RF TEST REPORT

SIEMIC
GLOBAL TESTING & CERTIFICATIONS
YOUR CHOICE FOR- TCB FCB CB NB CAB RCB

Report No.: FCC_RF_SL15060501-CPC-006-DSS
Supersede Report No.: None

Applicant	:	ChargePoint, Inc.
Product Name	:	Network Communication
Model No.	:	28010077
Test Standard	:	47 CFR 15.247 RSS 210 Issue8: 2010
Test Method	:	ANSI C63.10: 2013 RSS Gen issue4 FCC Public Notice DA 00-705
FCC ID	:	W38-28010077
IC ID	:	8854A-28010077
Dates of test	:	June 24, 2015 to July 20, 2015
Issue Date	:	July 23, 2015
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification [X] Equipment did not comply with the specification [ ]		

This Test Report is Issued Under the Authority of:	
Teody Manansala	**Nima Molaei**
Test Engineer	Engineer Reviewer

Issued By:
SIEMIC Laboratories
775 Montague Expressway, Milpitas, 95035 CA

ilac-MRA
ACCREDITED
TESTING CERT # 2742-01

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

CONTENTS

1 REPORT REVISION HISTORY 4
2 EXECUTIVE SUMMARY 5
3 CUSTOMER INFORMATION 5
4 TEST SITE INFORMATION 5
5 MODIFICATION 5
6 EUT INFORMATION 6
6.1 EUT Description 6
6.2 Radio Description 6
6.3 EUT test modes/configuration Description 6
6.4 EUT Photos 7
6.5 EUT Test Setup Photos 9
7 SUPPORTING EQUIPMENT/SOFTWARE AND CABLING DESCRIPTION 10
7.1 Supporting Equipment 10
7.2 Cabling Description 10
7.3 Test Software Description 10
8 TEST SUMMARY 11
9 MEASUREMENT UNCERTAINTY 12
10 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS 13
10.1 Conducted Emissions 13
10.2 Channel Separation (Bluetooth BDR/EDR) 16
10.3 20dB Occupied Bandwidth (Bluetooth BDR/EDR) 19
10.4 Number of Hopping Channel (Bluetooth BDR/EDR) 22
10.5 Time of Occupancy (Bluetooth BDR/EDR) 24
10.6 Peak Output Power (Bluetooth BDR/EDR) 27
10.7 Band Edge (Bluetooth BDR/EDR) 30
10.8 99% Occupied Bandwidth (BT-BDR/EDR) 33
10.9 Transmitter Radiated Spurious Emissions Below 1GHz 36
10.10 Transmitter Radiated Spurious Emissions > 1GHz & Restricted band & non-restricted band emission 39
ANNEX A. TEST INSTRUMENT 43
ANNEX B. SIEMIC ACCREDITATION 44

1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_RF_SL15060501-CPC-006-DSS	None	Original	07/23/2015

2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: ChargePoint, Inc.
Product: Network Comunication
Model: 28010077

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	:	ChargePoint, Inc.
Applicant Address	:	254 E. Hacienda Ave Campbell, CA 95148
Manufacturer Name	:	ChargePoint, Inc.
Manufacturer Address	:	254 E. Hacienda Ave Campbell, CA 95148

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Product Name	Network Comunication
Model No.	28010077
Trade Name	ChargePoint, Inc.
Serial No.	N/A
Host Model No.	N/A
Input Power	100-240VDC, 50/60Hz
Power Adapter Manu/Model	Condor/HK-CH13-A05
Power Adapter SN	N/A
Product Hardware version	27-010077
Product Software version	4.0.0.41
Radio Hardware version	27-010077
Radio Software version	4.0.0.41
Test Software version	4.0.0.41
Date of EUT received	June 20, 2015
Equipment Class/ Category	DSS
Operating Frequencies	2402MHz-2480MHz
Port/Connectors	N/A

6.2 Radio Description

Spec for BT Radio

Radio Type	Bluetooth (Ver4.0+EDR)
Operating Frequency	2402MHz-2480MHz
Modulation	FHSS (BDR, EDR), DSSS (LE)
Channel Spacing	1MHz (BDR, EDR), 2MHz (LE)
Antenna Type	Prestta Embedded Antenna
Antenna Gain	2.5dBi (for 2.4GHz)
Antenna Connector Type	On Board

