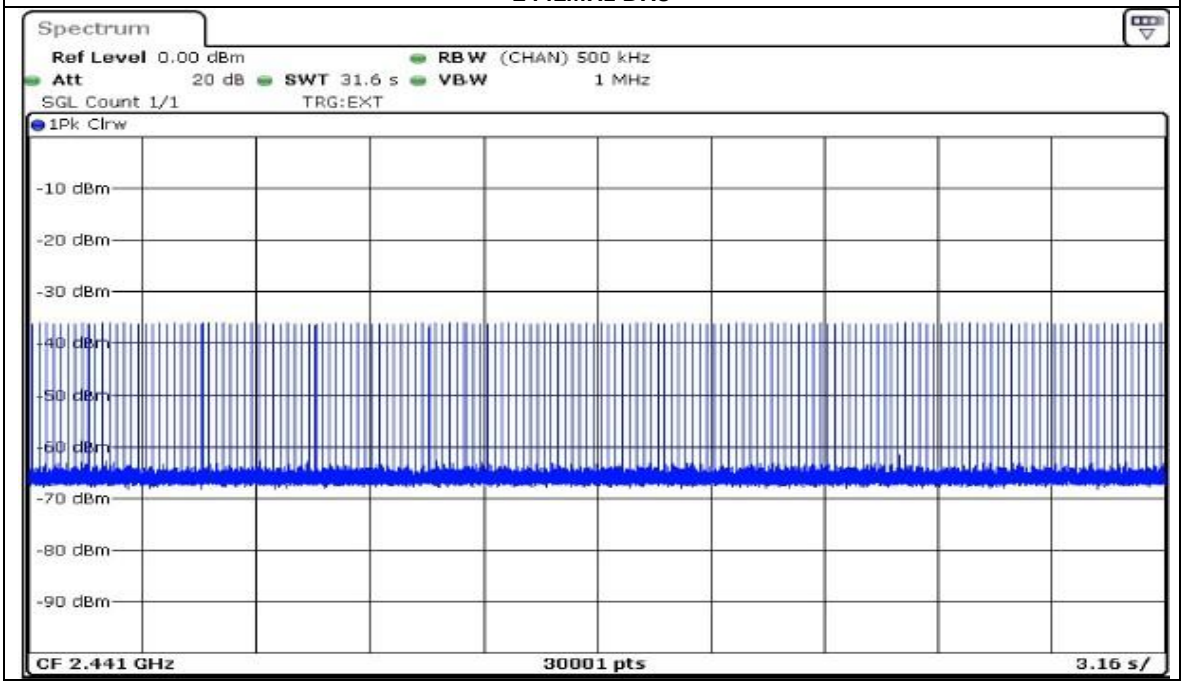
2441MHz

Data Rate	Time (ms)	Limit Max (ms)	Result
DH1	128.480	400.000	PASS
DH3	265.170	400.000	PASS
DH5	310.860	400.000	PASS
2-DH1	127.820	400.000	PASS
2-DH3	256.850	400.000	PASS
2-DH5	300.190	400.000	PASS
3-DH1	127.210	400.000	PASS
3-DH3	255.150	400.000	PASS
3-DH5	298.040	400.000	PASS

2441MHz DH3



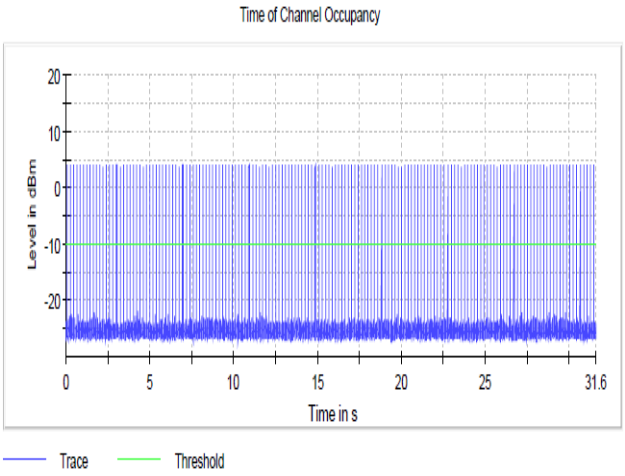
2441MHz DH3



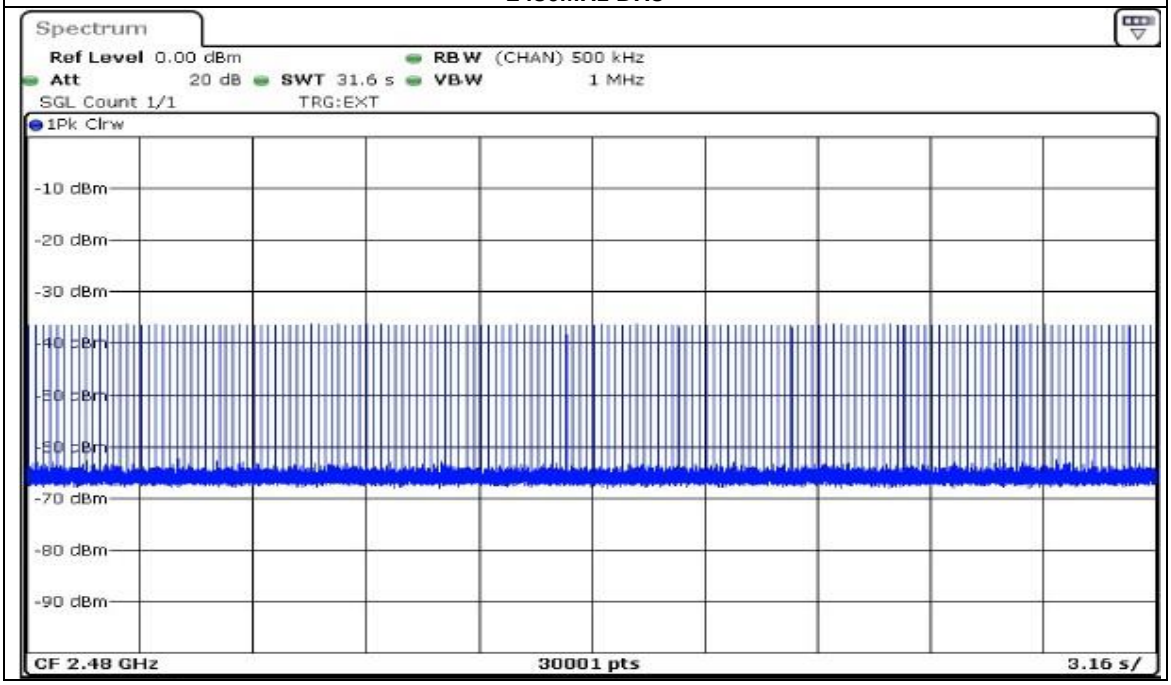
2480MHz

Data Rate	Time (ms)	Limit Max (ms)	Result
DH1	128.380	400.000	PASS
DH3	265.150	400.000	PASS
DH5	310.920	400.000	PASS
2-DH1	126.950	400.000	PASS
2-DH3	255.850	400.000	PASS
2-DH5	299.260	400.000	PASS
3-DH1	125.980	400.000	PASS
3-DH3	253.670	400.000	PASS
3-DH5	292.440	400.000	PASS

