

FCC Test Report

Equipment : Bluetooth Headset
Brand Name : Bang & Olufsen
Model No. : Beoplay H9
FCC ID : TTUBEOPLAYH9
Standard : 47 CFR FCC Part 15.247
RF Specification : Bluetooth BR/EDR
Frequency : 2400 MHz – 2483.5 MHz
FCC Classification : DSS
Applicant / Manufacturer : Bang & Olufsen A/S
Peter Bangs Vej 15, DK-7600 Struer, Denmark

The product sample received on Oct. 12, 2016 and completely tested on Oct. 20, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:


Kevin Liang / Assistant Manager



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Appendix I. Test Result of AC Power-line Conducted Emissions

Appendix A. Test Result of Emission Bandwidth & Channel Separation

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Appendix E.1~E.2. Test Result of Emissions in Restricted Frequency Bands

Appendix F. Test Photos

Summary of Test Result

Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Limit	Result
1.1.3	15.203	Antenna Requirement	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	Complied
3.2	15.247(a)	20dB Bandwidth	N/A	Complied
3.2	15.247(a)	Carrier Frequency Separation (ChS)	$ChS \geq BW_{20dB} \times 2/3$	Complied
3.3	15.247(a)	Number of Hopping Frequencies (N)	$N \geq 15$	Complied
3.4	15.247(a)	Time of Occupancy (Dwell Time)	0.4 s within 0.4 x N	Complied
3.5	15.247(b)	RF Output Power	Power [dBm] BR:21 EDR:21	Complied
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: > 20 dBc	Complied
3.7	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied



SPORTON INTERNATIONAL INC.
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FAX : 886-3-327-0973

1 General Description

1.1 Information

1.1.1 Product Details

The difference between the report no. : N/A	
The Difference	N/A

Evaluated Test Items	N/A
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1.1.2 RF General Information

Band	Mode	BWch (MHz)	Channel Number	Nss-Min	Nant
2.4G	BR / EDR	1	0-78 [79]	1	1

Note:

- ♦ 2.4G is the 2.4GHz Band (2.4-2.4835GHz)
- ♦ Bluetooth BR uses GFSK (1Mbps).
- ♦ Bluetooth EDR uses a combination of $\pi/4$ -DQPSK(2Mbps) and 8DPSK (3Mbps)
- ♦ BWch is the nominal channel bandwidth.
- ♦ Nss-Min is the minimum number of spatial streams.
- ♦ Nant is the number of outputs.

1.1.3 Antenna Information

Antenna Category	
☒	Integral antenna (antenna permanently attached)
☐	Temporary RF connector provided
☒	No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
☐	External antenna (dedicated antennas)
☐	Single power level with corresponding antenna(s).
☐	Multiple power level and corresponding antenna(s).

Antenna General Information				
No.	Ant. Cat.	Ant. Type	Model No.	Gain (dBi)
A	Integral	Chip	SDBTPTR3015	1.99

1.1.4 Type of EUT

Identify EUT	
EUT Serial Number	N/A
HW Ver. / FW Ver.	V1.0 / V5.0.0
Mac Address	00-09-A7-0D-F0-39
Presentation of Equipment	☐ Production ; ☒ Pre-Production ; ☐ Prototype
Type of EUT	
☒	Stand-alone
☐	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
☐	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
☐	Other:

1.1.5 Mode Test Duty Cycle

Mode	DC	T(s)
BT-BR	0.760	2.908m
BT-EDR2	0.762	2.915m
BT-EDR3	0.792	2.916m

1.1.6 EUT Operational Condition

Supply Voltage	☐ AC mains	☒ DC	
Type of DC Source	☐ External AC adapter	☒ From Host System	☒ Battery

1.1.7 EUT Operate Information

Items	Description	
Operate Condition	☒ Point-to-multipoint (P2M)	☐ Point-to-point (P2P)

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ Public Notice DA 00-705

1.3 Testing Location Information

Testing Location				
☒	HWA YA	ADD :	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.	
		TEL :	886-3-327-3456	FAX : 886-3-327-0973
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Ryan	22°C / 55%	14/10/2016
RF Conducted	TH01-HY	Ryan	24.5°C / 66%	14/10/2016
Radiated	03CH09-HY	Thor	25.1°C / 57.9%	20/10/2016

Test site registered number [553509] with FCC.

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Measurement Uncertainty		
Test Item		Uncertainty
AC power-line conducted emissions		±2.3 dB
Emission bandwidth, 6dB bandwidth		±0.6 %
RF output power, conducted		±0.1 dB
Power density, conducted		±0.6 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±5 %
DC and low frequency voltages		±0.9%
Time		±1.4 %
Duty Cycle		±0.6 %

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TN,VN	TN	20°C
-	VN	3.7V
Radiated RF	Remark	-
TX	USB	-

2.2 Test Channel Mode

Test Software Version	InstallBlueSuite_2_6_2_632
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Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	BT-BR	1	1	1	2402	L	63
2.4G	BT-BR	1	1	1	2440	M	63
2.4G	BT-BR	1	1	1	2480	H	63
2.4G	BT-EDR2	1	1	1	2402	L	120
2.4G	BT-EDR2	1	1	1	2440	M	120
2.4G	BT-EDR2	1	1	1	2480	H	120
2.4G	BT-EDR3	1	1	1	2402	L	120
2.4G	BT-EDR3	1	1	1	2440	M	120
2.4G	BT-EDR3	1	1	1	2480	H	120

Abbreviation Explanation

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Test Cond.	Abbreviation
2.4G	BT-BR	1	1	1	2402	L	TN,VN	2.4G;BT-BR;1;1;2402;L;TN,VN

Note:

- ♦ Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.).

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	USB Mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, 20dB Bandwidth, Carrier Frequency Separation (ChS), Number of Hopping Frequencies (N), Time of Occupancy (Dwell Time), Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement		
User Position	☐ EUT will be placed in fixed position.		
	☐ EUT will be placed in mobile position and operating multiple positions.		
	☒ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.		
Operating Mode < 1GHz	☒ 1. USB Mode		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT	V		

2.4 Accessories and Support Equipment

Accessories Information				
Battery	Brand Name	Bang & Olufsen	Model Name	PLB-103
	Power Rating	3.7 Vdc, 770 mAh	Type	Li-ion
USB Cable	Brand Name	Bang & Olufsen	Model Name	-
	Signal Line	0.25 meter, non-shielded cable, w/o ferrite core		
Audio Cable	Brand Name	Bang & Olufsen	Model Name	-
	Signal Line	1.25 meter, non-shielded cable, w/o ferrite core		

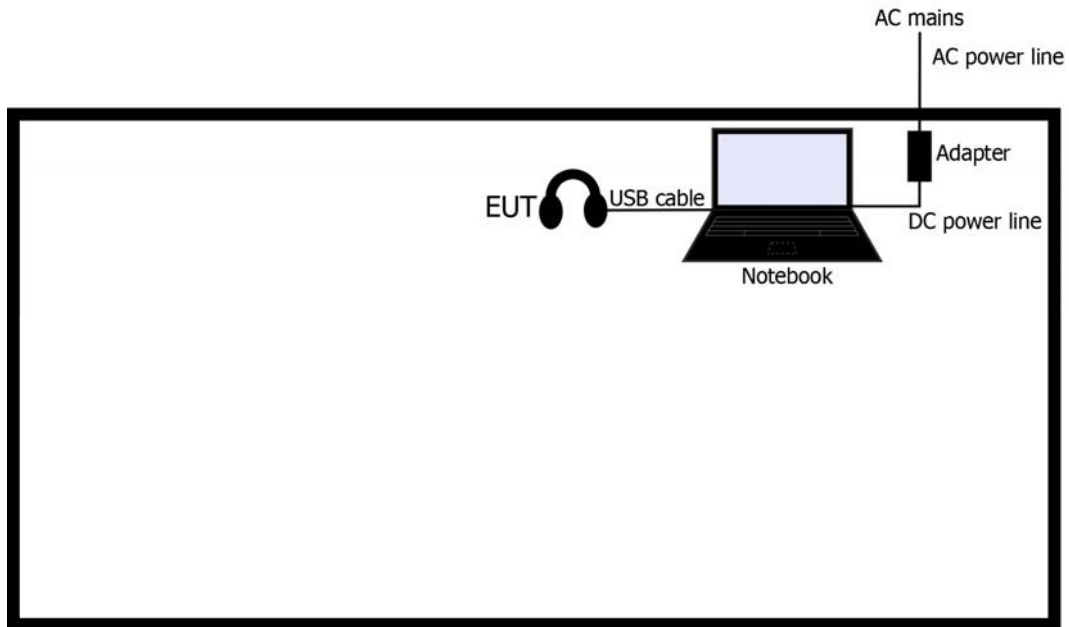
Reminder: Regarding to more detail and other information, please refer to user manual.

Support Equipment - RF Conducted			
No.	Equipment	Brand Name	Model Name
1	Notebook	DELL	E6400
2	AC Adapter for Notebook	DELL	HA65NM130

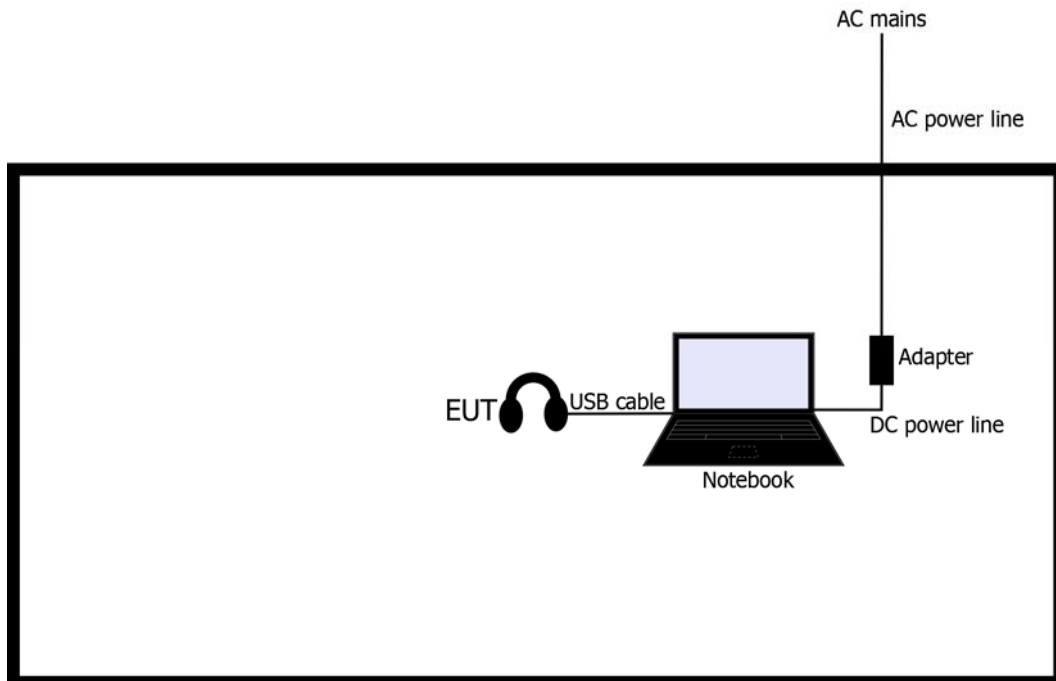
Support Equipment - AC Conduction and Radiated Emission			
No.	Equipment	Brand Name	Model Name
1	Notebook	DELL	E5520
2	AC Adapter for Notebook	DELL	LA65NS2-01