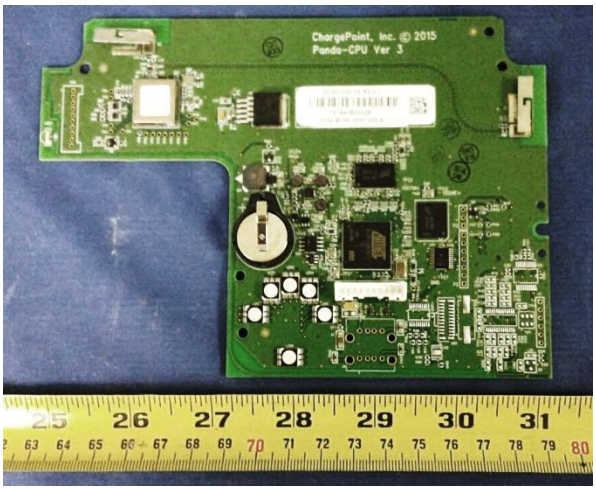
Channel List

Type	Channel No.	Frequency (MHz)	Available (Y/N)
Bluetooth(BDR, EDR) 2402-2480MHz	0	2402	Y
	…	…	Y
	39	2441	Y
	…	…	Y
	78	2480	Y

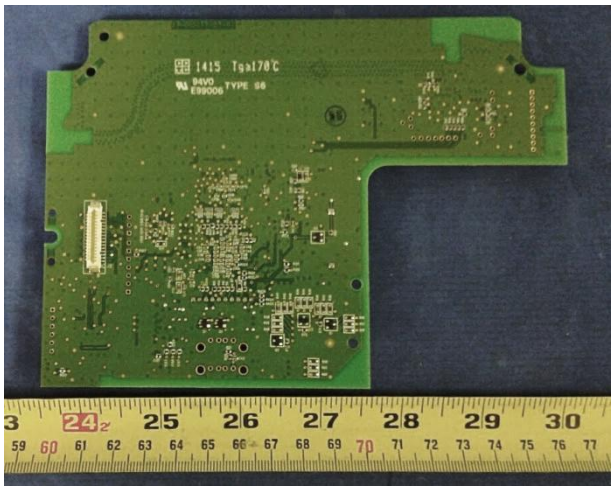
6.3 EUT test modes/configuration Description

Mode	Note
Bluetooth	BDR (GFSK)
Bluetooth	EDR (8-DPSK)