2480MHz DH3



2480MHz DH3

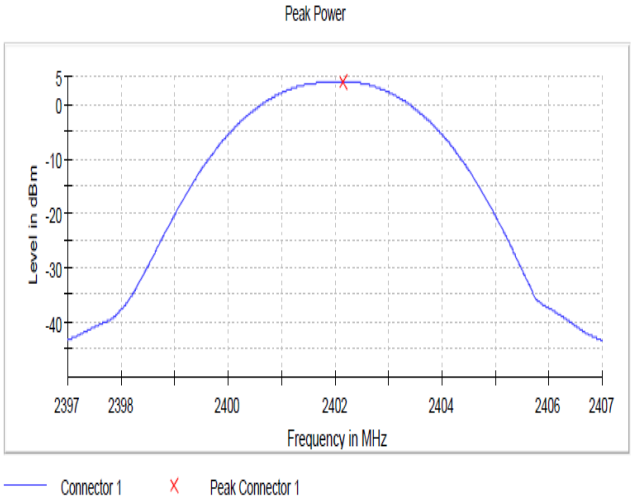


Peak Output Power

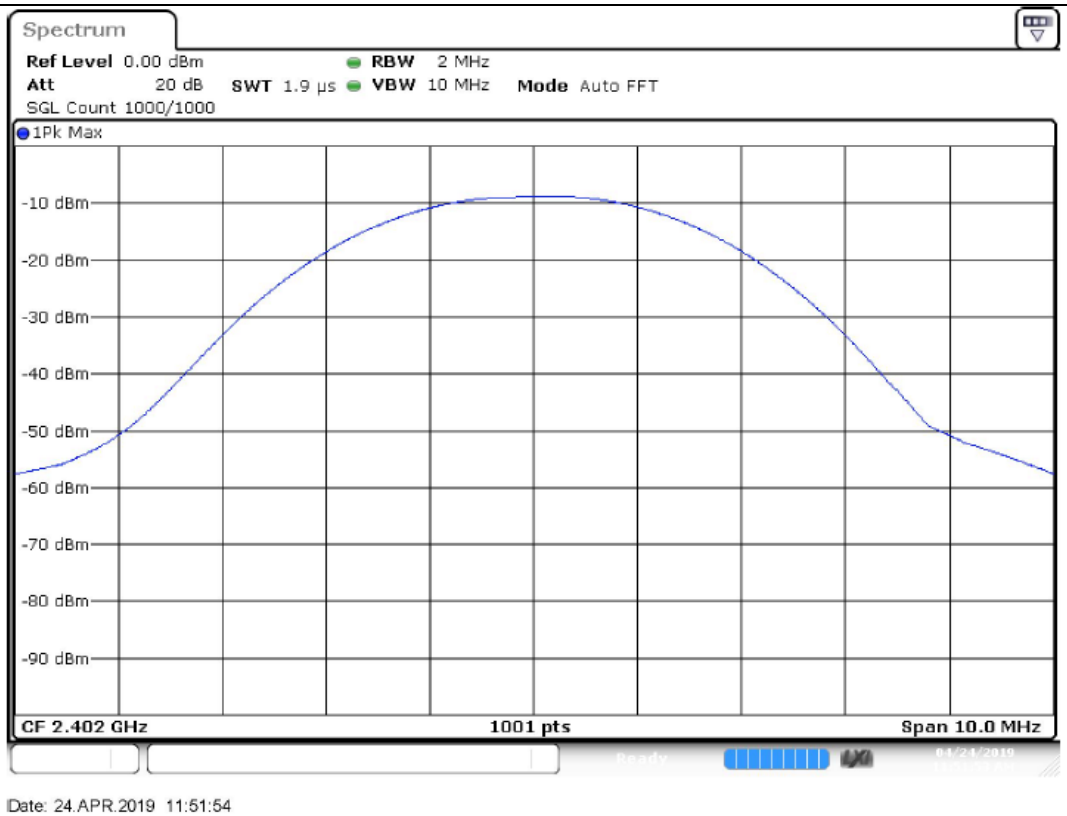
Test procedure in accordance with ANSI C63.10-2013

Data Rate	2402MHz	2441MHz	2480MHz	Limit dBm
DH1	3.920	3.969	3.759	20.96
DH3	4.057	4.041	3.849	20.96
DH5	3.985	3.962	3.780	20.96
2-DH1	2.161	2.306	2.144	20.96
2-DH3	2.174	2.370	2.229	20.96
2-DH5	2.202	2.495	2.155	20.96
3-DH1	2.050	2.273	2.119	20.96
3-DH3	2.308	2.530	2.438	20.96
3-DH5	2.411	2.645	2.224	20.96

2402MHz DH3



2402MHz DH3



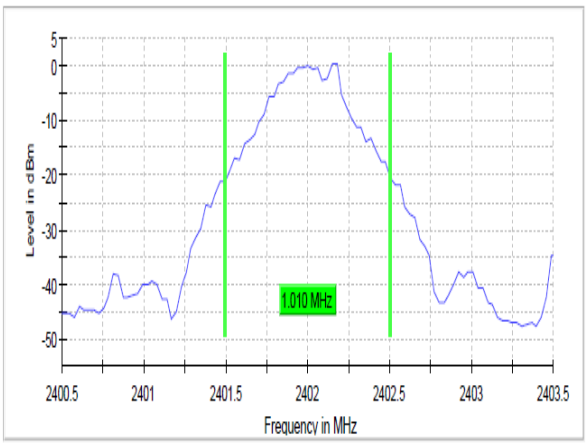
Emission Bandwidth 20 dB

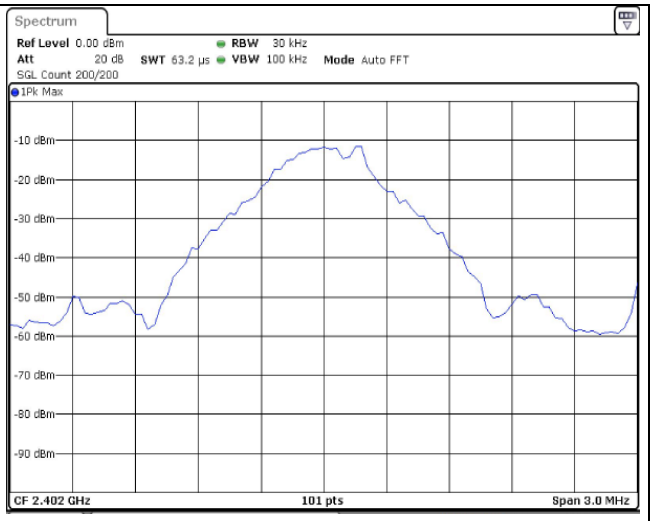
Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

Modulation: GFSK

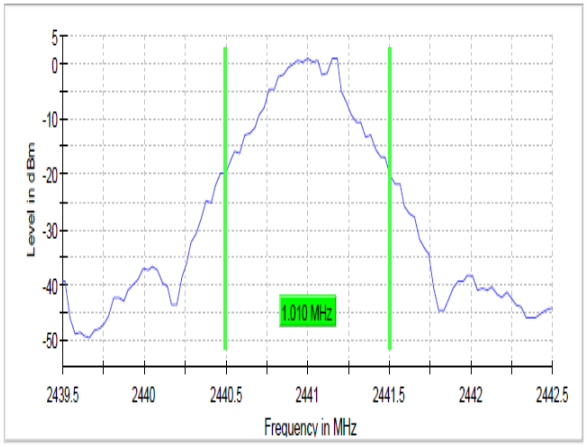
Channel	Data Rate	20dB Bandwidth (MHz)
0	DH1	0.980198
	DH3	0.980198
	DH5	1.009900
39	DH1	0.920793
	DH3	1.009900
	DH5	1.009900
78	DH1	0.920793
	DH3	1.009900
	DH5	1.009900