2.5 Test Setup Diagram

Test Setup Diagram - AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

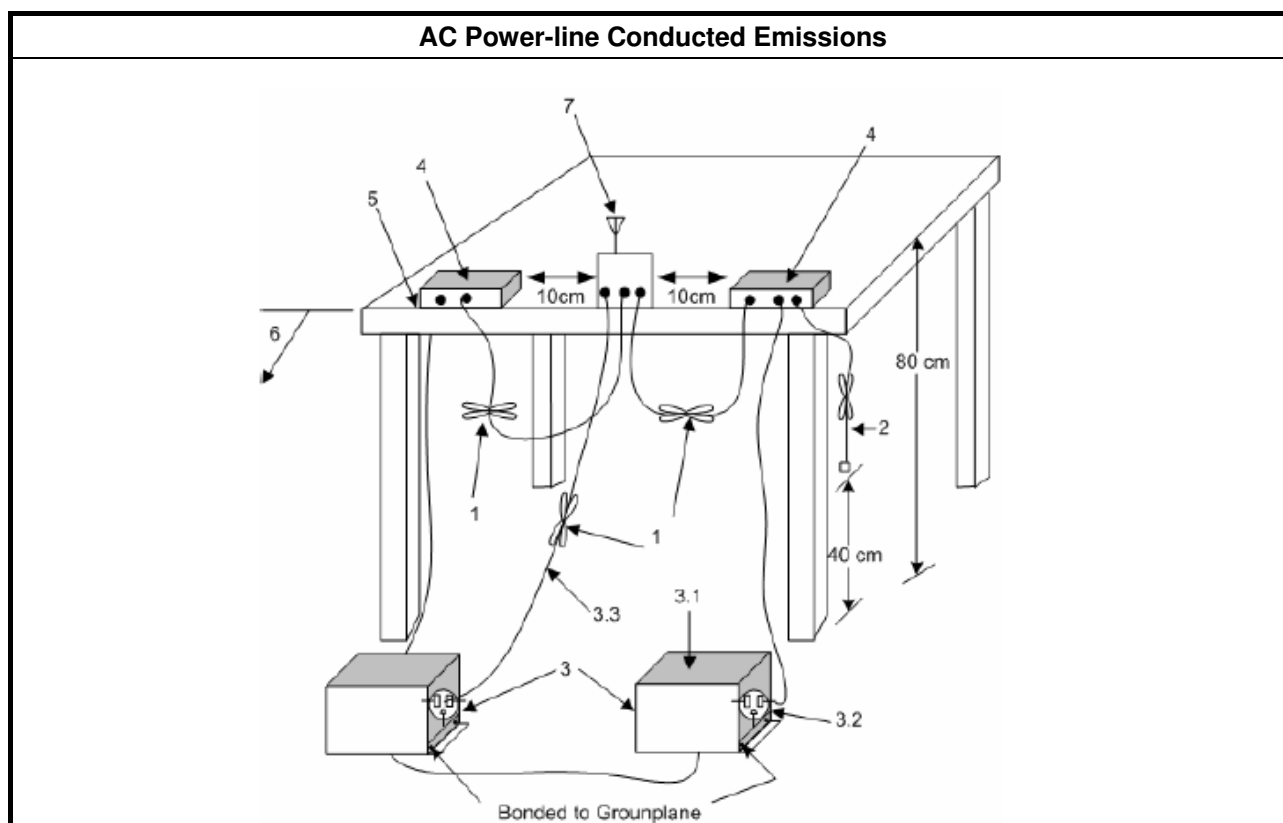
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix I

3.2 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
☒	2400-2483.5 MHz Band:
☐	$N \geq 75$ and ChS $\geq$ MAX (20 dB bandwidth, 25 kHz).
☒	$N \geq 15$ and ChS $\geq$ MAX (20 dB bandwidth x 2/3, 25 kHz).
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

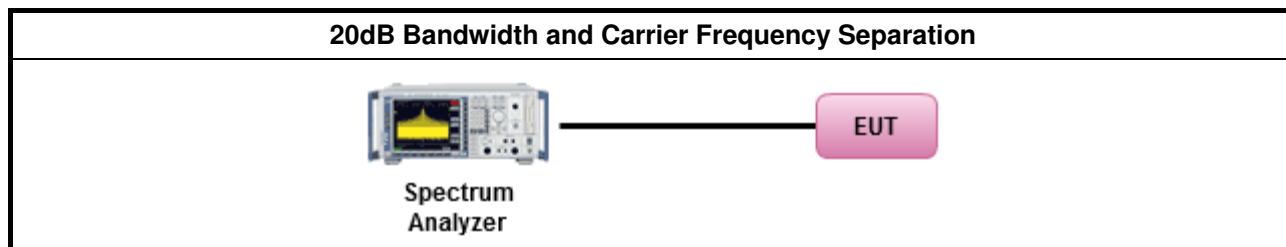
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
☒	Refer as ANSI C63.10, clause 6.9.2 for 20 dB bandwidth measurement.
☒	Refer as ANSI C63.10, clause 7.8.2 for carrier frequency separation measurement.
☒	For conducted measurement.
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☐	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.2.4 Test Setup



3.2.5 Test Result of 20dB Bandwidth and Carrier Frequency Separation

Refer as Appendix A

3.3 Number of Hopping Frequencies

3.3.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit for Frequency Hopping Systems	
☒	2400-2483.5 MHz Band:
☐	$N \geq 75$ and ChS $\geq$ MAX (20 dB bandwidth, 25 kHz).
☒	$N \geq 15$ and ChS $\geq$ MAX (20 dB bandwidth x 2/3, 25 kHz).
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

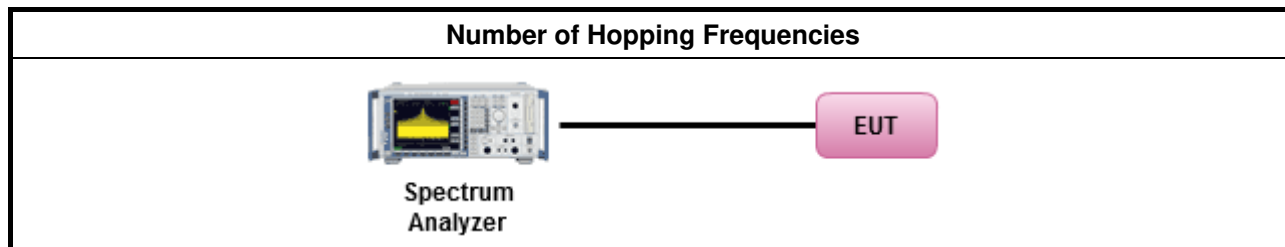
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
☒	Refer as ANSI C63.10, clause 7.8.3 for number of hopping frequencies measurement.
☒	For conducted measurement.
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☐	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.3.4 Test Setup



3.3.5 Test Result of Number of Hopping Frequencies

Refer as Appendix C.1

3.4 Time of Occupancy (Dwell Time)

3.4.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems	
☒	2400-2483.5 MHz Band: Dwell time ≤ 0.4 second within $0.4 \times N$
N: Number of Hopping Frequencies	

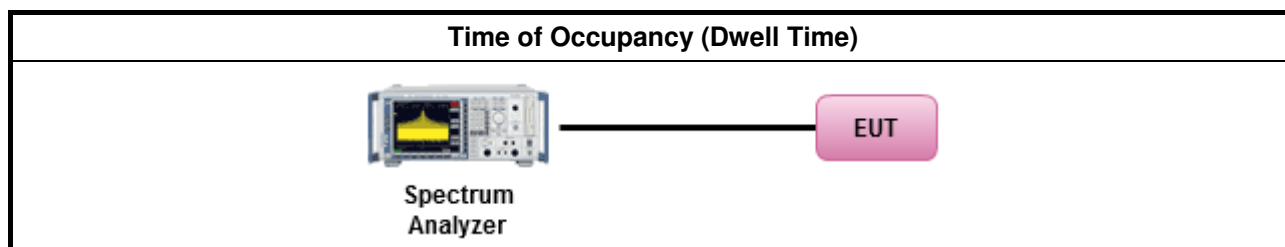
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method	
☒	Refer as DA-00-705 for dwell time measurement.
☒	Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.
☒	The DH1 packet can cover a single time slot. A maximum length packet has duration of 1 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $1/1600$ seconds, or 0.625ms. DH1 Packet permit maximum $1600 / 79 / 2 = 10.12$ hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds.
☒	The DH3 packet can cover up to 3 time slots. A maximum length packet has duration of 3 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $3/1600$ seconds, or 1.875ms. DH3 Packet permit maximum $1600 / 79 / 4 = 5.06$ hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
☒	The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $5/1600$ seconds, or 3.125ms. DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $3.37 \times 31.6 = 106.6$ within 31.6 seconds
☒	For conducted measurement.
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☐	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.4.4 Test Setup



3.4.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix C.2

3.5 RF Output Power

3.5.1 RF Output Power Limit

RF Output Power Limit for Frequency Hopping Systems	
Maximum Peak Conducted Output Power Limit	
☒ 2400-2483.5 MHz Band:	
☐	For Hopping Channel: $N \geq 75$
☐	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
☐	If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
☒	For Hopping Channel: $N \geq 15$
☒	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 21$ dBm (0.125 W)
☐	If $G_{TX} > 6$ dBi, then $P_{Out} = 21 - (G_{TX} - 6)$ dBm
e.i.r.p. Power Limit:	
☒ 2400-2483.5 MHz Band:	
☐	For Hopping Channel: $N \geq 75$ - $P_{eirp} \leq 36$ dBm (4 W)
☒	For Hopping Channel: $N \geq 15$ - $P_{eirp} \leq 27$ dBm (0.5 W)
G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm. N: Number of Hopping Frequencies ChS: Hopping Channel Separation	

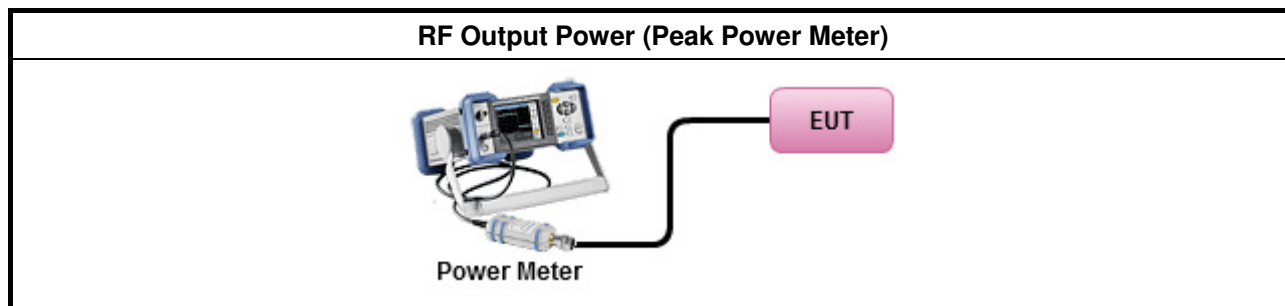
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method	
☒ Maximum Peak Conducted Output Power	
☐	Refer as DA 00-705, spectrum analyzer for peak power.
☒	Refer as DA 00-705, peak power meter for peak power.
☐	Refer as ANSI C63.10, clause 11.9.1.3) for peak power meter.
☐	Refer as ANSI C63.10, clause 11.9.1.1) for spectrum analyzer - (RBW $\geq$ EBW).
☒ For conducted measurement.	
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☐	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.5.4 Test Setup



3.5.5 Test Result of Maximum Peak Conducted Output Power

Refer as Appendix B.1

3.5.6 Test Result of Maximum Average Conducted Output Power

Refer as Appendix B.2

3.6 Emissions in Non-restricted Frequency Bands

3.6.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.	

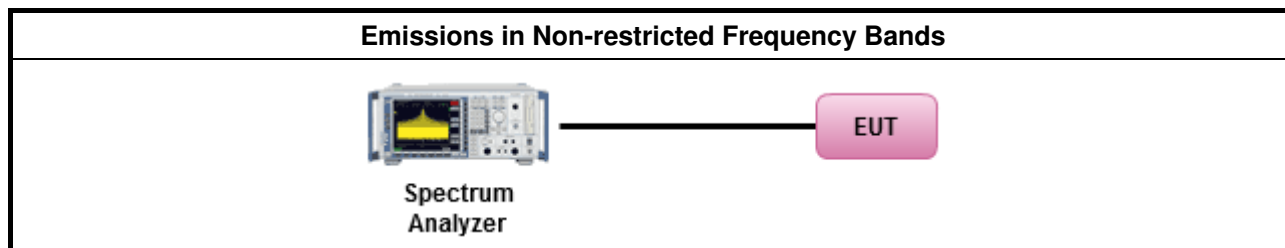
3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method – General Information	
☒	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
☒	Refer as ANSI C63.10, clause 6.10.3 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
☒	For the transmitter unwanted emissions shall be measured using following options below:
☒	For unwanted emissions into non-restricted bands. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
☒	For unwanted emissions into restricted bands.
☒	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW $\geq$ 1/T, where T is pulse time.
☐	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
☒	Refer as ANSI C63.10, clause 11.11.3 measurement procedure peak limit.
☒	For the transmitter bandedge emissions shall be measured using following options below:
☒	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
☐	Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
☒	Refer as ANSI C63.10, clause 7.8.6 for band-edge testing into non-restricted bands.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions and test distance is 3m.