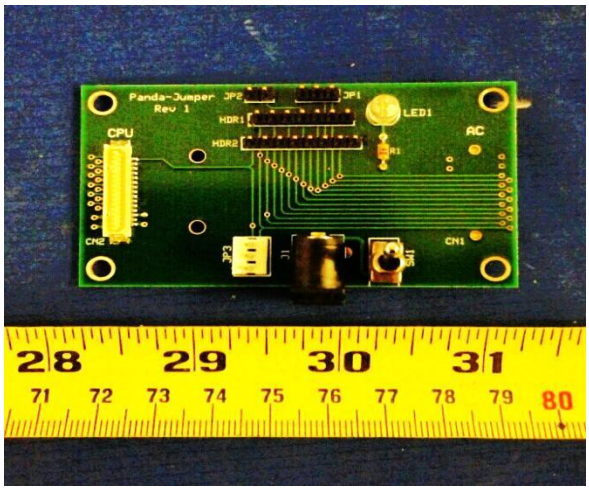
6.4 EUT Photos



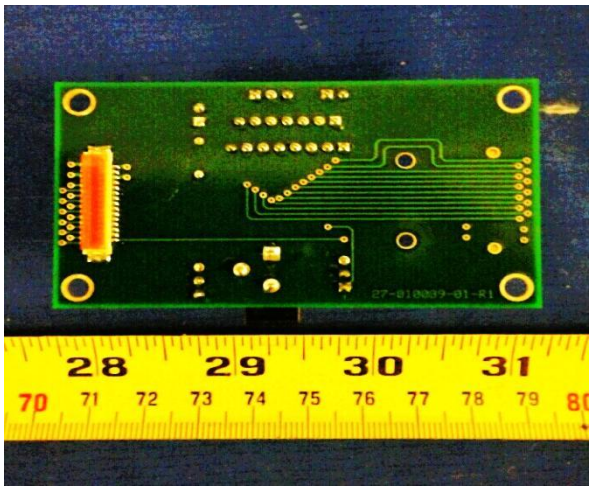
EUT Top View



EUT Bottom View

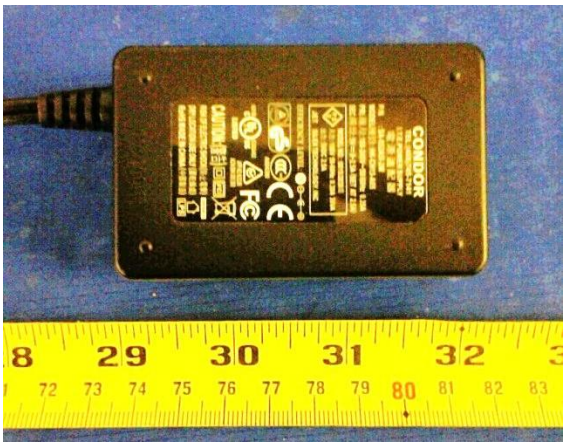


PCBA2 –Top View

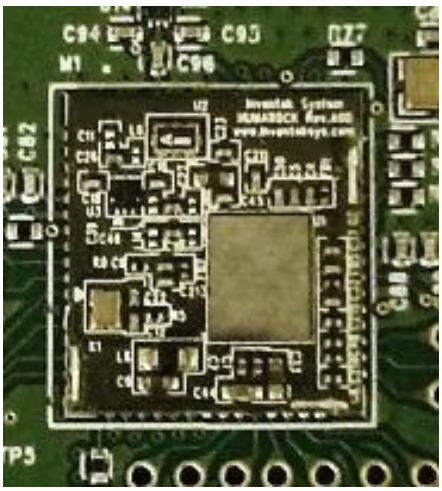
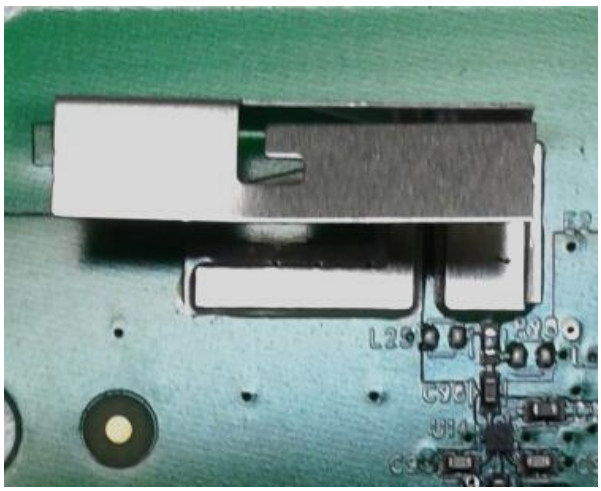
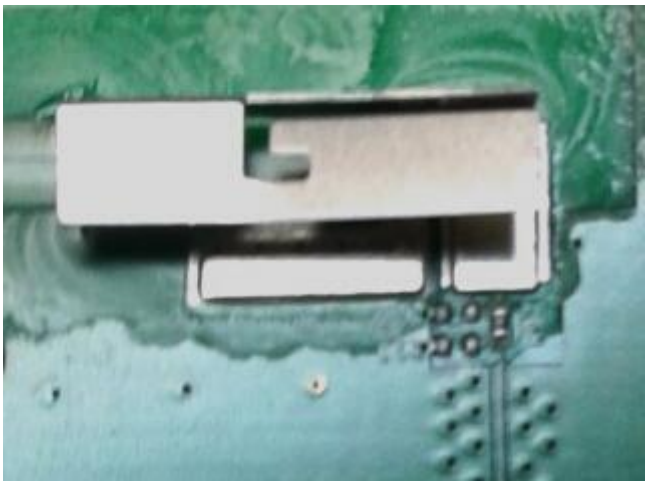