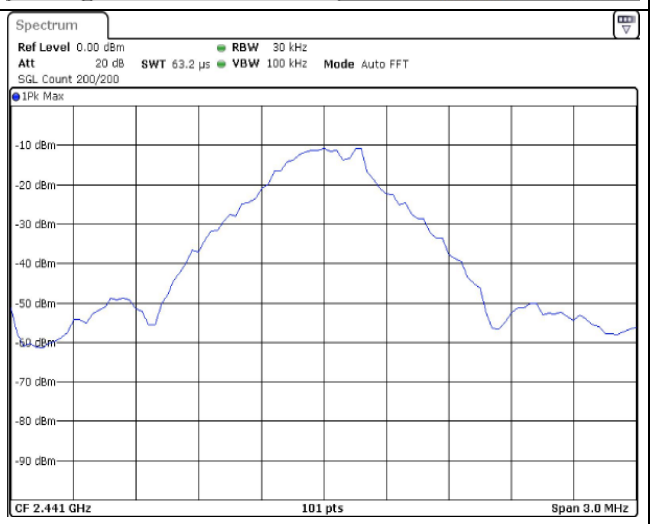
2402 MHz DH5



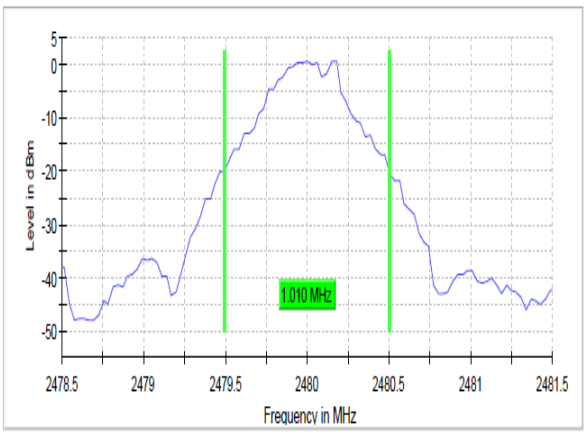


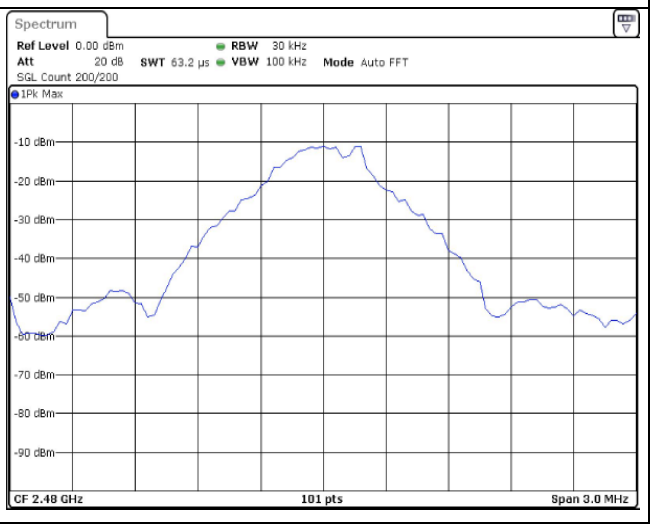
2441 MHz DH5





2480 MHz DH5

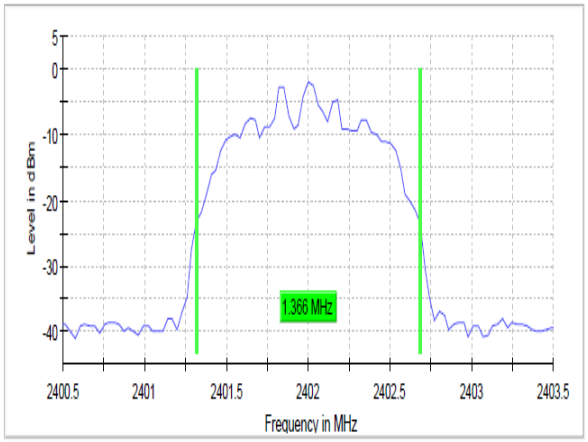


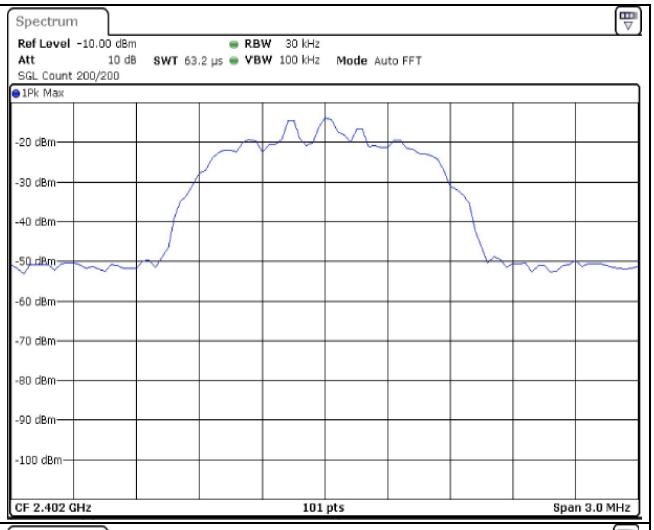


Modulation: π/4-DQPSK

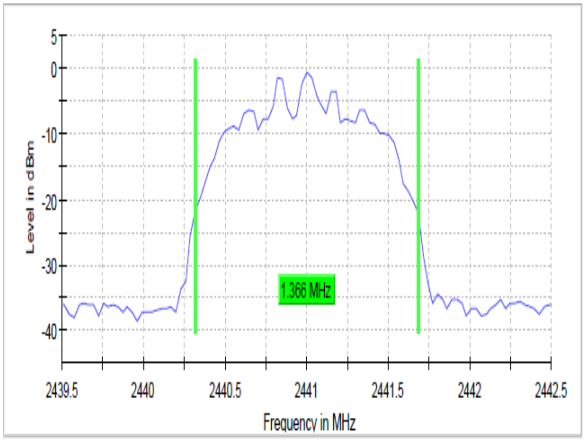
Channel	Data Rate	20dB Bandwidth (MHz)
0	2-DH1	1.306930
	2-DH3	1.366336
	2-DH5	1.366336
39	2-DH1	1.306930
	2-DH3	1.366336
	2-DH5	1.366336
78	2-DH1	1.306930
	2-DH3	1.366336
	2-DH5	1.366336