3.6.4 Test Setup



3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix D

3.7 Emissions in Restricted Frequency Bands

3.7.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

3.7.2 Measuring Instruments

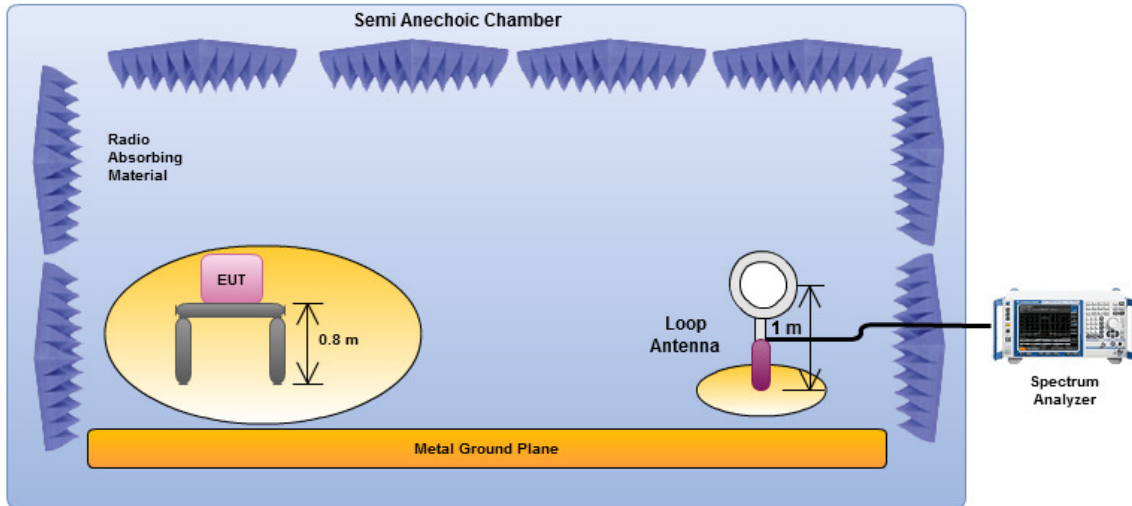
Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Test Method – General Information	
☒	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
☒	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
☒	For the transmitter unwanted emissions shall be measured using following options below:
☒	Refer as DA 00-705, for spurious radiated emissions. The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$
☐	For unwanted emissions into non-restricted bands. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
☒	For unwanted emissions into restricted bands.
☒	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). $\text{VBW} \geq 1/T$, where T is pulse time.
☐	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
☒	Refer as ANSI C63.10, clause 11.12.2.4 measurement procedure peak limit.
☒	Refer as ANSI C63.10, clause 11.12.2.3 measurement procedure Quasi-Peak limit.
☒	For radiated measurement.
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.
☒	The any unwanted emissions level shall not exceed the fundamental emission level.
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

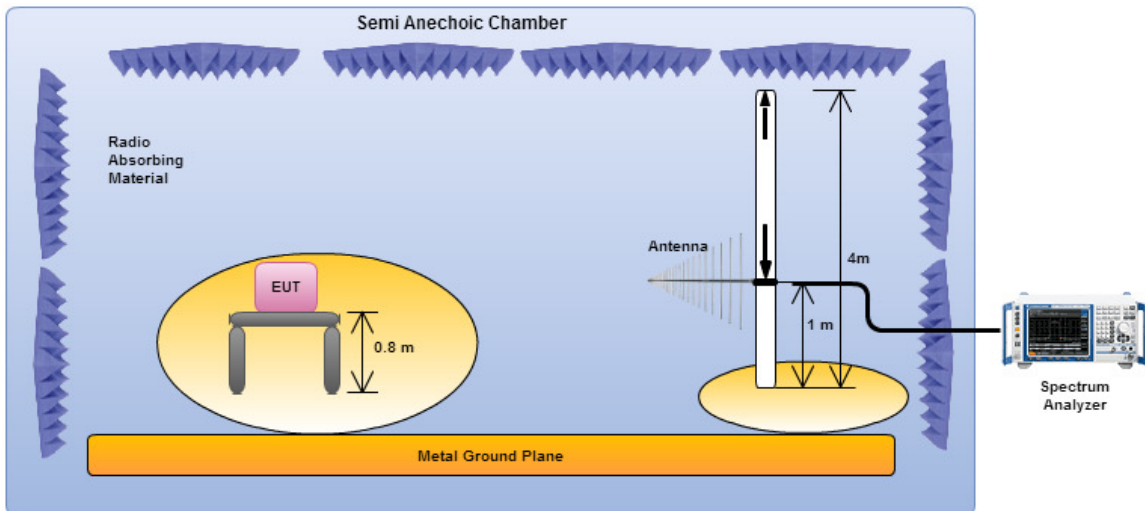
3.7.4 Test Setup

Transmitter Spurious and Out of Band Emissions (9 kHz - 30 MHz)

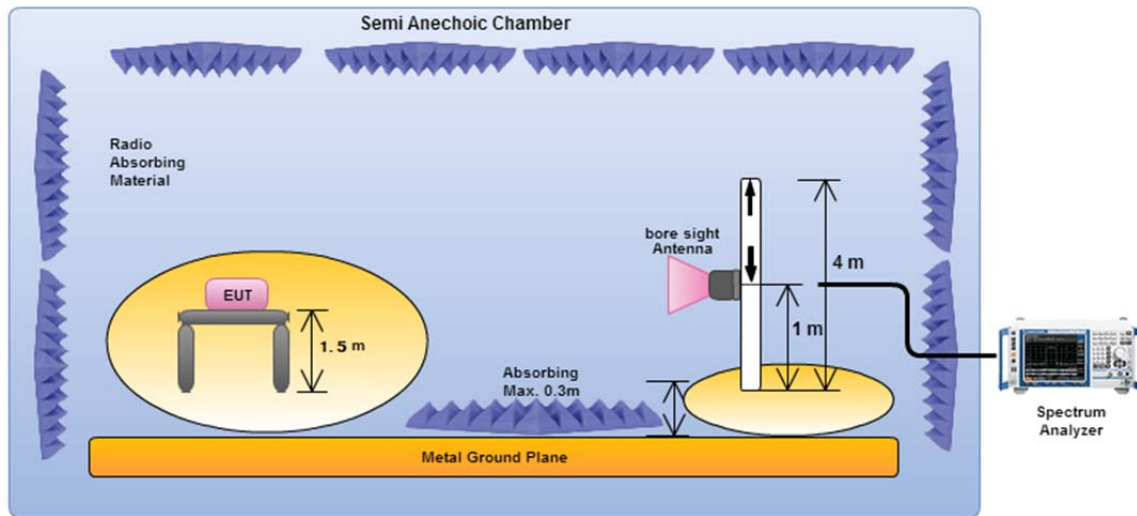


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

Transmitter Radiated Unwanted Emissions (below 1GHz)



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.

Transmitter Radiated Unwanted Emissions (above 1GHz)


Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

3.7.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. Any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

3.7.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix E.1~E.2

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR-3	102051	9 kHz ~ 3.6 GHz	19/04/2016	18/04/2017
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9 kHz ~ 30 MHz	26/01/2016	25/01/2017
LISN (Support Unit)	R&S	ENV216	101295	9 kHz ~ 30 MHz	04/11/2015	03/11/2016
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9 kHz ~ 30 MHz	30/10/2015	29/10/2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

NCR: Non-Calibration Require

Instrument for Radiated Test

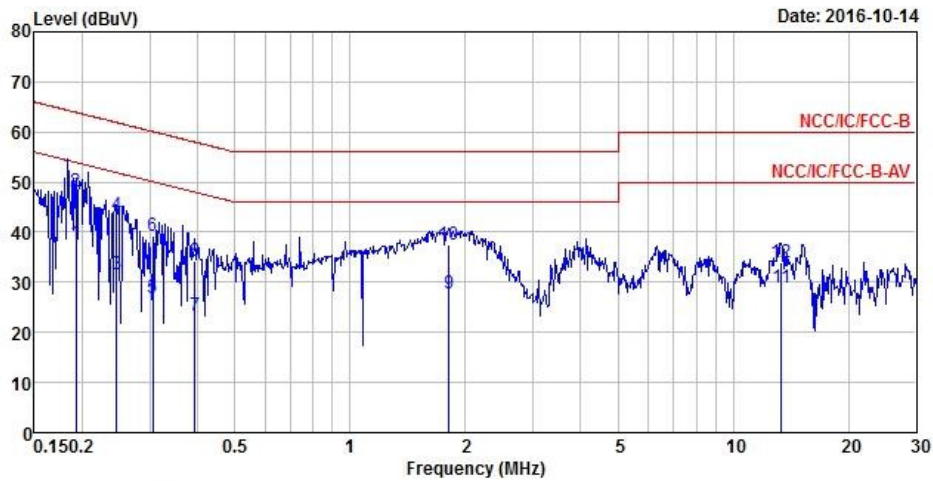
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30 MHz ~ 1 GHz	25/04/2016	24/04/2017
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1 GHz ~ 18 GHz	21/06/2016	20/06/2017
Amplifier	Agilent	8449B	3008A02096	1 GHz ~ 26.5 GHz	11/04/2016	10/04/2017
Amplifier	EMC	EMC9135	980232	9 kHz ~ 1 GHz	29/01/2016	28/01/2017
Spectrum Analyzer	KEYSIGHT	N9010A	MY54200885	10 Hz ~ 44 GHz	04/07/2016	03/07/2017
Bilog Antenna	TESEQ	CBL 6111D	35418	30 MHz ~ 1 GHz	01/10/2016	30/09/2017
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA9120D 1534	1 GHz ~ 18 GHz	22/04/2016	21/04/2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18 GHz ~ 40 GHz	04/01/2016	03/01/2017
Loop Antenna	R&S	HFH2-Z2	100330	9 kHz~30 MHz	10/11/2015	09/11/2016

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9 kHz ~ 40 GHz	12/05/2016	11/05/ 2017
Power Sensor	Anritsu	MA2411B	917017	300 MHz ~ 40 GHz	04/02/2016	03/02/2017
Power Meter	Anritsu	ML2495A	949003	300 MHz ~ 40 GHz	04/02/2016	03/02/2017
Signal Generator	R&S	SMR40	100116	10 MHz ~ 40 GHz	21/07/2016	20/07/2017

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	USB Mode		

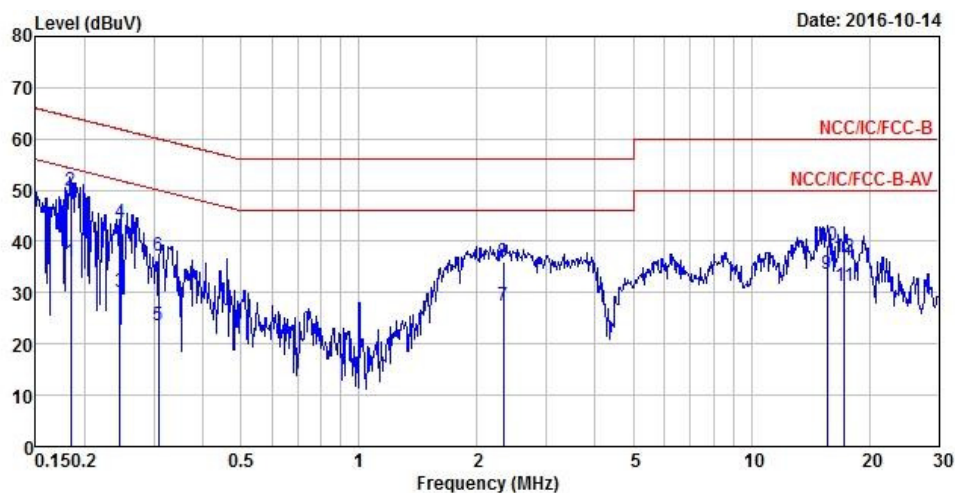


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Aux Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.19	37.91	-16.02	53.93	27.64	0.11	0.29	9.87	Average
2	0.19	48.24	-15.69	63.93	37.97	0.11	0.29	9.87	QP
3	0.25	31.49	-20.42	51.91	21.27	0.11	0.24	9.87	Average
4	0.25	43.27	-18.64	61.91	33.05	0.11	0.24	9.87	QP
5	0.31	27.01	-23.08	50.09	16.83	0.12	0.18	9.88	Average
6	0.31	39.35	-20.74	60.09	29.17	0.12	0.18	9.88	QP
7	0.39	23.44	-24.55	47.99	13.34	0.12	0.10	9.88	Average
8	0.39	34.20	-23.79	57.99	24.10	0.12	0.10	9.88	QP
9	1.81	27.74	-18.26	46.00	17.43	0.15	0.27	9.89	Average
10	1.81	37.63	-18.37	56.00	27.32	0.15	0.27	9.89	QP
11	13.34	28.93	-21.07	50.00	18.48	0.32	0.20	9.93	Average
12	13.34	33.98	-26.02	60.00	23.53	0.32	0.20	9.93	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	USB Mode		