PCBA2 –Top View

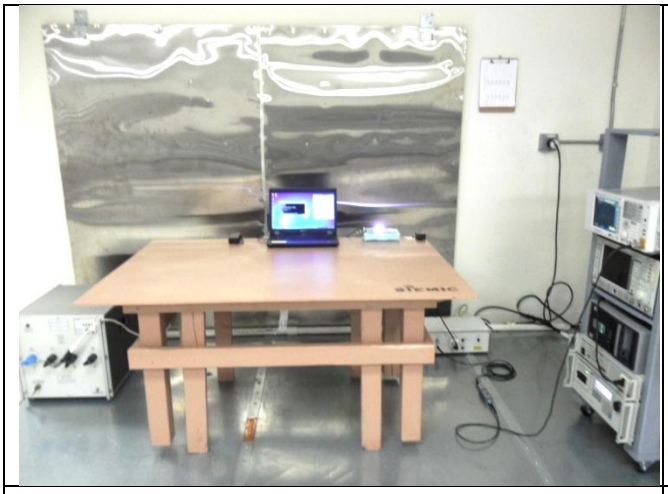
Power Supply – Top View



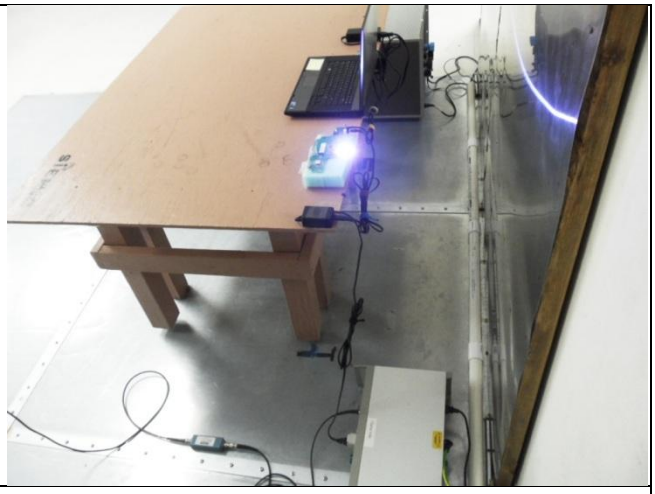
Power Supply – Bottom View

	
EUT Radio with shielding	**EUT Radio without shielding**
	
Antenna 1	**Antenna 2**

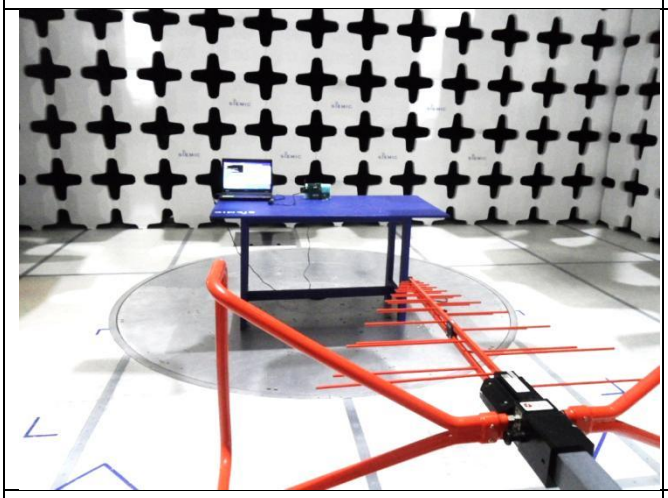
6.5 EUT Test Setup Photos



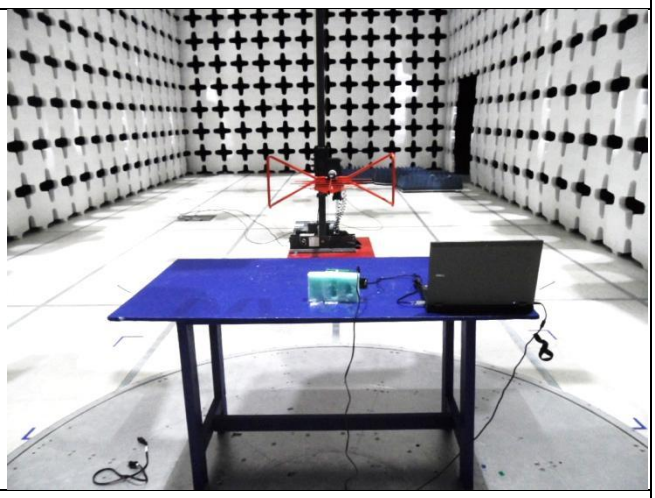
AC Line Conducted Emissions – Front View