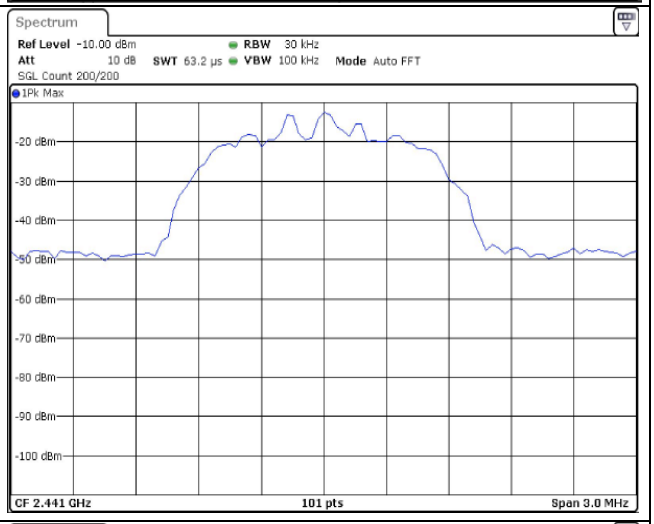
2402 MHz 2-DH3



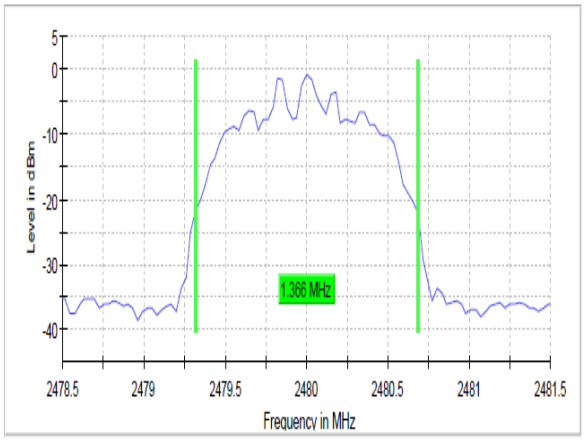


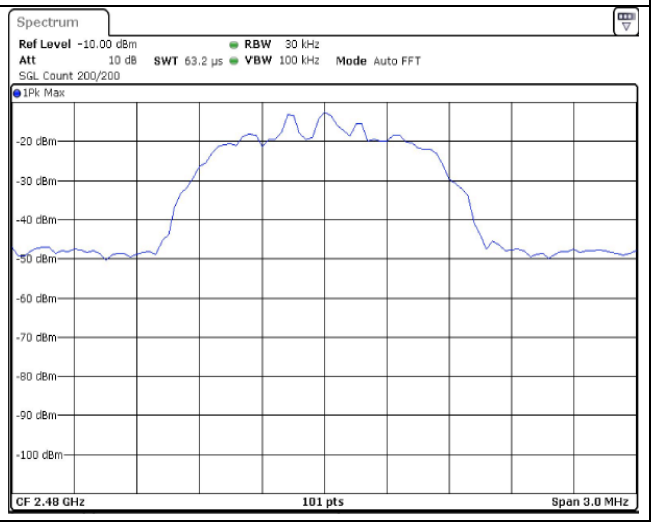
2441 MHz 2-DH3





2480 MHz 2-DH3

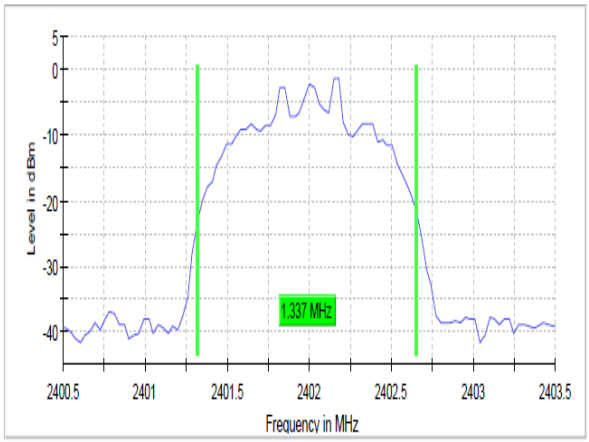


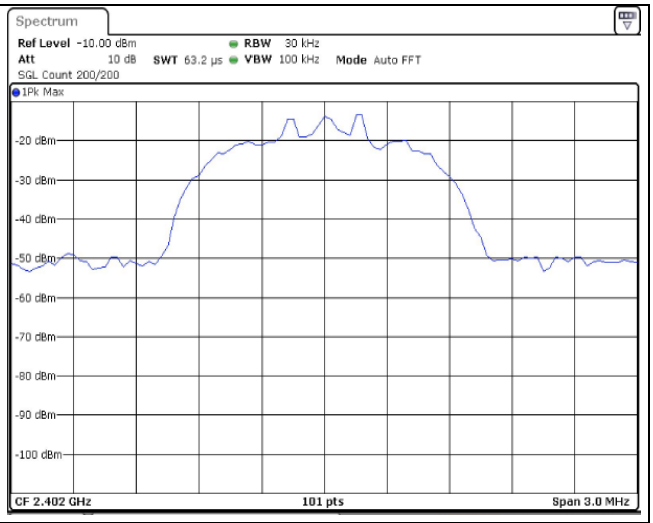


Modulation: 8DPSK

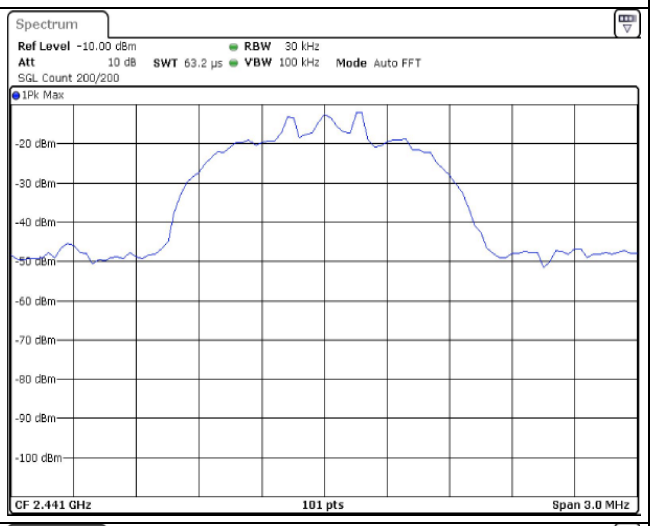
Channel	Data Rate	20dB Bandwidth (MHz)
0	3-DH1	1.306930
	3-DH3	1.336633
	3-DH5	1.336633
39	3-DH1	1.306930
	3-DH3	1.366336
	3-DH5	1.336633
78	3-DH1	1.306930
	3-DH3	1.336633
	3-DH5	1.366336

2402 MHz 3-DH5

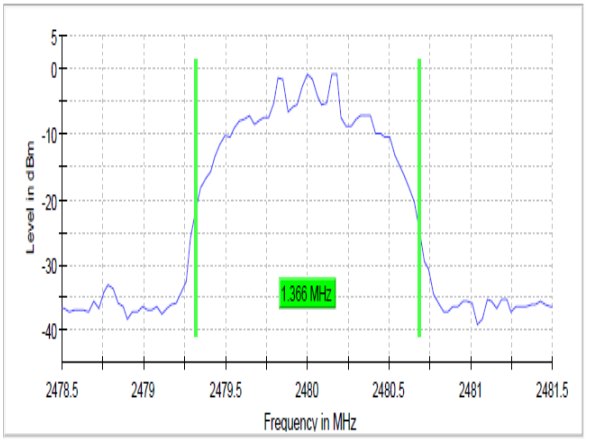


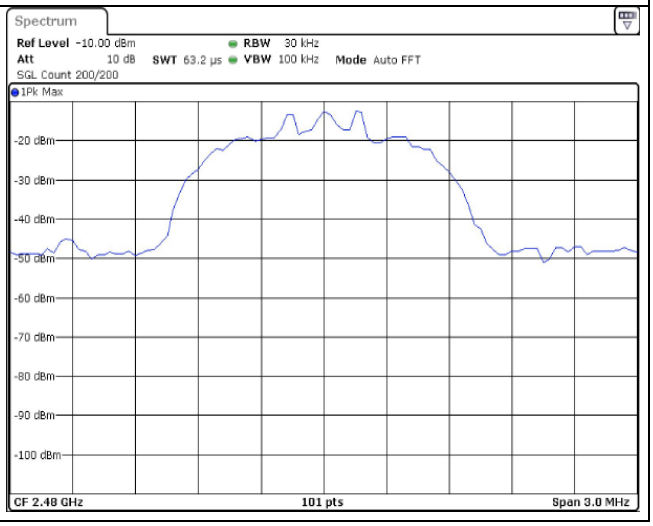


2441 MHz 3-DH5



2480 MHz 3-DH5





Band Edge Low

Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 0.8 dB

In-band Peak

Channel	Inband Peak	DH1	DH3	DH5	2-DH1	2-DH3	2-DH5	3-DH1	3-DH3	3-DH5
0	Frequency (MHz)	2401.825	2402.175	2402.175	2402.025	2402.025	2402.025	2402.025	2402.025	2402.025
	Level (dBm)	2.6	2.7	2.7	0.3	0.3	0.3	0.3	0.3	0.4

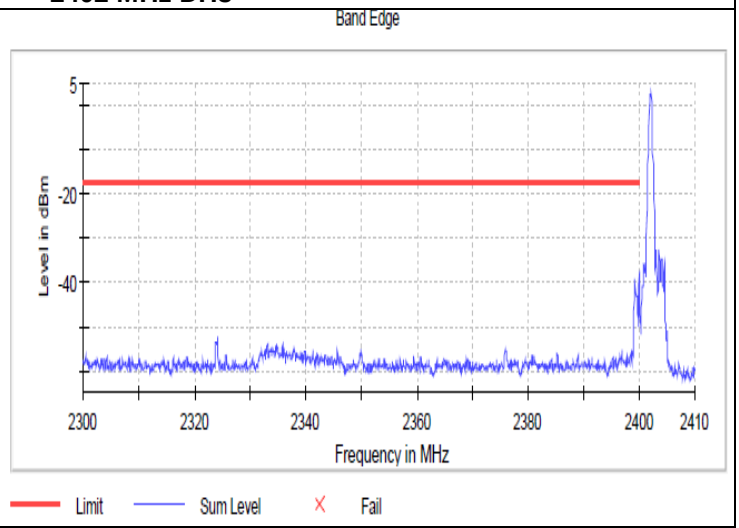
2402 MHz DH3

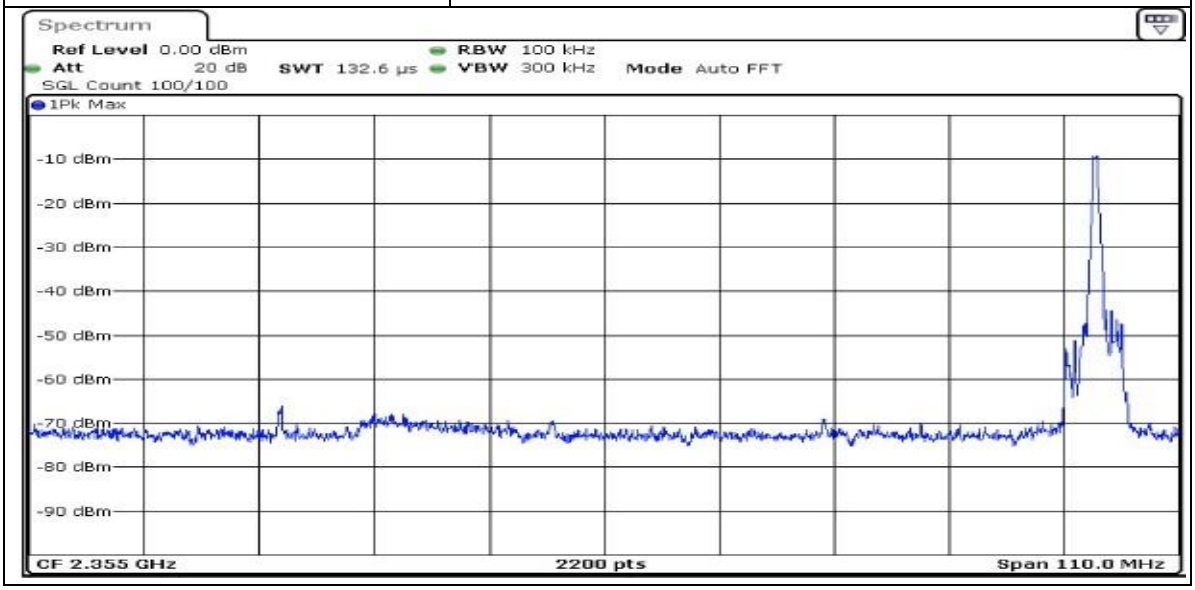
Inband Peak

Frequency (MHz)	Level (dBm)
2402.175000	2.7

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-37.5	20.2	-17.3	PASS
2399.175000	-39.2	21.8	-17.3	PASS
2399.225000	-40.2	22.9	-17.3	PASS
2399.125000	-40.2	22.9	-17.3	PASS
2399.925000	-40.4	23.1	-17.3	PASS
2399.275000	-42.8	25.5	-17.3	PASS
2399.475000	-43.1	25.8	-17.3	PASS
2399.325000	-43.1	25.8	-17.3	PASS
2399.425000	-43.2	25.8	-17.3	PASS
2399.375000	-43.2	25.9	-17.3	PASS
2399.525000	-43.2	25.9	-17.3	PASS
2399.075000	-44.1	26.7	-17.3	PASS
2399.575000	-44.6	27.3	-17.3	PASS
2399.875000	-44.9	27.5	-17.3	PASS
2399.625000	-45.9	28.6	-17.3	PASS