	Freq	Level	Over	Limit	Read	LISN	Cable	Aux	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Factor	Remark
			dB	dBuV	dBuV	dB	dB	dB	
1	0.18	35.92	-18.36	54.28	25.66	0.11	0.28	9.87	Average
2	0.18	49.81	-14.47	64.28	39.55	0.11	0.28	9.87	QP
3	0.25	30.24	-21.65	51.89	20.02	0.11	0.24	9.87	Average
4	0.25	43.59	-18.30	61.89	33.37	0.11	0.24	9.87	QP
5	0.31	23.72	-26.31	50.03	13.54	0.12	0.18	9.88	Average
6	0.31	37.20	-22.83	60.03	27.02	0.12	0.18	9.88	QP
7	2.33	27.58	-18.42	46.00	17.28	0.15	0.26	9.89	Average
8	2.33	35.98	-20.02	56.00	25.68	0.15	0.26	9.89	QP
9	15.61	33.74	-16.26	50.00	23.28	0.32	0.20	9.94	Average
10	15.61	39.36	-20.64	60.00	28.90	0.32	0.20	9.94	QP
11	17.29	31.26	-18.74	50.00	20.80	0.33	0.20	9.93	Average
12	17.29	37.00	-23.00	60.00	26.54	0.33	0.20	9.93	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



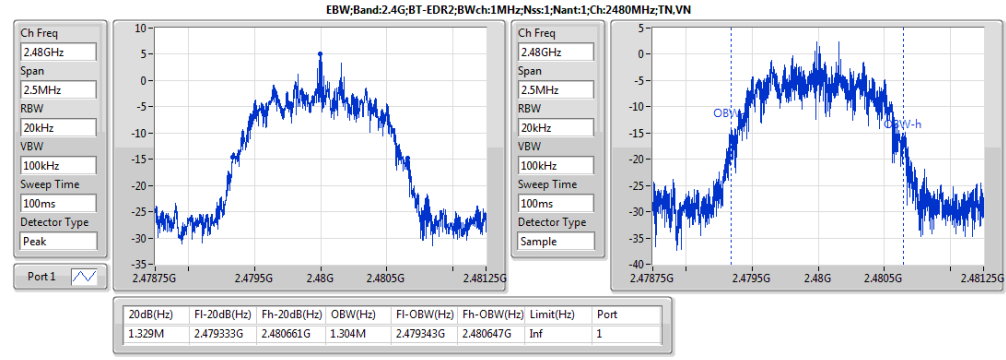
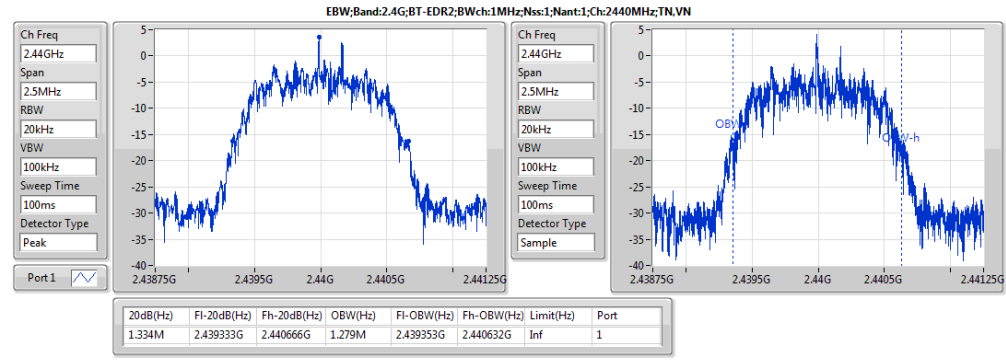
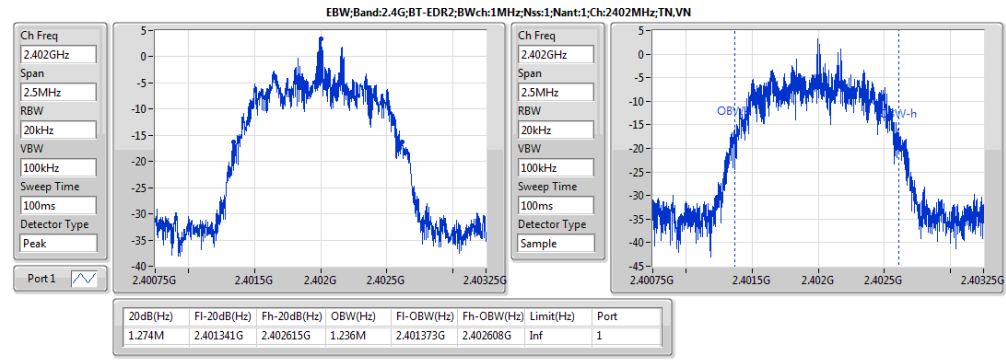
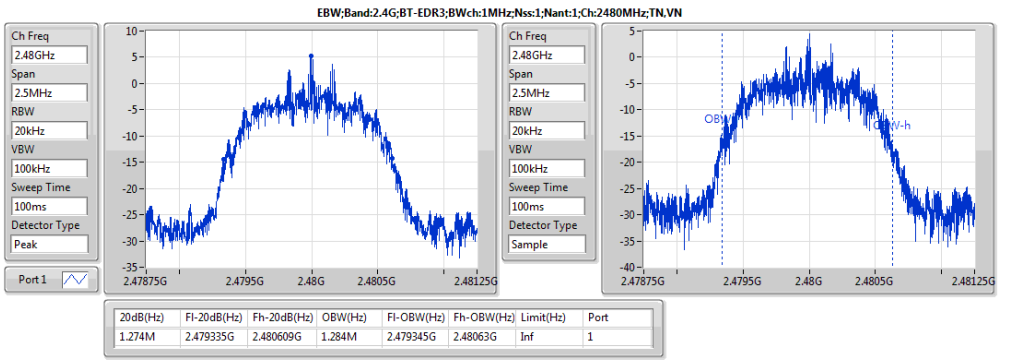
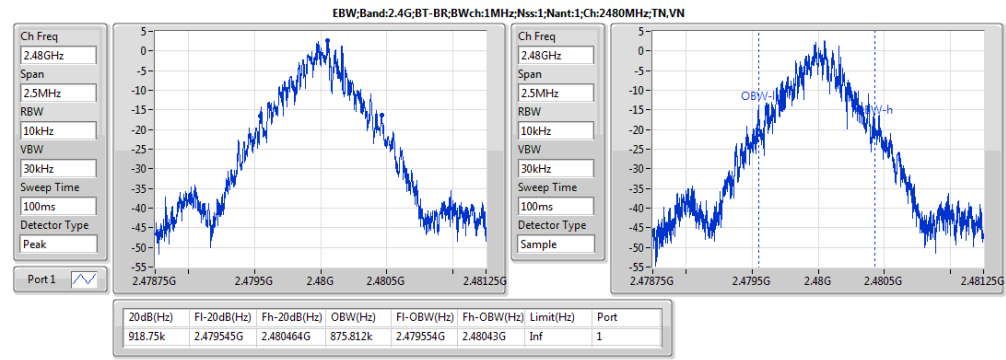
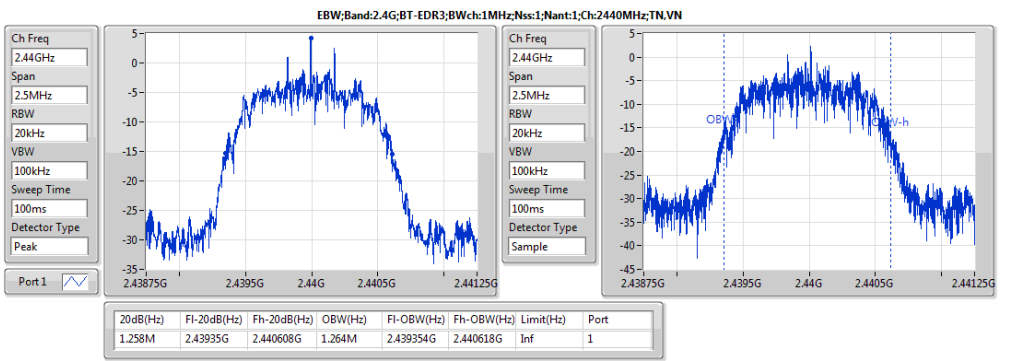
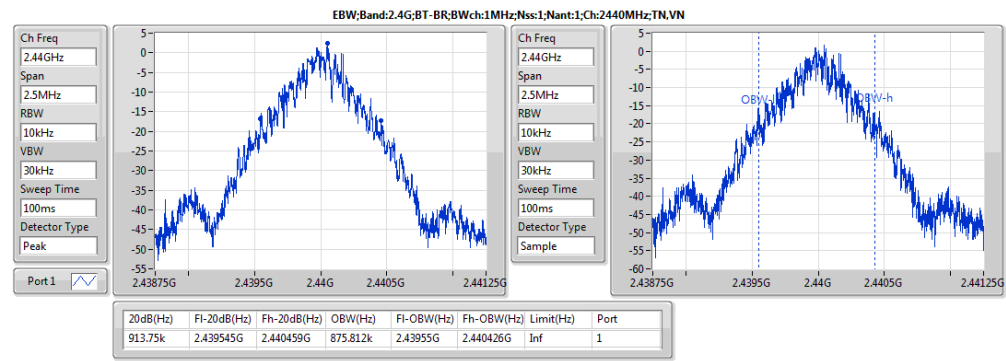
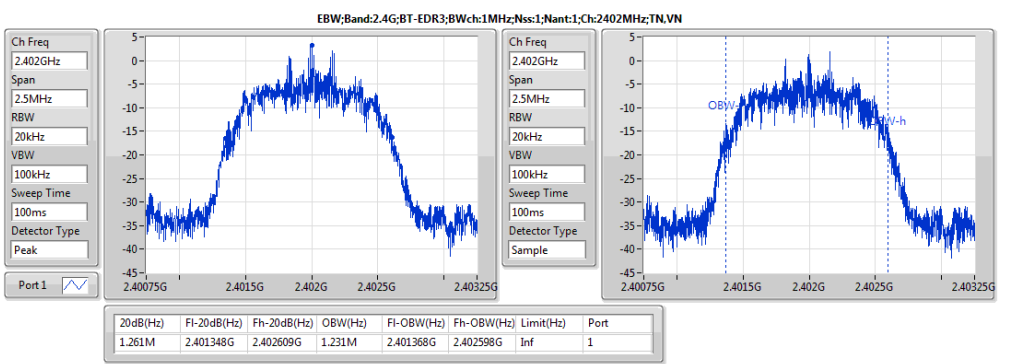
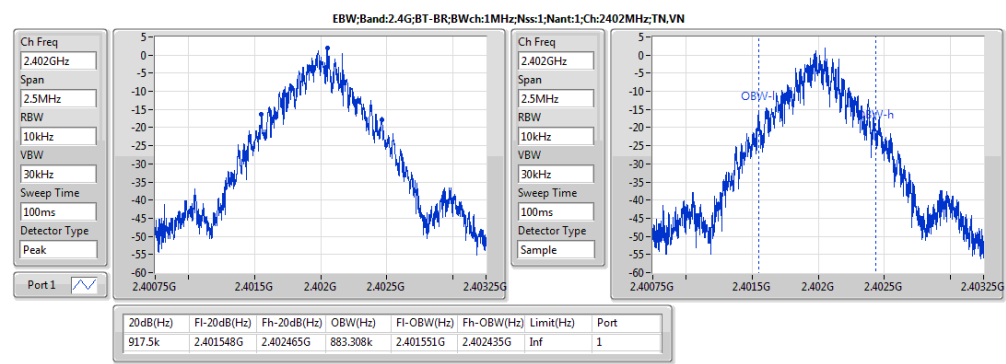
Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4G;BT-BR;1;1;1	918.75k	883.308k	883kF1D	913.75k	875.812k
2.4G;BT-EDR2;1;1;1	1.334M	1.304M	1M30G1D	1.274M	1.236M
2.4G;BT-EDR3;1;1;1	1.274M	1.284M	1M28G1D	1.258M	1.231M



Result

Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)
2.4G;BT-BR;1;1;1;2402;L;TN,VN	Pass	Inf	917.5k	883.308k
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	Inf	913.75k	875.812k
2.4G;BT-BR;1;1;1;2480;H;TN,VN	Pass	Inf	918.75k	875.812k
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	Inf	1.274M	1.236M
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	Inf	1.334M	1.279M
2.4G;BT-EDR2;1;1;1;2480;H;TN,VN	Pass	Inf	1.329M	1.304M
2.4G;BT-EDR3;1;1;1;2402;L;TN,VN	Pass	Inf	1.261M	1.231M
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	Inf	1.258M	1.264M
2.4G;BT-EDR3;1;1;1;2480;H;TN,VN	Pass	Inf	1.274M	1.284M