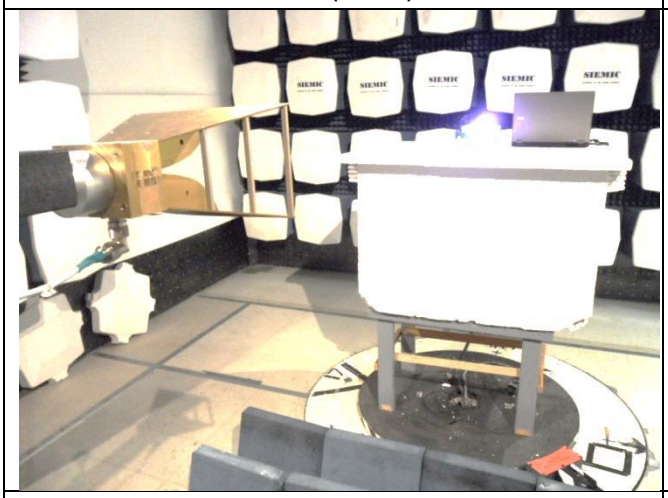
AC Line Conducted Emissions – Rear View



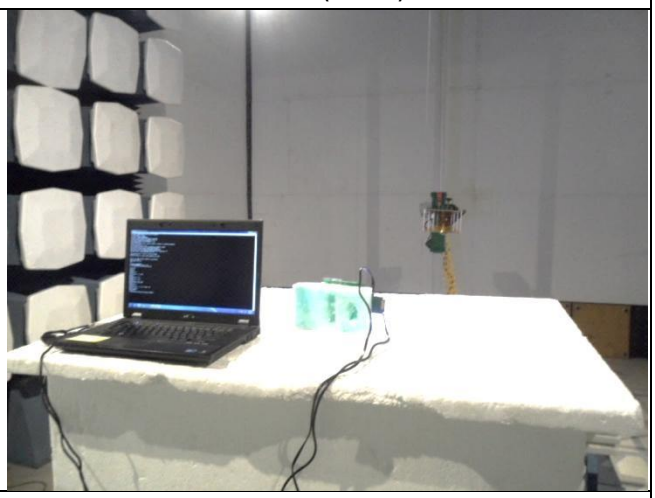
Radiated Emissions (<1GHz) – Front View



Radiated Emissions (<1GHz) – Rear View



Radiated Emissions (>1GHz) – Front View



Radiated Emissions (>1GHz) – Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	P05F Latitude E5510	N/A	Dell	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
USB	EUT	I/O Port	Laptop	USB	1	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Tera Term	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10: 2013 Public Notice DA 00-705	☒ Pass ☐ N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	ANSI C63.10: 2013	☒ Pass ☐ N/A

DSS Band Requirement

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC	15.247 (a)(1)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210 (A8.1)	IC	-	
20dB Occupied Bandwidth	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS Gen(6.6)	IC	-	
Bandwidth	FCC	15.247(a)(2)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS210 (A8.2)	IC	-	
Number of Hopping Channels	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210(A8.1)	IC	-	
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210(A8.5)	IC	-	
Time of Occupancy	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210(A8.1)	IC	-	
Output Power	FCC	15.247(b)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210 (A8.4)	IC	-	
Receiver Spurious Emissions	FCC	15.247(d)	FCC	-	☐ Pass ☒ N/A
	IC	RSS Gen (7.1)	IC	RSS Gen (7.1)	
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS210(A8.4)	IC	-	
Power Spectral Density	FCC	15.247(e)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	IC	-	
Hybrid System Requirement	FCC	15.247(f)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	IC	-	
Hopping Capability	FCC	15.247(g)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS210(A8.1)	IC	-	
Hopping Coordination Requirement	FCC	15.247(h)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
RF Exposure requirement	FCC	15.247(i)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS Gen(3.2)	IC	-	
Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.				

9 Measurement Uncertainty

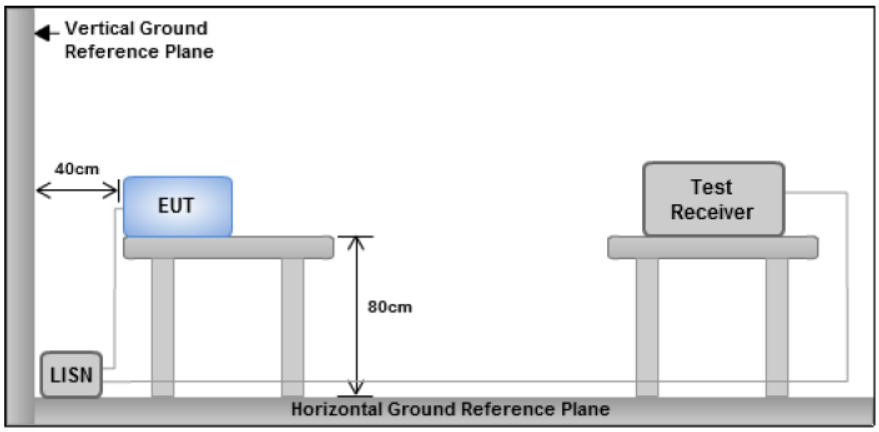
Emissions			
Test Item	**Frequency Range**	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and Radiated Spurious Emissions	1GHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+4.3dB/-4.1dB

10 Measurements, Examination and Derived Results

10.1 Conducted Emissions

Conducted Emission Limit

Frequency ranges (MHz)	Limit (dBuV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