Band Edge High

Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 0.8 dB

In-band Peak

Channel	Inband Peak	DH1	DH3	DH5	2-DH1	2-DH3	2-DH5	3-DH1	3-DH3	3-DH5
78	Frequency (MHz)	2479.825	2479.825	2479.975	2479.975	2479.825	2480.025	2479.975	2480.025	2479.825
	Level (dBm)	3.4	3.4	3.3	1.6	1.6	1.5	1.6	1.6	1.7

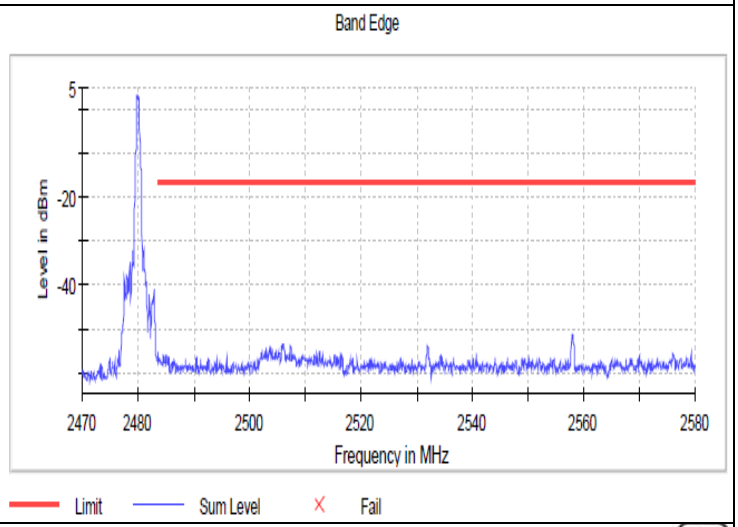
2480 MHz DH3

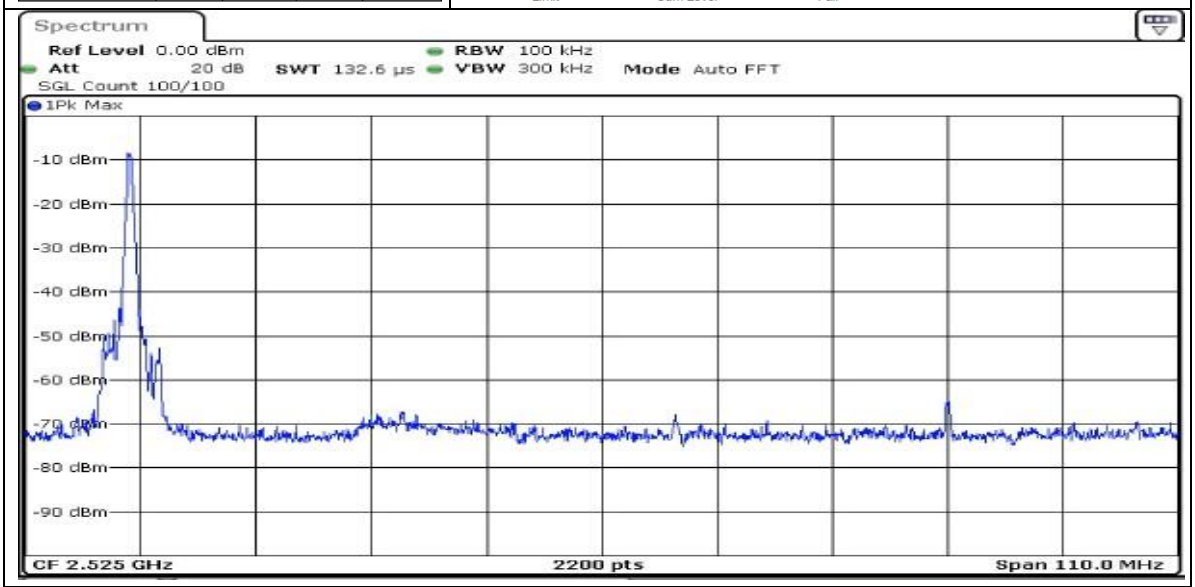
Inband Peak

Frequency (MHz)	Level (dBm)
2479.825000	3.4

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2558.075000	-51.3	34.8	-16.6	PASS
2557.825000	-51.4	34.8	-16.6	PASS
2558.025000	-51.5	34.9	-16.6	PASS
2557.975000	-51.6	35.0	-16.6	PASS
2557.875000	-52.2	35.6	-16.6	PASS
2557.775000	-52.4	35.9	-16.6	PASS
2557.925000	-52.4	35.9	-16.6	PASS
2558.125000	-53.1	36.5	-16.6	PASS
2558.175000	-53.1	36.6	-16.6	PASS
2506.025000	-53.4	36.8	-16.6	PASS
2505.975000	-53.6	37.0	-16.6	PASS
2506.175000	-53.7	37.2	-16.6	PASS
2506.075000	-53.7	37.2	-16.6	PASS
2506.125000	-53.9	37.3	-16.6	PASS
2503.625000	-53.9	37.3	-16.6	PASS





Occupied Channel Bandwidth 99%

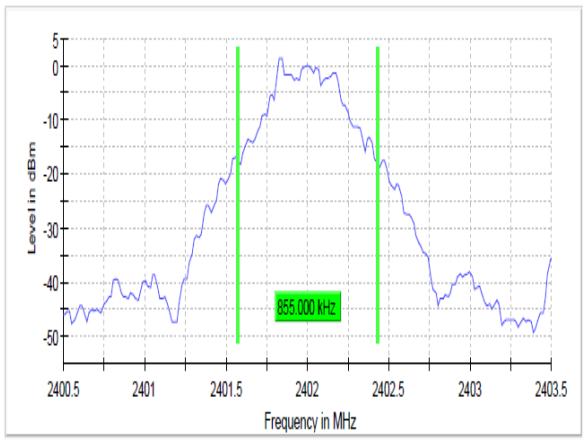
Test procedure in accordance with RSS-Gen Issue 5 Section 6.7.

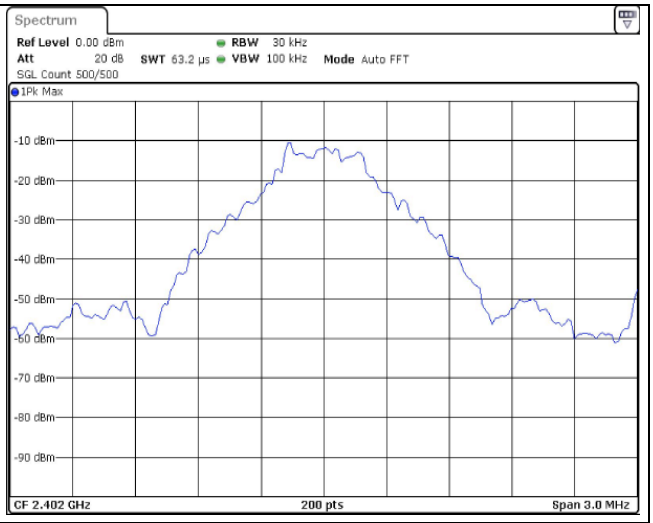
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

Modulation: GFSK

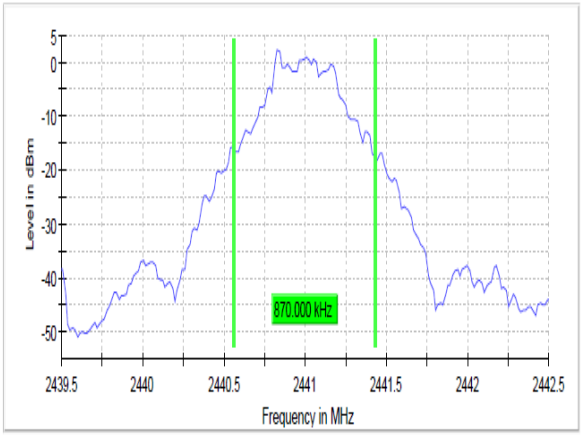
Channel	Data Rate	Occupied Channel Bandwidth 99% (MHz)
0	DH1	0.855000
	DH3	0.855000
	DH5	0.855000
39	DH1	0.840000
	DH3	0.870000
	DH5	0.870000
78	DH1	0.840000
	DH3	0.870000
	DH5	0.870000