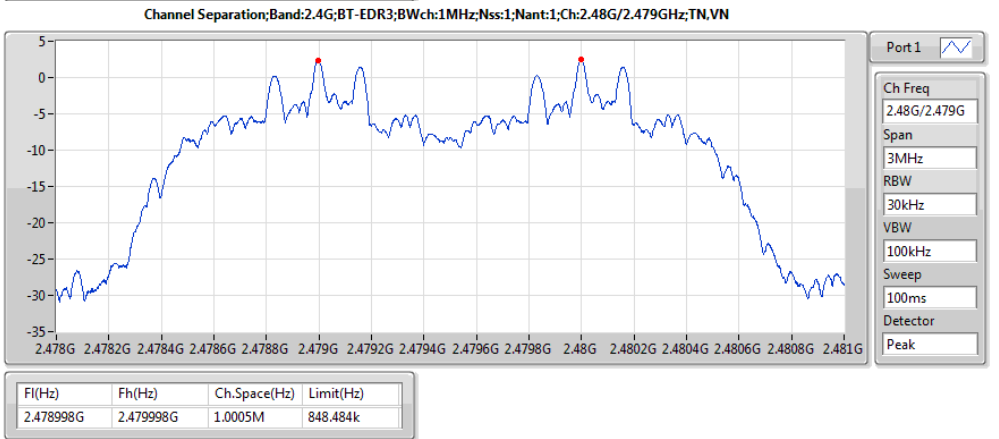
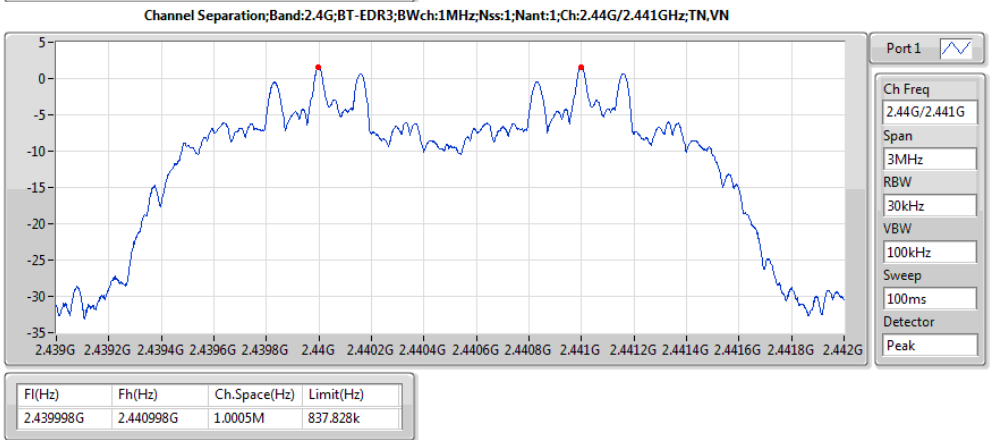
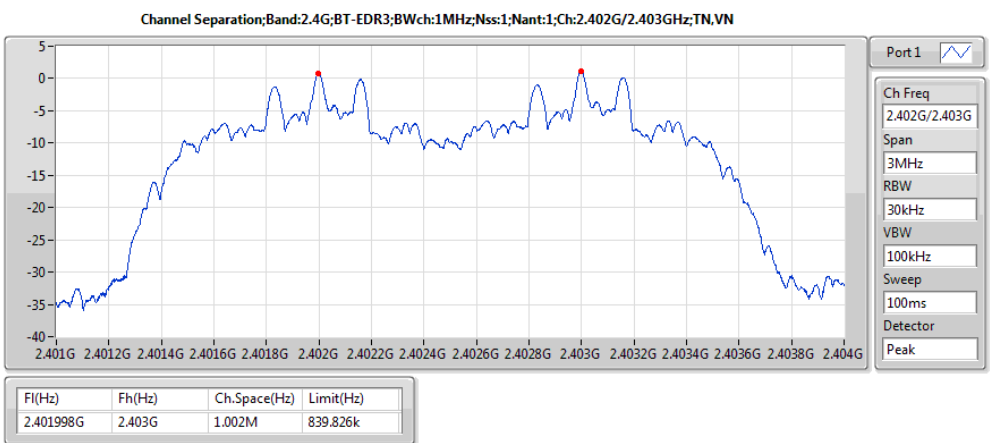
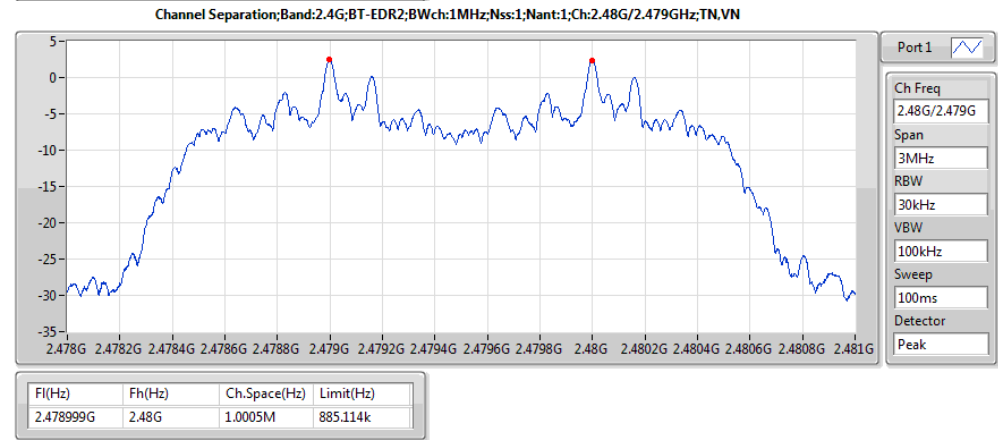
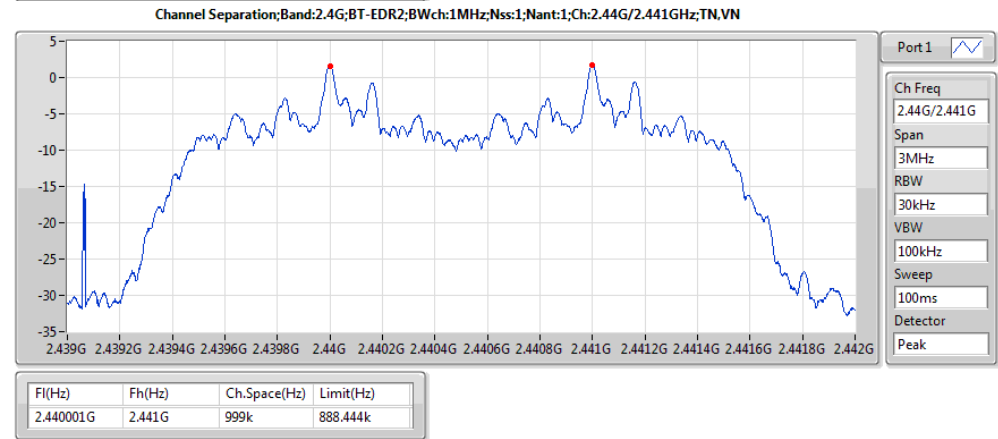
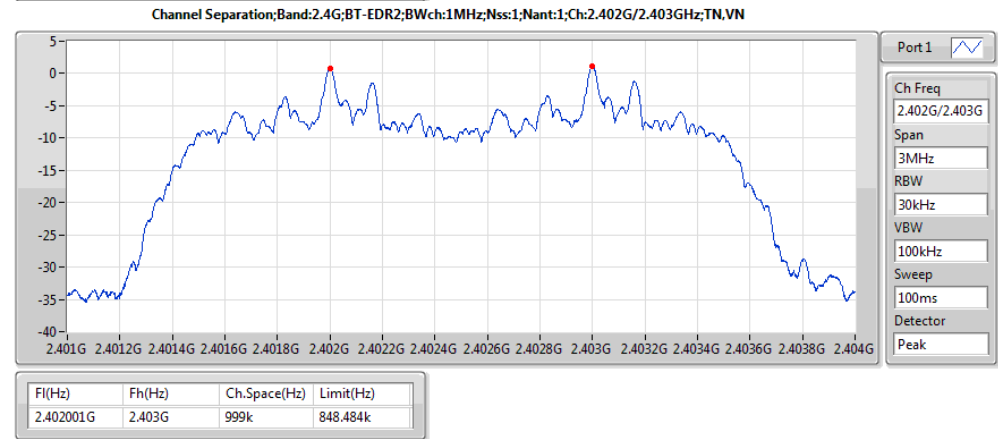
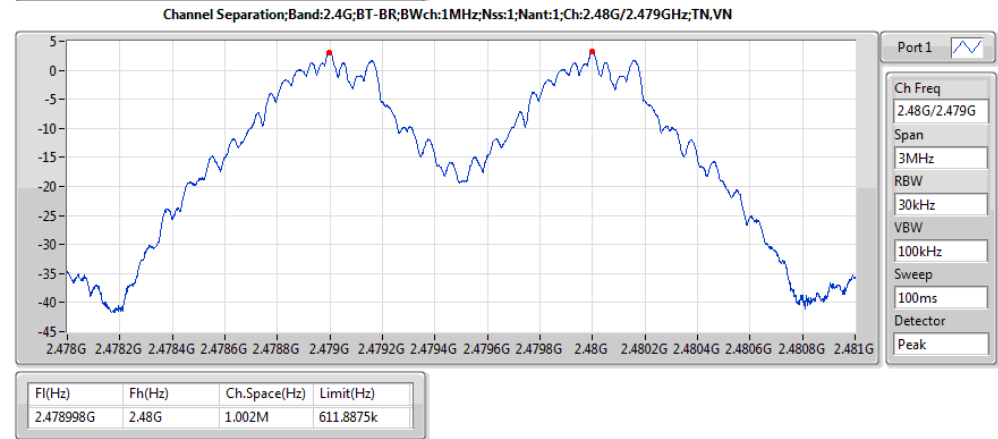
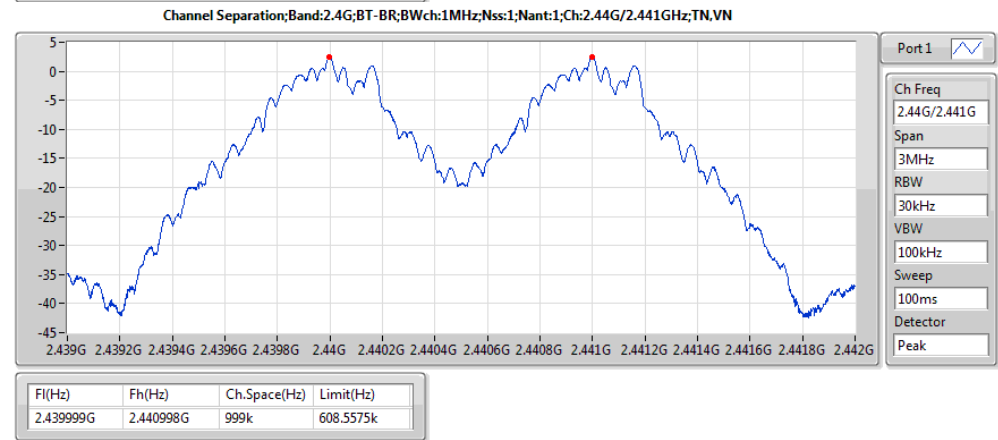
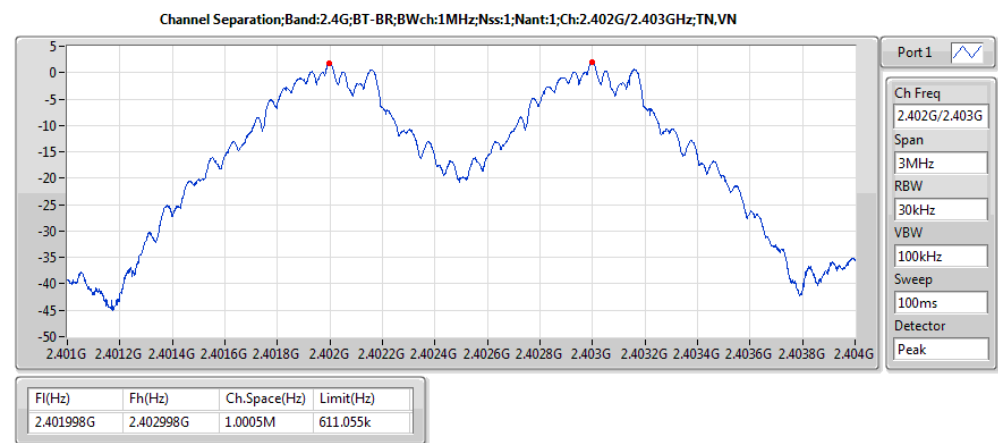
Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4G;BT-BR;1;1;1	1.002M	999k
2.4G;BT-EDR2;1;1;1	1.0005M	999k
2.4G;BT-EDR3;1;1;1	1.002M	1.0005M



Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
2.4G;BT-BR;1;1;1;2402;L;TN,VN	Pass	2.401998G	2.402998G	1.0005M	611.055k
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	2.439999G	2.440998G	999k	608.5575k
2.4G;BT-BR;1;1;1;2480;H;TN,VN	Pass	2.478998G	2.48G	1.002M	611.8875k
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	2.402001G	2.403G	999k	848.484k
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	2.440001G	2.441G	999k	888.444k
2.4G;BT-EDR2;1;1;1;2480;H;TN,VN	Pass	2.478999G	2.48G	1.0005M	885.114k
2.4G;BT-EDR3;1;1;1;2402;L;TN,VN	Pass	2.401998G	2.403G	1.002M	839.826k
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	2.439998G	2.440998G	1.0005M	837.828k
2.4G;BT-EDR3;1;1;1;2480;H;TN,VN	Pass	2.478998G	2.479998G	1.0005M	848.484k





Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;BT-BR;1;1;1	8.74	0.00748	10.73	0.01183
2.4G;BT-EDR2;1;1;1	8.38	0.00689	10.37	0.01089
2.4G;BT-EDR3;1;1;1	8.36	0.00685	10.35	0.01084



Result

Mode	Result	DG (dBi)	Sum (dBm)	Sum Lim. (dBm)	EIRP (dBm)	EIRP Lim. (dBm)	P1 (dBm)
2.4G;BT-BR;1;1;1;2402;L;TN,VN	Pass	1.99	7.57	21.00	9.56	27.00	7.57
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	1.99	8.06	21.00	10.05	27.00	8.06
2.4G;BT-BR;1;1;1;2480;H;TN,VN	Pass	1.99	8.74	21.00	10.73	27.00	8.74
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	1.99	7.04	21.00	9.03	27.00	7.04
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	1.99	7.63	21.00	9.62	27.00	7.63
2.4G;BT-EDR2;1;1;1;2480;H;TN,VN	Pass	1.99	8.38	21.00	10.37	27.00	8.38
2.4G;BT-EDR3;1;1;1;2402;L;TN,VN	Pass	1.99	7.09	21.00	9.08	27.00	7.09
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	1.99	7.65	21.00	9.64	27.00	7.65
2.4G;BT-EDR3;1;1;1;2480;H;TN,VN	Pass	1.99	8.36	21.00	10.35	27.00	8.36



Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;BT-BR;1;1;1	8.61	0.00726	10.60	0.01148
2.4G;BT-EDR2;1;1;1	7.33	0.00541	9.32	0.00855
2.4G;BT-EDR3;1;1;1	7.20	0.00525	9.19	0.0083



Result

Mode	Result	DG (dBi)	Sum (dBm)	Sum Lim. (dBm)	EIRP (dBm)	EIRP Lim. (dBm)	P1 (dBm)
2.4G;BT-BR;1;1;1;2402;L;TN,VN	Pass	1.99	7.37	21.00	9.36	27.00	7.37
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	1.99	7.75	21.00	9.74	27.00	7.75
2.4G;BT-BR;1;1;1;2480;H;TN,VN	Pass	1.99	8.61	21.00	10.60	27.00	8.61
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	1.99	5.46	21.00	7.45	27.00	5.46
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	1.99	6.41	21.00	8.40	27.00	6.41
2.4G;BT-EDR2;1;1;1;2480;H;TN,VN	Pass	1.99	7.33	21.00	9.32	27.00	7.33
2.4G;BT-EDR3;1;1;1;2402;L;TN,VN	Pass	1.99	5.34	21.00	7.33	27.00	5.34
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	1.99	6.28	21.00	8.27	27.00	6.28
2.4G;BT-EDR3;1;1;1;2480;H;TN,VN	Pass	1.99	7.20	21.00	9.19	27.00	7.20



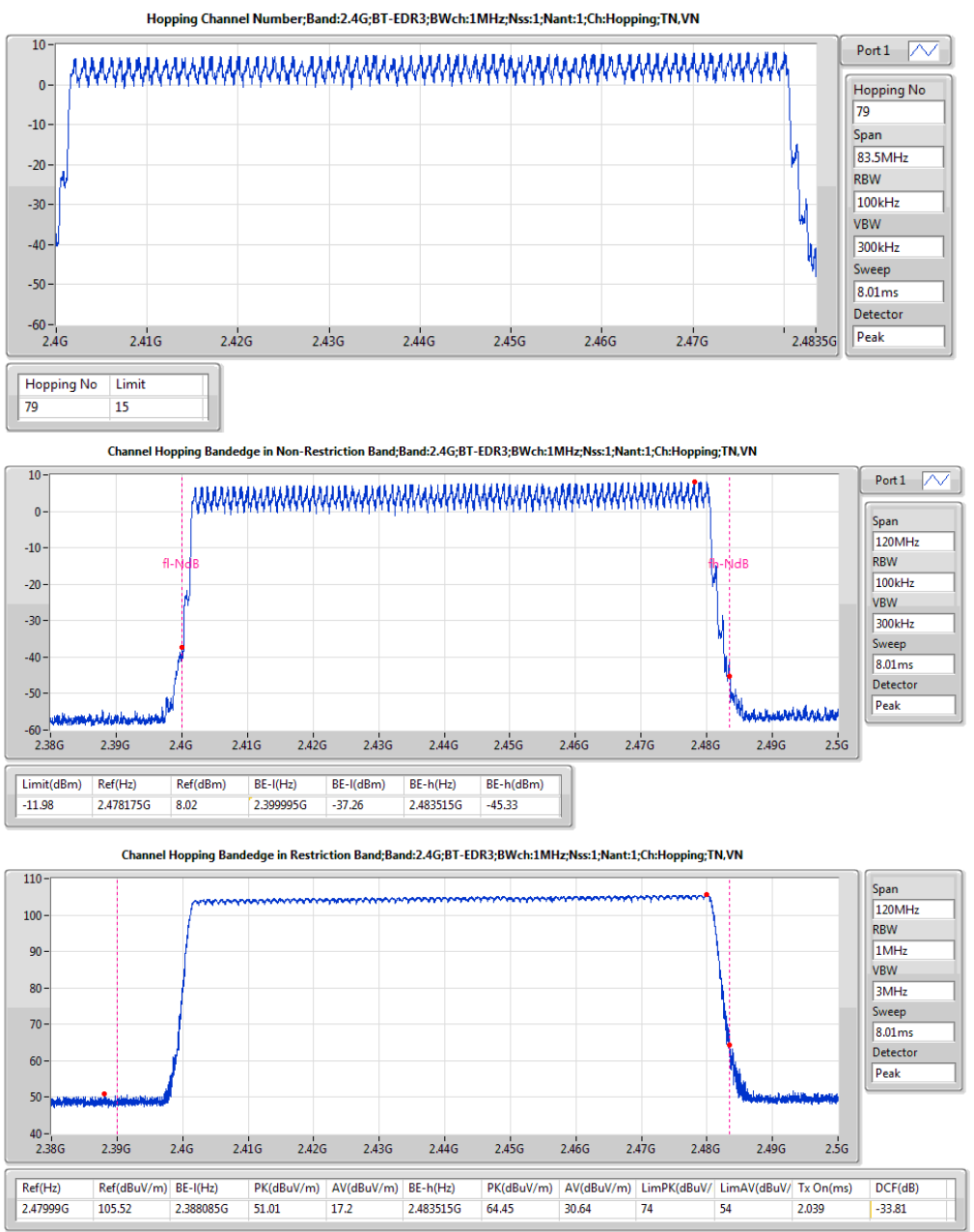
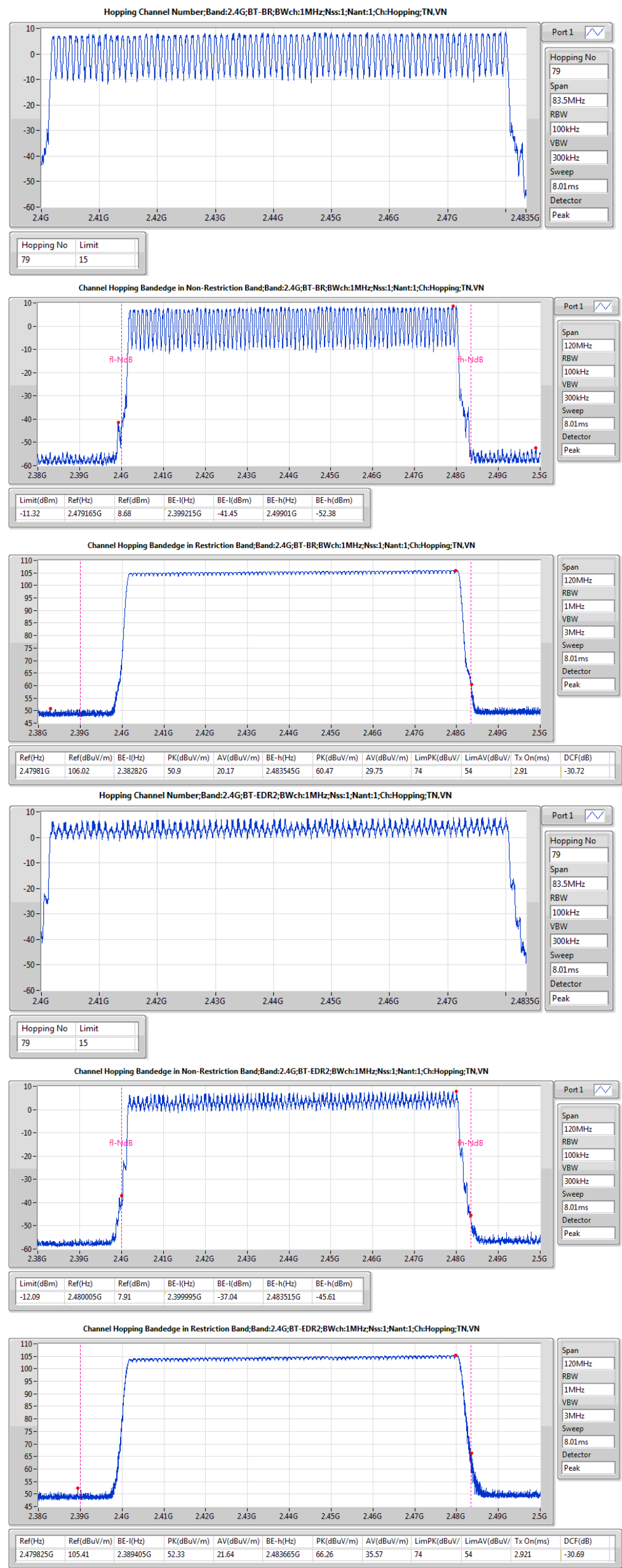
Summary

Mode	Max-Hop No
2.4G;BT-BR;1;1;1	79
2.4G;BT-EDR2;1;1;1	79
2.4G;BT-EDR3;1;1;1	79



Result

Mode	Result	Hopping No	Limit
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	79	15
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	79	15
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	79	15