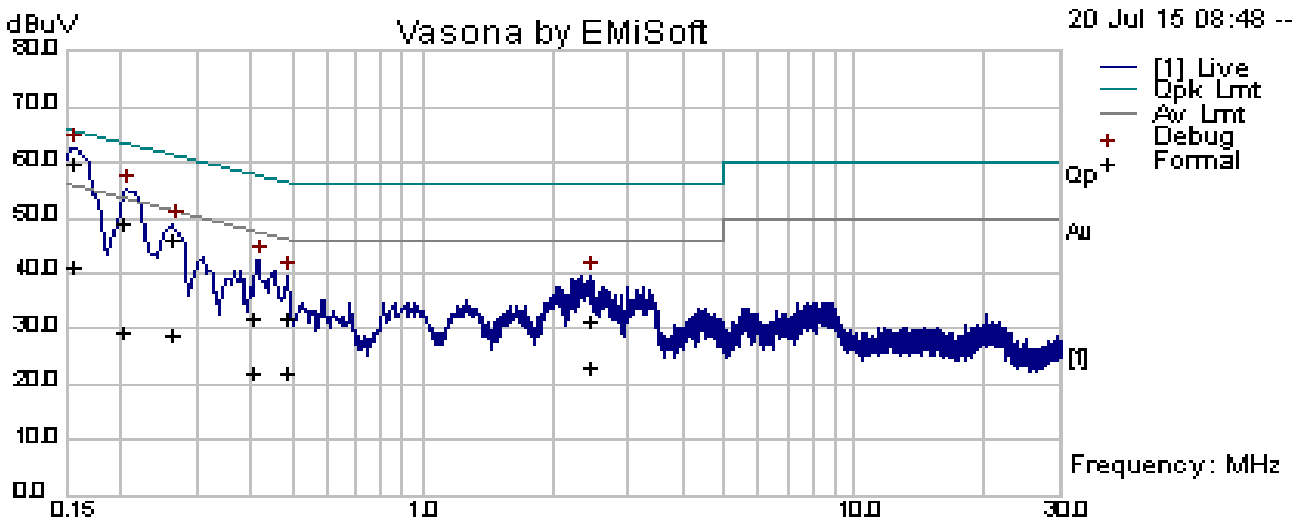
Spec	Item	Requirement	Applicable
47CFR§15.207	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	☒
Test Setup	 Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes	
Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50Ω/50µH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment was powered separately from another main supply.	
Remark	EUT tested with AC 110V 60Hz	
Result	☒ Pass ☐ Fail	

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Conducted Emission Test Results (Line)

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	22	Result:	☒ Pass ☐ Fail
	Humidity (%):	40		
	Atmospheric(mbar):	1022		
Mains Power:	110Vac, 60Hz			
Tested by:	Teody Manansala			
Test Date:	07/20/2015			
Remarks	Line			



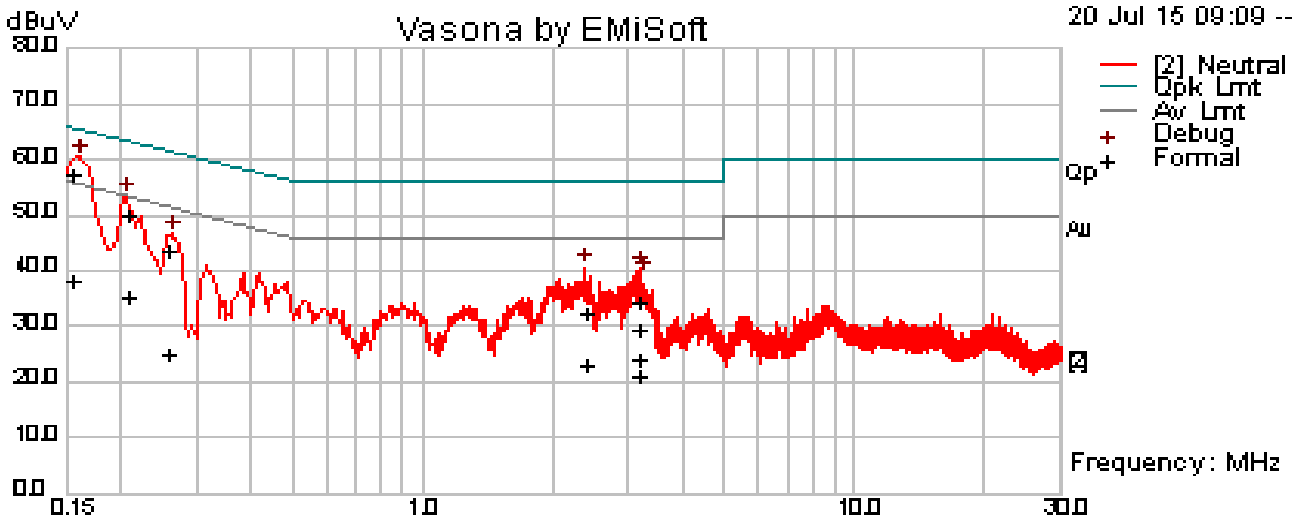
Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.16	49.21	10.00	0.75	59.96	Quasi Peak	Line	65.70	-5.73	Pass
0.20	38.38	10.00	0.74	49.13	Quasi Peak	Line	63.50	-14.37	Pass
0.26	35.13	10.00	0.72	45.85	Quasi Peak	Line	61.35	-15.50	Pass
0.40	21.24	10.01	0.73	31.97	Quasi Peak	Line	57.76	-25.79	Pass
2.42	20.32	10.03	0.96	31.30	Quasi Peak	Line	56.00	-24.70	Pass
0.48	21.13	10.01	0.74	31.88	Quasi Peak	Line	56.27	-24.39	Pass
0.16	30.68	10.00	0.75	41.44	Average	Line	55.70	-14.26	Pass
0.20	18.69	10.00	0.74	29.43	Average	Line	53.50	-24.06	Pass
0.26	18.14	10.00	0.72	28.86	Average	Line	51.35	-22.49	Pass
0.40	11.19	10.01	0.73	21.92	Average	Line	47.76	-25.84	Pass
2.42	11.90	10.03	0.96	22.89	Average	Line	46.00	-23.11	Pass
0.48	11.38	10.01	0.74	22.12	Average	Line	46.27	-24.15	Pass