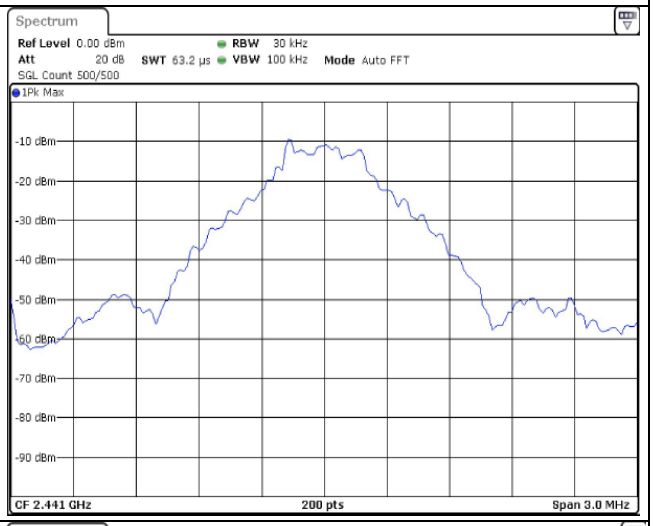
2402 MHz DH3



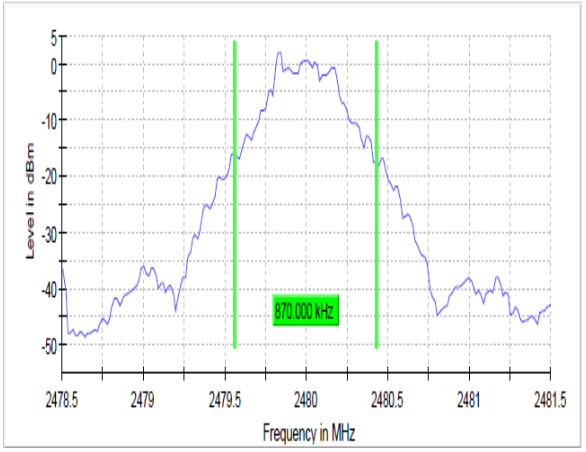


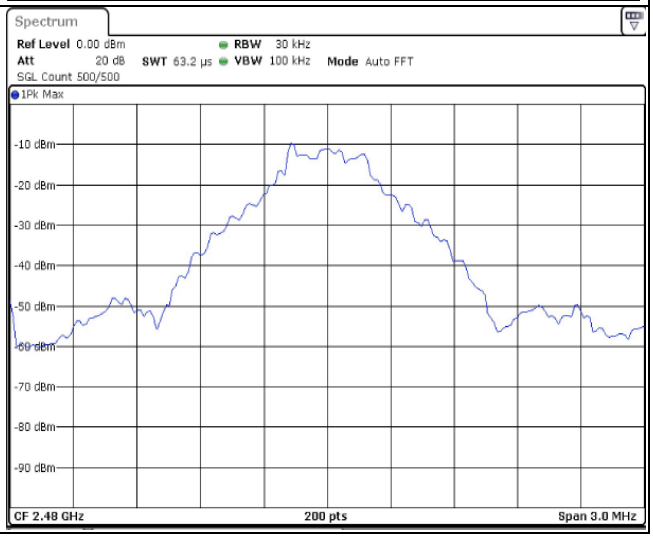
2441 MHz DH3





2480 MHz DH3

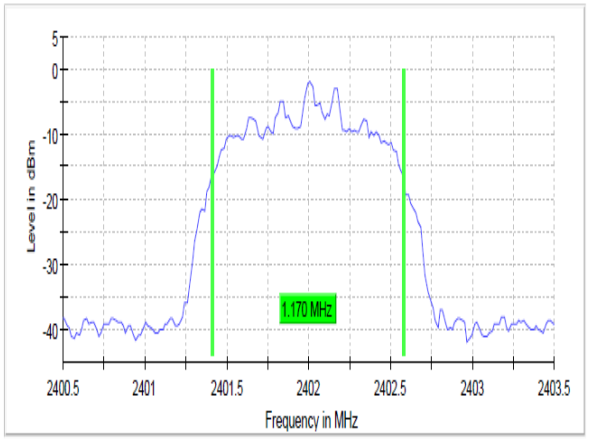


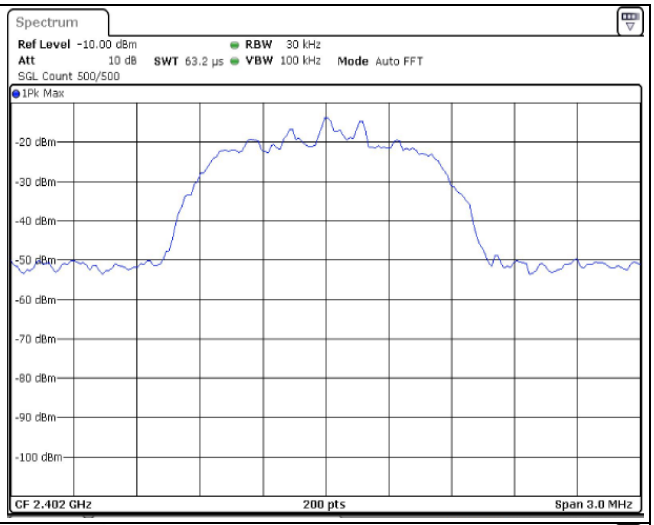


Modulation: π/4-DQPSK

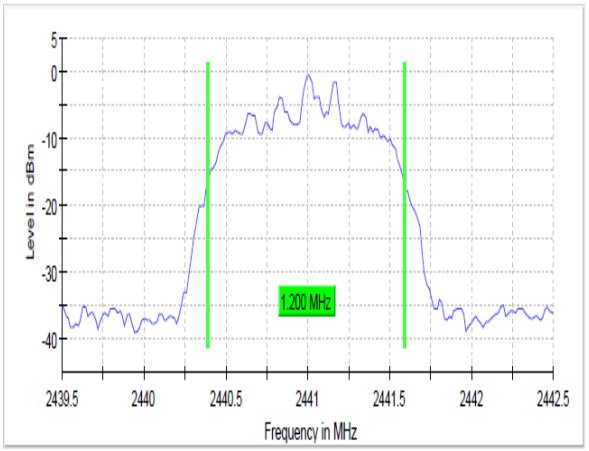
Channel	Data Rate	Occupied Channel Bandwidth 99% (MHz)
0	2-DH1	1.170000
	2-DH3	1.170000
	2-DH5	1.170000
39	2-DH1	1.185000
	2-DH3	1.200000
	2-DH5	1.200000
78	2-DH1	1.185000
	2-DH3	1.200000
	2-DH5	1.200000