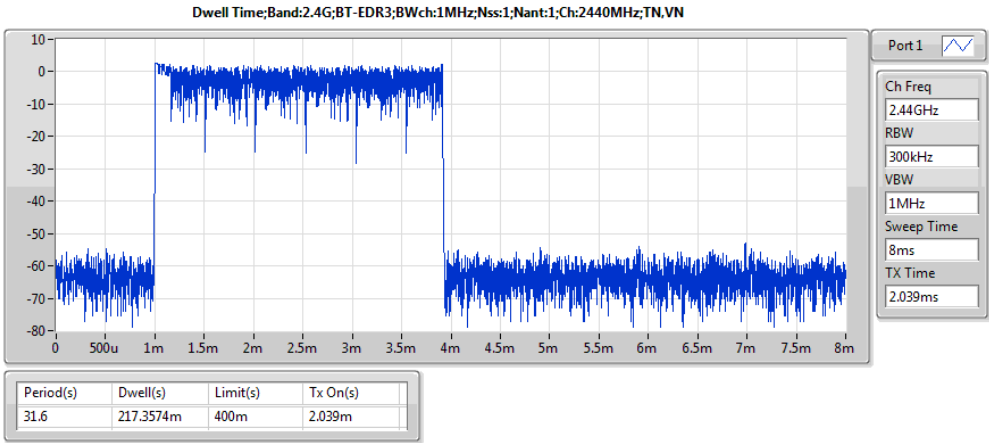
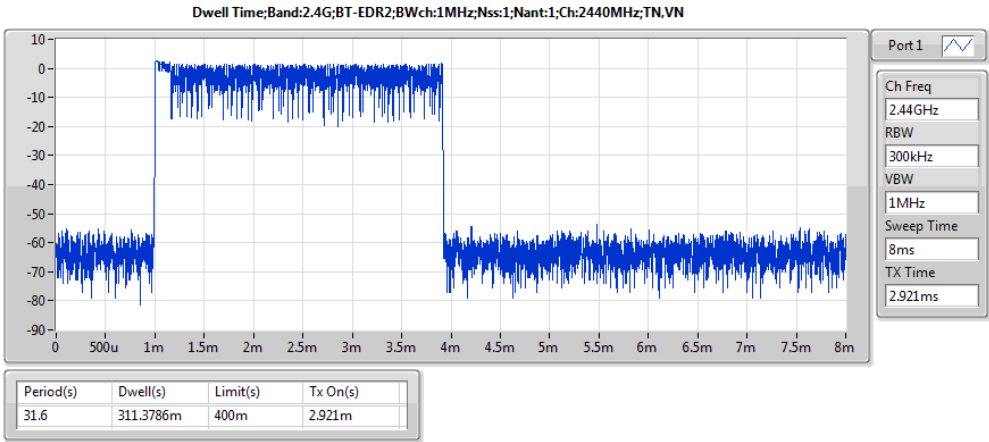
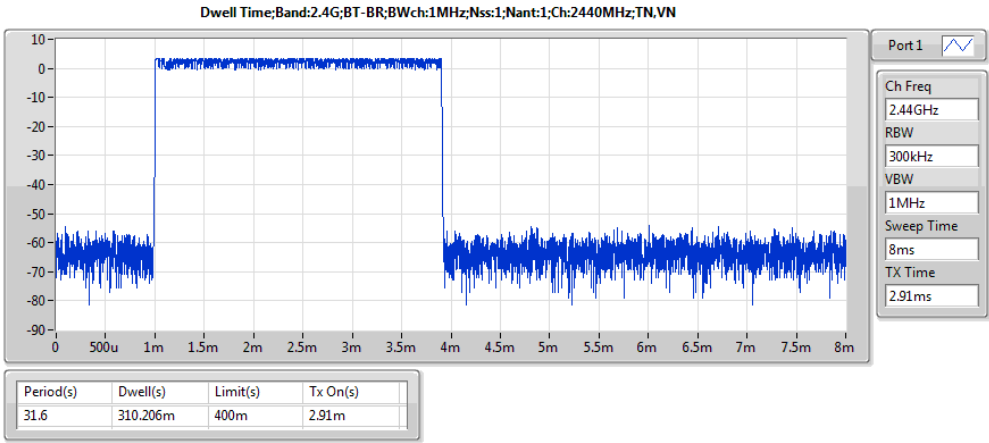
Summary

Mode	Max-Dwell (s)
2.4G;BT-BR;1;1;1	310.206m
2.4G;BT-EDR2;1;1;1	311.3786m
2.4G;BT-EDR3;1;1;1	217.3574m



Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	31.6	310.206m	400m	2.91m
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	31.6	311.3786m	400m	2.921m
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	31.6	217.3574m	400m	2.039m





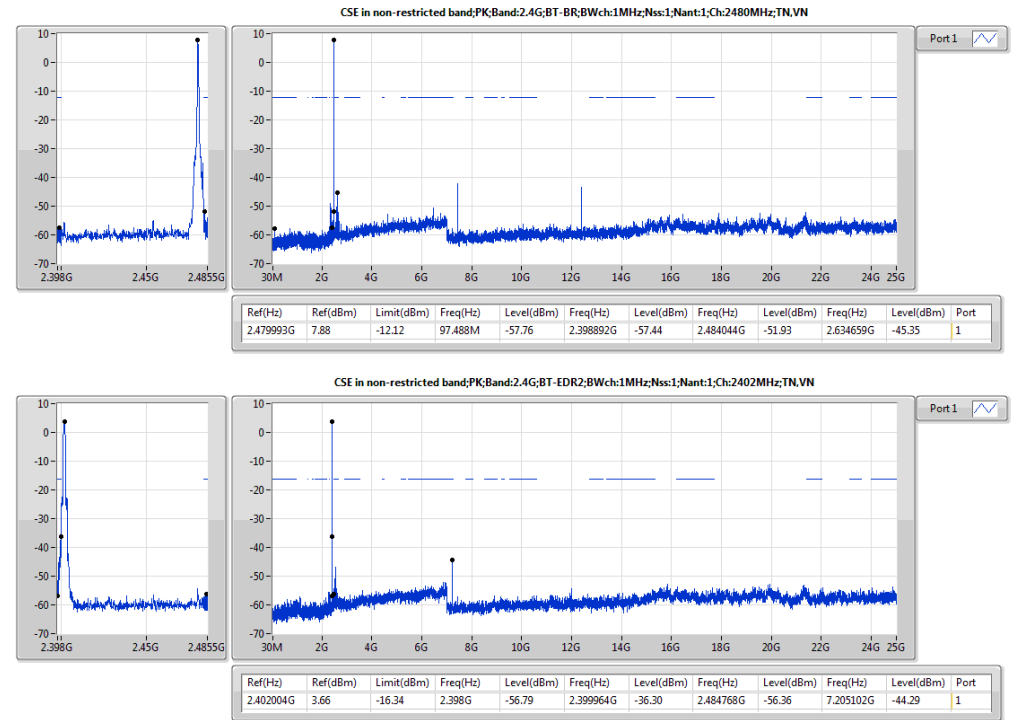
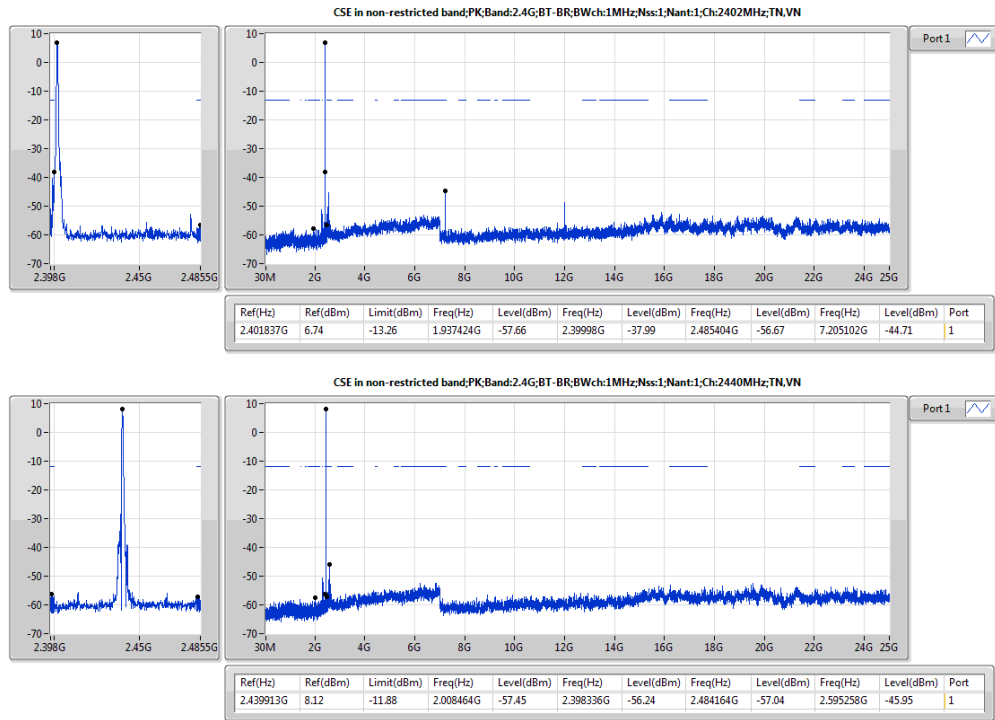
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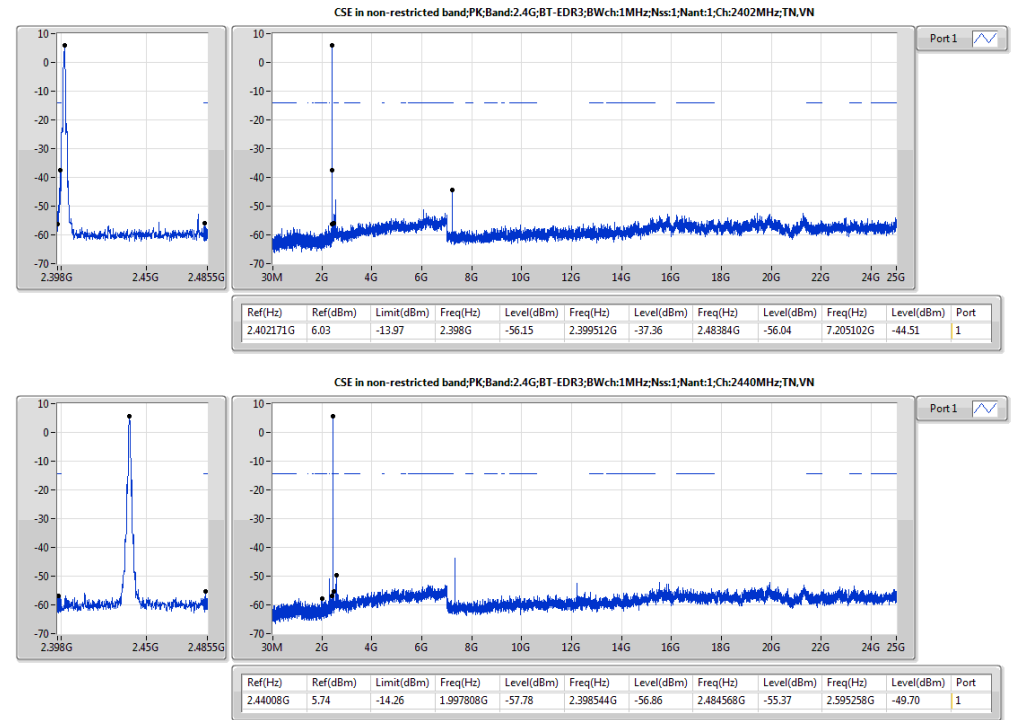
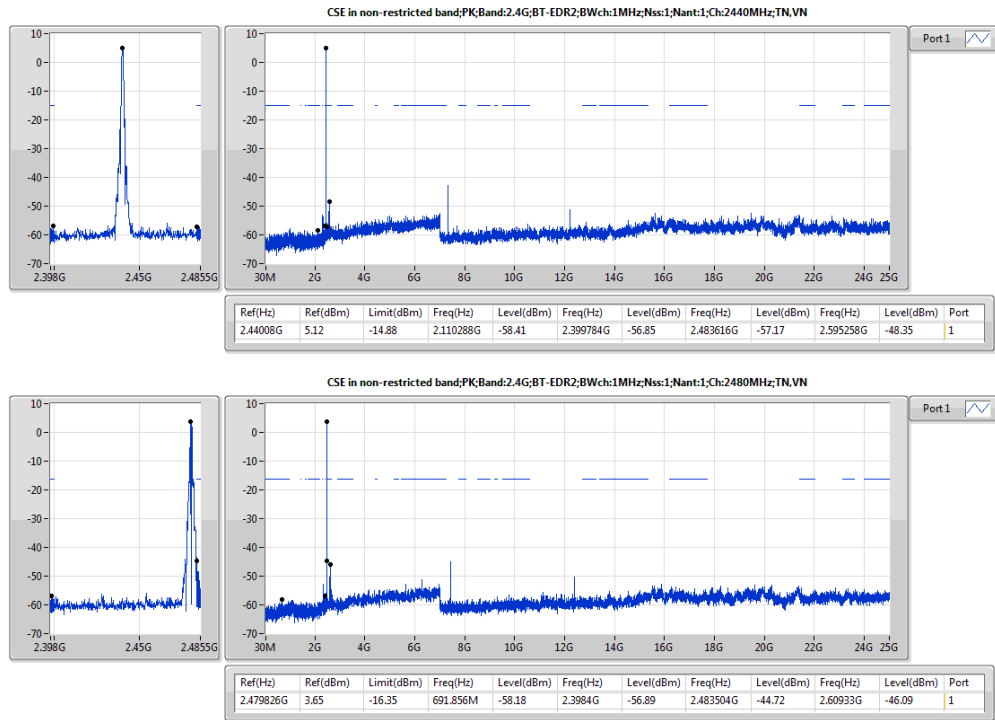
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	2.402004G	3.66	-16.34	2.398G	-56.79	2.399964G	-36.30	2.484768G	-56.36	7.205102G	-44.29	1