Note: The results above show only the worst case.

Conducted Emission Test Results (Neutral)

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	22	Result:	☒ Pass ☐ Fail
	Humidity (%):	40		
	Atmospheric(mbar):	1022		
Mains Power:	110Vac, 60Hz			
Tested by:	Teody Manansala			
Test Date:	07/20/2015			
Remarks	Neutral			



Neutral Line Plot @ 120Vac, 60Hz

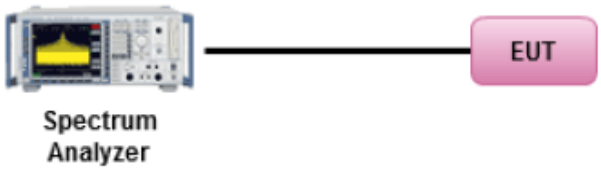
Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.15	46.64	10.00	0.76	57.39	Quasi Peak	Neutral	65.77	-8.38	Pass
0.21	39.09	10.00	0.74	49.83	Quasi Peak	Neutral	63.20	-13.37	Pass
0.26	32.79	10.00	0.72	43.51	Quasi Peak	Neutral	61.47	-17.96	Pass
2.38	21.17	10.03	0.96	32.16	Quasi Peak	Neutral	56.00	-23.84	Pass
3.16	23.09	10.03	0.99	34.11	Quasi Peak	Neutral	56.00	-21.89	Pass
3.20	18.31	10.03	1.00	29.33	Quasi Peak	Neutral	56.00	-26.67	Pass
0.15	27.55	10.00	0.76	38.31	Average	Neutral	55.77	-17.46	Pass
0.21	24.60	10.00	0.74	35.34	Average	Neutral	53.20	-17.86	Pass
0.26	14.53	10.00	0.72	25.26	Average	Neutral	51.47	-26.22	Pass
2.38	12.16	10.03	0.96	23.14	Average	Neutral	46.00	-22.86	Pass
3.16	13.16	10.03	0.99	24.18	Average	Neutral	46.00	-21.82	Pass
3.20	10.31	10.03	1.00	21.34	Average	Neutral	46.00	-24.66	Pass

Note: The results above show only the worst case.

10.2 Channel Separation (Bluetooth BDR/EDR)

Requirement(s):

Spec	Item	Requirement	Applicable
47 CFR §15.247 (e) RSS-210 (A2.6)	a)	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.	☒

Test Setup				
Test Procedure	DA 00-705 Measurement Guidelines for Frequency Hopping Spread Spectrum Systems Channel Separation procedure - The EUT must have its hopping function enabled. - Span = wide enough to capture the peaks of two adjacent channels - Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span - Video (or Average) Bandwidth (VBW) ≥ RBW. - Detector = Peak. - Trace mode = max hold. - Use the marker-delta function to determine the separation between the peaks of the adjacent channels.			
Test Date	07/02/2015	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	21°C 46% 1019mbar
Remark	NONE			
Result	☒ Pass ☐ Fail			

Equipment Setting

Test	RBW	VBW	SPAN	Detector	Sweep	Trace	Notes
Channel Separation	≥1% Span	≥ RBW	-	PK	Auto	Maxhold	-