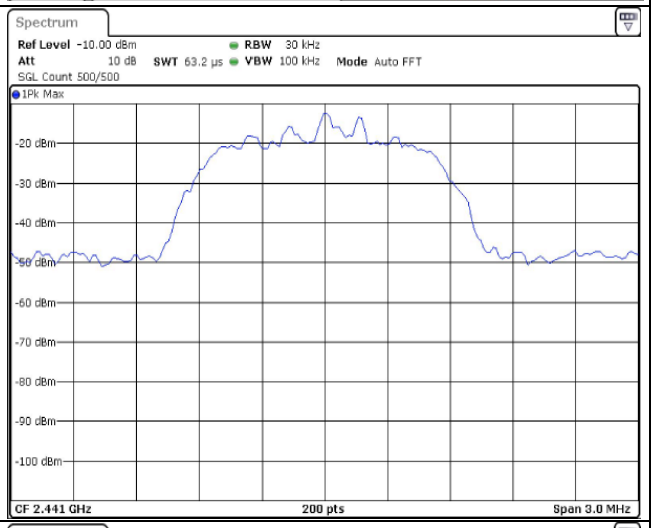
2402 MHz 2-DH5



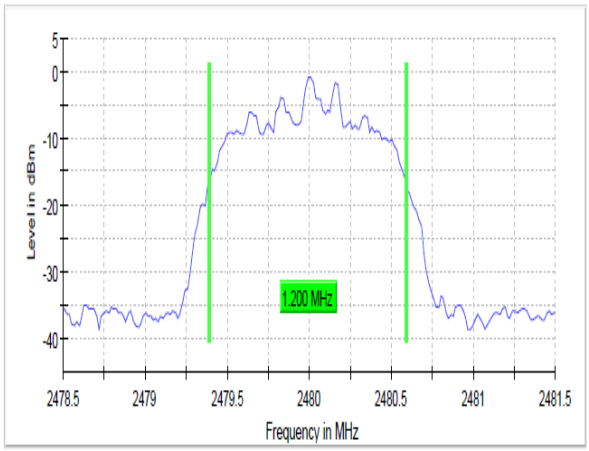


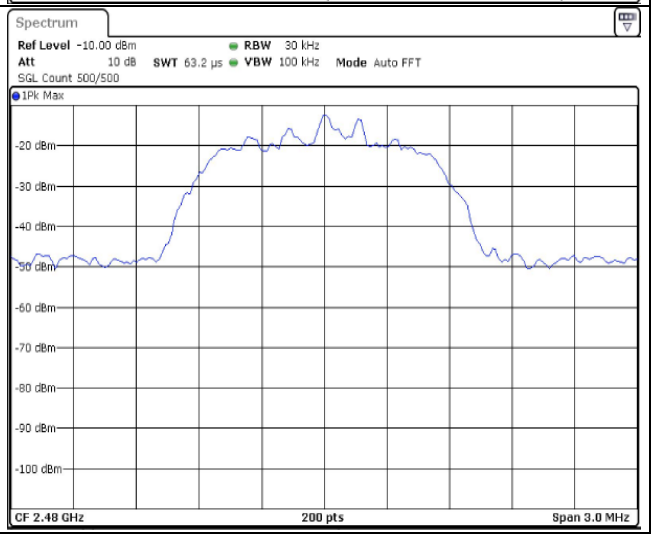
2441 MHz 2-DH5





2480 MHz 2-DH5

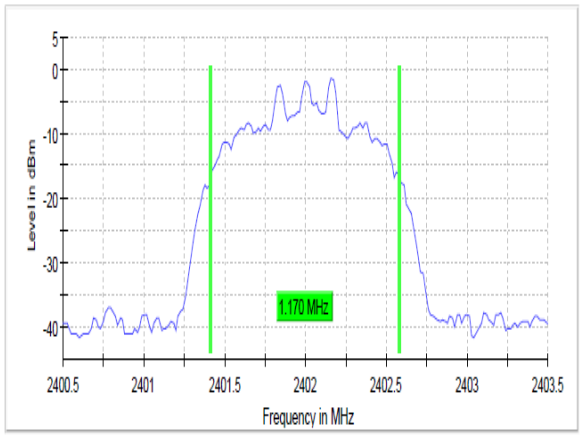


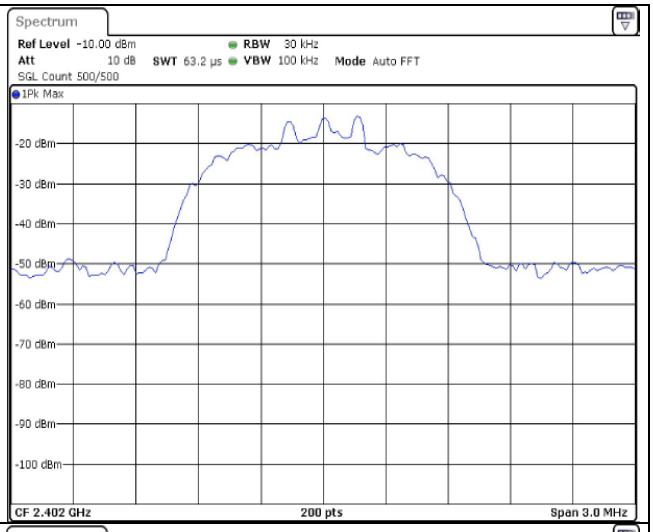


Modulation: 8DPSK

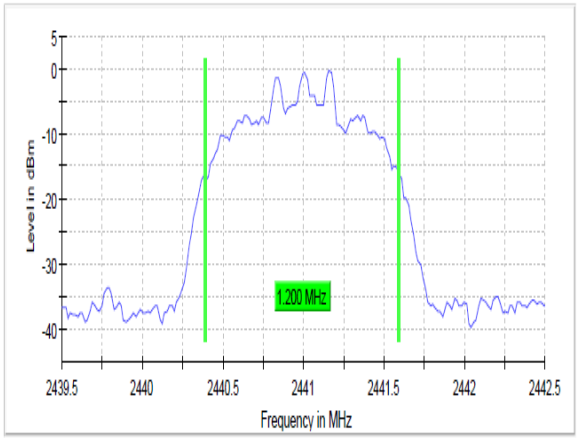
Channel	Data Rate	Occupied Channel Bandwidth 99% (MHz)
0	3-DH1	1.170000
	3-DH3	1.200000
	3-DH5	1.170000
39	3-DH1	1.170000
	3-DH3	1.200000
	3-DH5	1.200000
78	3-DH1	1.170000
	3-DH3	1.200000
	3-DH5	1.200000