Result

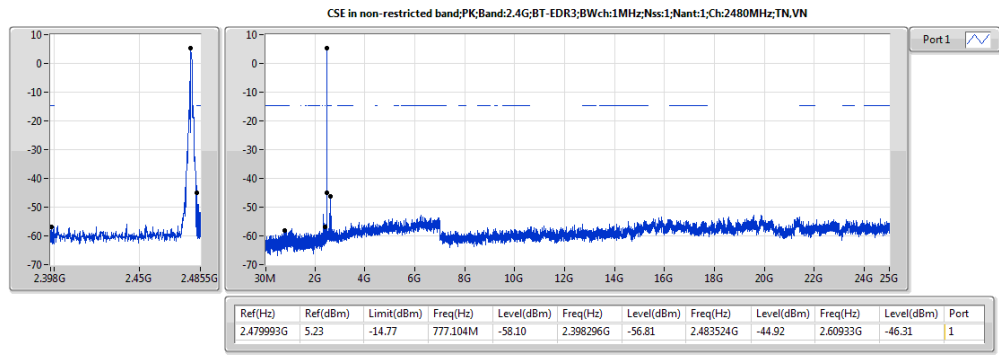
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4G;BT-BR;1;1;1;2402;L;TN,VN	Pass	2.401837G	6.74	-13.26	1.937424G	-57.66	2.39998G	-37.99	2.485404G	-56.67	7.205102G	-44.71	1
2.4G;BT-BR;1;1;1;2440;M;TN,VN	Pass	2.439913G	8.12	-11.88	2.008464G	-57.45	2.398336G	-56.24	2.484164G	-57.04	2.595258G	-45.95	1
2.4G;BT-BR;1;1;1;2480;H;TN,VN	Pass	2.479993G	7.88	-12.12	97.488M	-57.76	2.398892G	-57.44	2.484044G	-51.93	2.634659G	-45.35	1
2.4G;BT-EDR2;1;1;1;2402;L;TN,VN	Pass	2.402004G	3.66	-16.34	2.398G	-56.79	2.399964G	-36.30	2.484768G	-56.36	7.205102G	-44.29	1
2.4G;BT-EDR2;1;1;1;2440;M;TN,VN	Pass	2.44008G	5.12	-14.88	2.110288G	-58.41	2.399784G	-56.85	2.483616G	-57.17	2.595258G	-48.35	1
2.4G;BT-EDR2;1;1;1;2480;H;TN,VN	Pass	2.479826G	3.65	-16.35	691.856M	-58.18	2.3984G	-56.89	2.483504G	-44.72	2.60933G	-46.09	1
2.4G;BT-EDR3;1;1;1;2402;L;TN,VN	Pass	2.402171G	6.03	-13.97	2.398G	-56.15	2.399512G	-37.36	2.48384G	-56.04	7.205102G	-44.51	1
2.4G;BT-EDR3;1;1;1;2440;M;TN,VN	Pass	2.44008G	5.74	-14.26	1.997808G	-57.78	2.398544G	-56.86	2.484568G	-55.37	2.595258G	-49.70	1
2.4G;BT-EDR3;1;1;1;2480;H;TN,VN	Pass	2.479993G	5.23	-14.77	777.104M	-58.10	2.398296G	-56.81	2.483524G	-44.92	2.60933G	-46.31	1







CSEndB-DSS Result





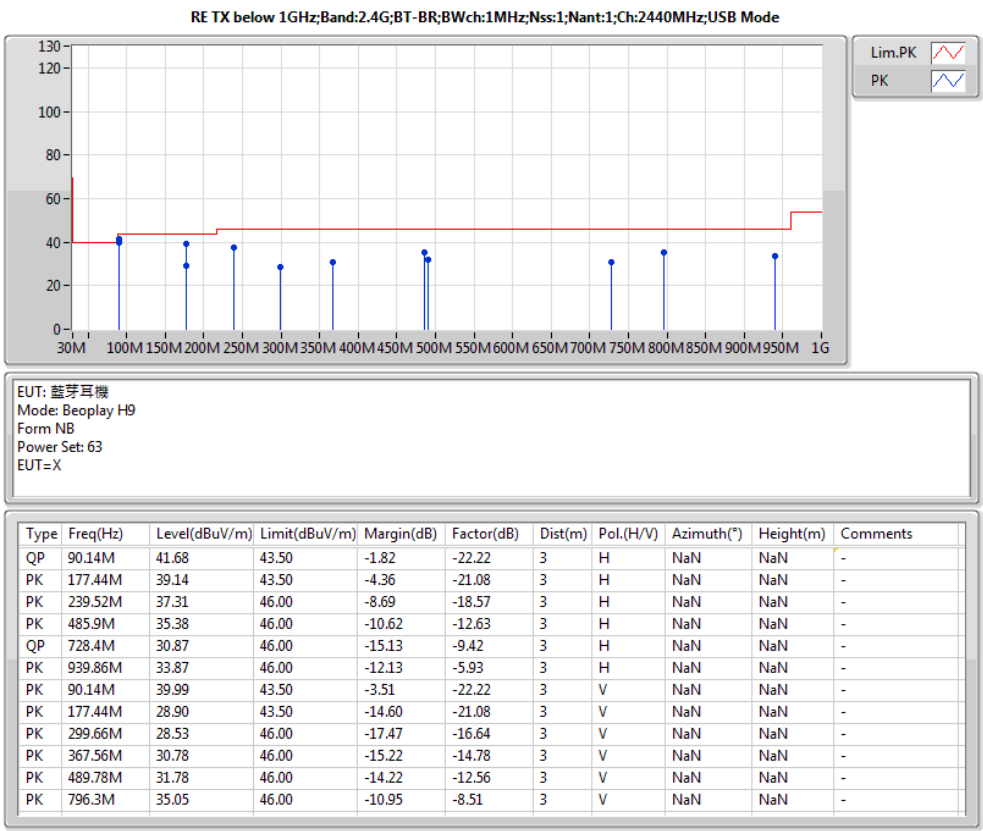
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth (°)	Height (m)	Comments
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	QP	90.14M	41.68	43.50	-1.82	-22.22	3	H	NaN	NaN	-



Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth (°)	Height (m)	Comments
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	QP	90.14M	41.68	43.50	-1.82	-22.22	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	177.44M	39.14	43.50	-4.36	-21.08	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	239.52M	37.31	46.00	-8.69	-18.57	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	485.9M	35.38	46.00	-10.62	-12.63	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	QP	728.4M	30.87	46.00	-15.13	-9.42	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	939.86M	33.87	46.00	-12.13	-5.93	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	90.14M	39.99	43.50	-3.51	-22.22	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	177.44M	28.90	43.50	-14.60	-21.08	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	299.66M	28.53	46.00	-17.47	-16.64	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	367.56M	30.78	46.00	-15.22	-14.78	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	489.78M	31.78	46.00	-14.22	-12.56	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;USB Mode	Pass	PK	796.3M	35.05	46.00	-10.95	-8.51	3	V	NaN	NaN	-





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth (°)	Height (m)	Comments
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	4.96G	60.89	74.00	-13.11	2.38	3	V	NaN	NaN	-



Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth (°)	Height (m)	Comments
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	AV	2.324892G	27.99	54.00	-26.01	31.05	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	AV	2.402208G	69.66	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	2.324892G	58.09	74.00	-15.91	31.05	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	2.402208G	99.76	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	AV	4.804G	29.33	54.00	-24.67	2.06	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	4.804G	59.43	74.00	-14.57	2.06	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	7.206G	51.35	Inf	-Inf	7.99	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	9.608G	54.66	Inf	-Inf	11.47	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	AV	4.804G	30.76	54.00	-23.24	2.06	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	4.804G	60.86	74.00	-13.14	2.06	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	7.206G	51.69	Inf	-Inf	7.99	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2402;L;TX	Pass	PK	9.608G	54.87	Inf	-Inf	11.47	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	2.34952G	27.91	54.00	-26.09	31.14	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	2.43958G	73.93	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	2.49506G	28.43	54.00	-25.57	31.63	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	2.34952G	58.01	74.00	-15.99	31.14	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	2.43958G	104.03	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	2.49506G	58.53	74.00	-15.47	31.63	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	4.88G	28.12	74.00	-45.88	2.22	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	4.88G	58.22	74.00	-15.78	2.22	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	7.32G	21.67	74.00	-52.33	8.32	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	7.32G	51.77	74.00	-22.23	8.32	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	9.76G	55.10	Inf	-Inf	11.73	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	4.88G	29.56	54.00	-24.44	2.22	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	4.88G	59.66	74.00	-14.34	2.22	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	AV	7.32G	22.02	54.00	-31.98	8.32	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	7.32G	52.12	74.00	-21.88	8.32	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2440;M;TX	Pass	PK	9.76G	55.34	Inf	-Inf	11.73	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	2.47968G	69.02	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	2.4952G	29.10	54.00	-24.90	31.63	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	2.47968G	99.12	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	2.4952G	59.20	74.00	-14.80	31.63	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	4.96G	30.51	74.00	-43.49	2.38	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	4.96G	60.61	74.00	-13.39	2.38	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	7.44G	20.86	74.00	-53.14	8.66	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	7.44G	50.96	74.00	-23.04	8.66	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	9.92G	55.94	Inf	-Inf	12.00	3	H	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	4.96G	30.79	74.00	-43.21	2.38	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	4.96G	60.89	74.00	-13.11	2.38	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	AV	7.44G	22.17	74.00	-51.83	8.66	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	7.44G	52.27	74.00	-21.73	8.66	3	V	NaN	NaN	-
2.4G;BT-BR;1;1;1;2480;H;TX	Pass	PK	9.92G	55.38	Inf	-Inf	12.00	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2402;L;TX	Pass	AV	2.387724G	27.75	54.00	-26.25	31.28	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2402;L;TX	Pass	AV	2.4018G	70.62	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2402;L;TX	Pass	PK	2.387724G	57.85	74.00	-16.15	31.28	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2402;L;TX	Pass	PK	2.4018G	100.72	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	AV	2.33546G	28.20	54.00	-25.80	31.09	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	AV	2.43996G	73.64	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	AV	2.48784G	28.47	54.00	-25.53	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	PK	2.33546G	58.30	74.00	-15.70	31.09	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	PK	2.43996G	103.74	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2440;M;TX	Pass	PK	2.48784G	58.57	74.00	-15.43	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2480;H;TX	Pass	AV	2.47984G	68.84	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2480;H;TX	Pass	AV	2.48672G	29.07	54.00	-24.93	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2480;H;TX	Pass	PK	2.47984G	98.94	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-EDR2;1;1;1;2480;H;TX	Pass	PK	2.48672G	59.17	74.00	-14.83	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2402;L;TX	Pass	AV	2.354472G	28.19	54.00	-25.81	31.16	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2402;L;TX	Pass	AV	2.402004G	70.63	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2402;L;TX	Pass	PK	2.354472G	58.29	74.00	-15.71	31.16	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2402;L;TX	Pass	PK	2.402004G	100.73	Inf	-Inf	31.33	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	AV	2.3822G	27.85	54.00	-26.15	31.26	3	V	NaN	NaN	-



Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth (°)	Height (m)	Comments
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	AV	2.43996G	73.71	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	AV	2.4886G	28.88	54.00	-25.12	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	PK	2.3822G	57.95	74.00	-16.05	31.26	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	PK	2.43996G	103.81	Inf	-Inf	31.45	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2440;M;TX	Pass	PK	2.4886G	58.98	74.00	-15.02	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2480;H;TX	Pass	AV	2.48G	68.72	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2480;H;TX	Pass	AV	2.48768G	28.69	54.00	-25.31	31.61	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2480;H;TX	Pass	PK	2.48G	98.82	Inf	-Inf	31.58	3	V	NaN	NaN	-
2.4G;BT-EDR3;1;1;1;2480;H;TX	Pass	PK	2.48768G	58.79	74.00	-15.21	31.61	3	V	NaN	NaN	-