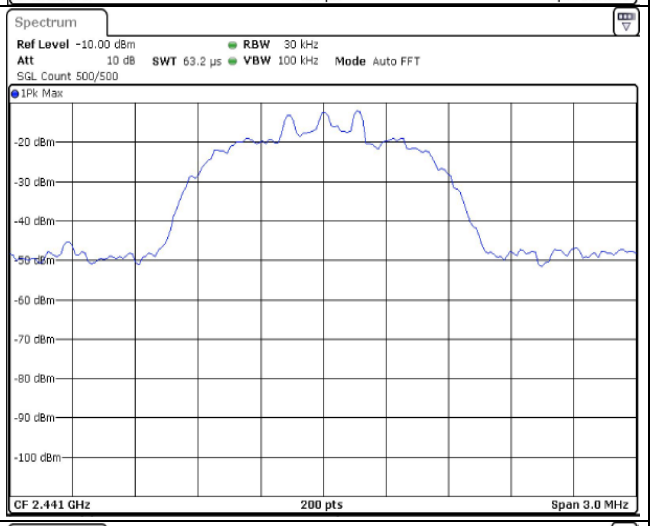
2402 MHz 3-DH5



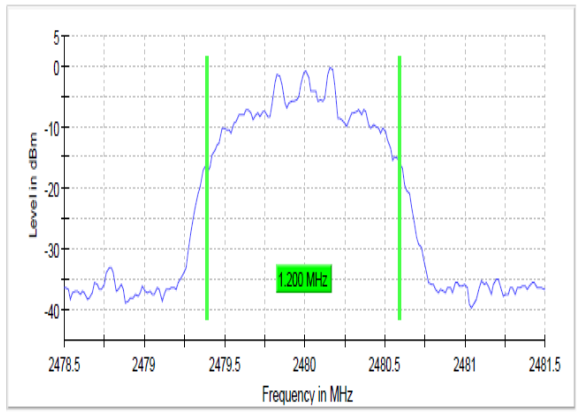


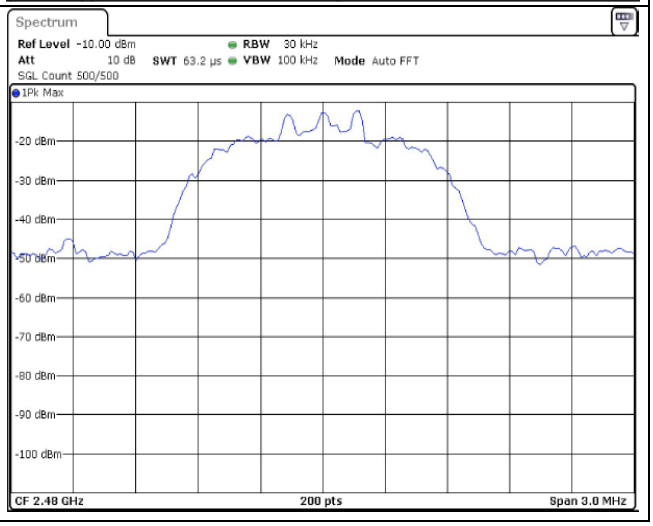
2441 MHz 3-DH5





2480 MHz 3-DH5





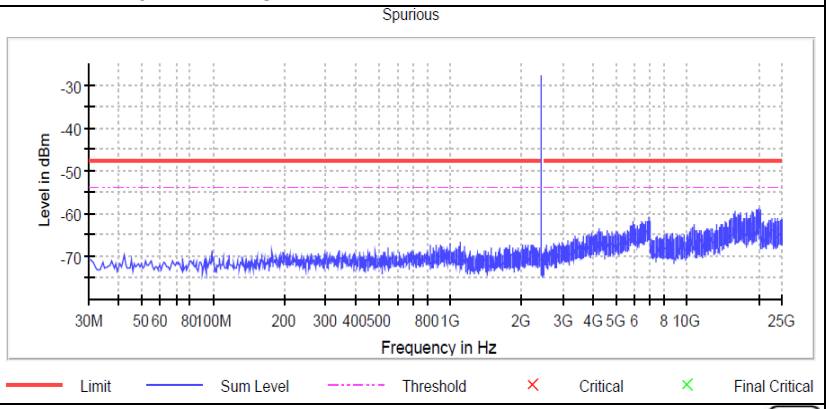
Conducted Spurious Emissions

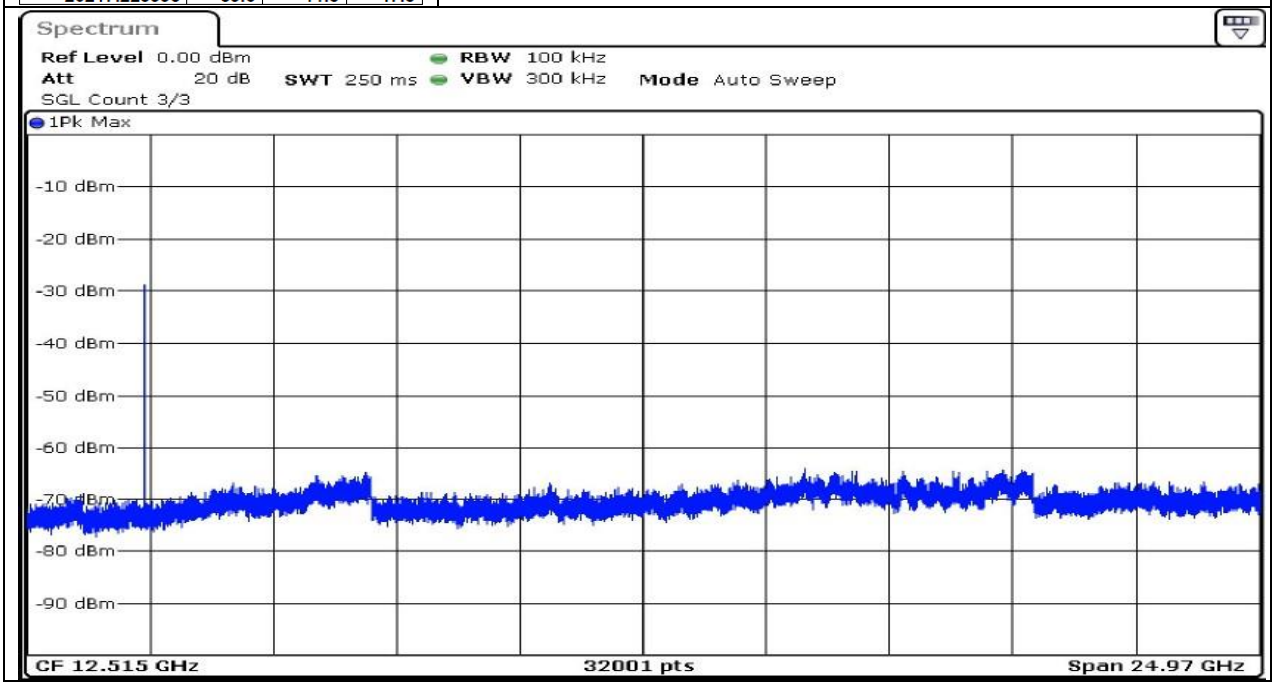
Test procedure in accordance with ANSI C63.10-2013
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 0.8 dB

2402 MHz DH3

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
20190.694197	-58.9	11.1	-47.8
19814.595325	-58.9	11.1	-47.8
20251.556670	-59.0	11.3	-47.8
19502.480079	-59.2	11.4	-47.8
18793.198181	-59.3	11.5	-47.8
20195.375926	-59.3	11.5	-47.8
19503.260367	-59.3	11.6	-47.8
15805.474985	-59.3	11.6	-47.8
20292.911940	-59.4	11.6	-47.8
20235.170620	-59.4	11.6	-47.8
20233.610043	-59.6	11.8	-47.8
19784.164089	-59.6	11.8	-47.8
18942.233211	-59.6	11.8	-47.8
20216.443705	-59.6	11.8	-47.8
20217.223993	-59.6	11.8	-47.8

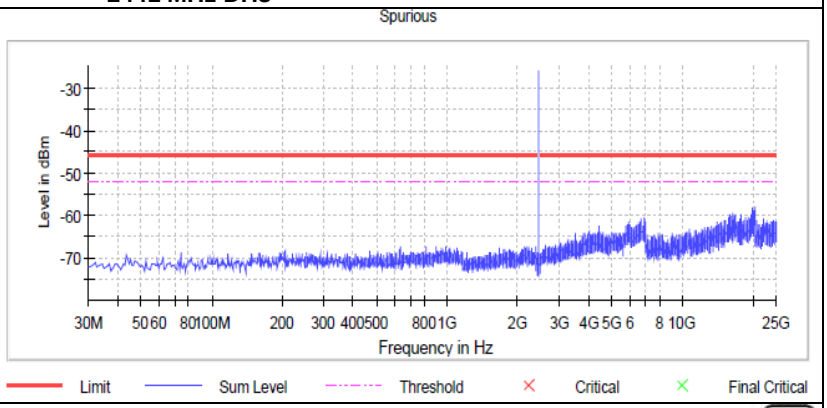


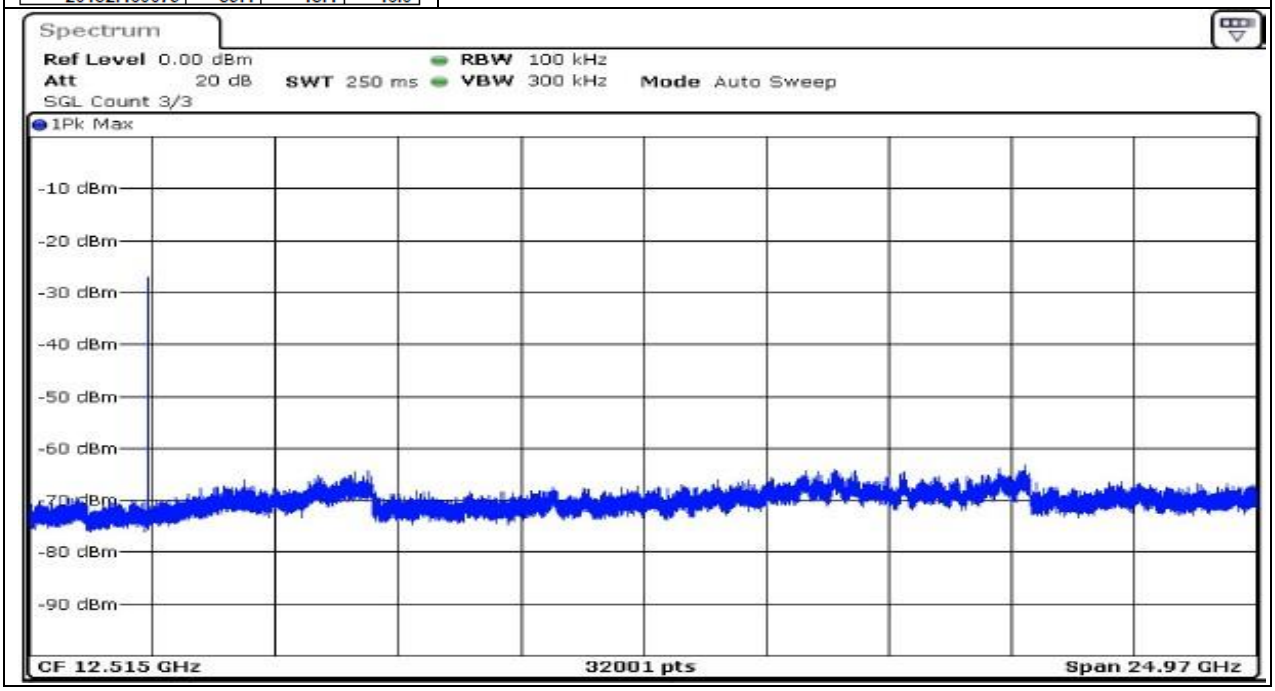


2441 MHz DH3

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
20285.889347	-57.9	11.8	-46.0
19759.975157	-58.5	12.4	-46.0
20282.768195	-58.7	12.6	-46.0
20229.708603	-59.0	12.9	-46.0
20253.117246	-59.0	12.9	-46.0
20178.989875	-59.0	13.0	-46.0
20194.595638	-59.1	13.1	-46.0
20212.542264	-59.2	13.2	-46.0
20193.035061	-59.2	13.2	-46.0
19765.437174	-59.2	13.2	-46.0
20189.913909	-59.3	13.3	-46.0
20214.102841	-59.3	13.3	-46.0
20278.086466	-59.4	13.4	-46.0
20344.410956	-59.4	13.4	-46.0
20152.460079	-59.4	13.4	-46.0





2480 MHz DH3

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
20239.852348	-57.8	11.4	-46.5
19776.361207	-58.1	11.7	-46.5
19784.944377	-58.4	11.9	-46.5
19742.808818	-58.7	12.2	-46.5
19984.698134	-58.9	12.4	-46.5
19748.270835	-59.0	12.5	-46.5
20277.306178	-59.0	12.6	-46.5
19829.420799	-59.1	12.6	-46.5
20253.897534	-59.1	12.6	-46.5
20174.308147	-59.1	12.7	-46.5
20170.406706	-59.2	12.7	-46.5
20285.109059	-59.2	12.7	-46.5
20313.199431	-59.3	12.8	-46.5
20235.950908	-59.3	12.9	-46.5
20257.798975	-59.4	12.9	-46.5