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

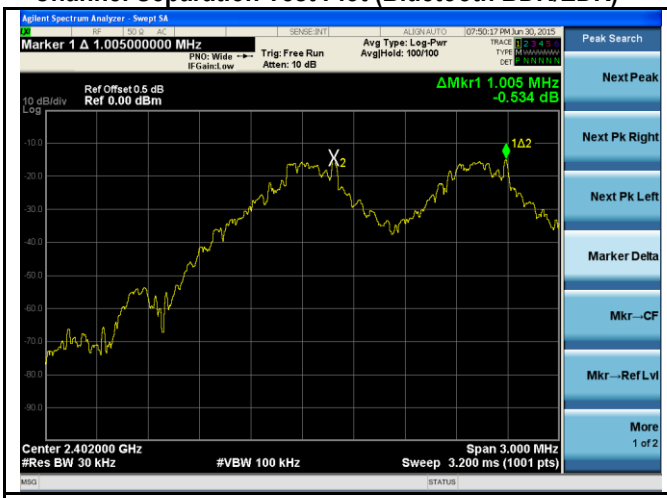
Configuration : Bluetooth Mode , BDR Mode

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	2/3 20dB Bandwidth (MHz)	Pass/Fail
Low	2402	1.005	0.670	Pass
Mid	2441	0.990	0.660	Pass
High	2480	1.002	0.668	Pass

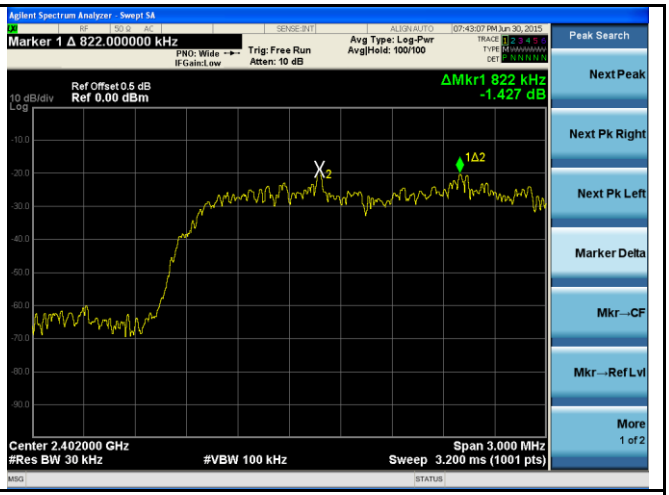
Configuration : Bluetooth Mode , EDR Mode

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	2/3 20dB Bandwidth (MHz)	Pass/Fail
Low	2402	0.822	0.548	Pass
Mid	2441	1.014	0.676	Pass
High	2480	0.831	0.554	Pass

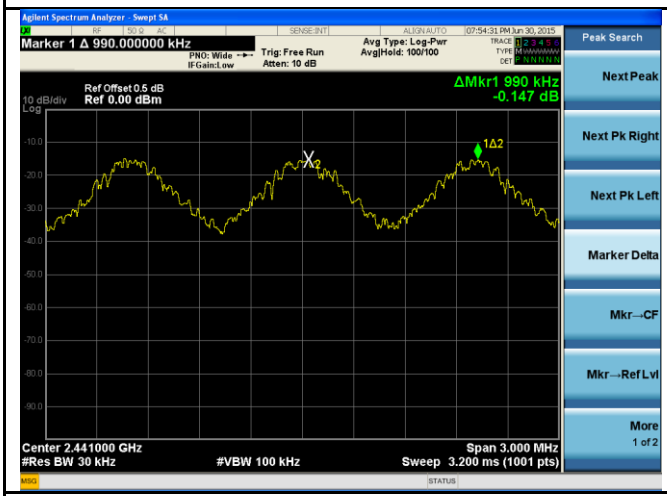
Channel Separation Test Plot (Bluetooth BDR/EDR)



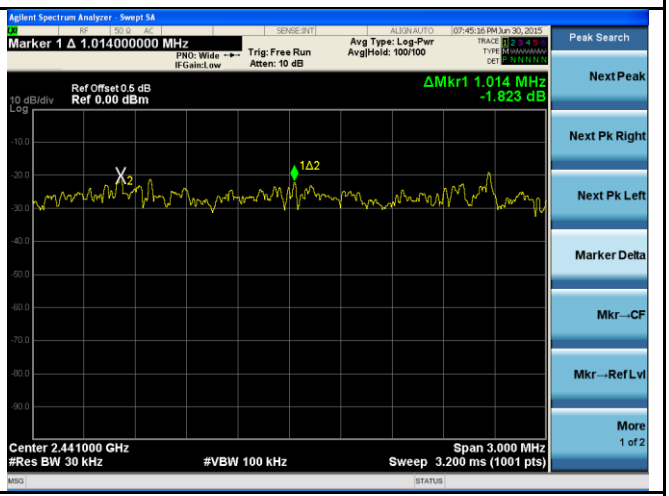
Channel Separation-Low Channel BDR- Mode



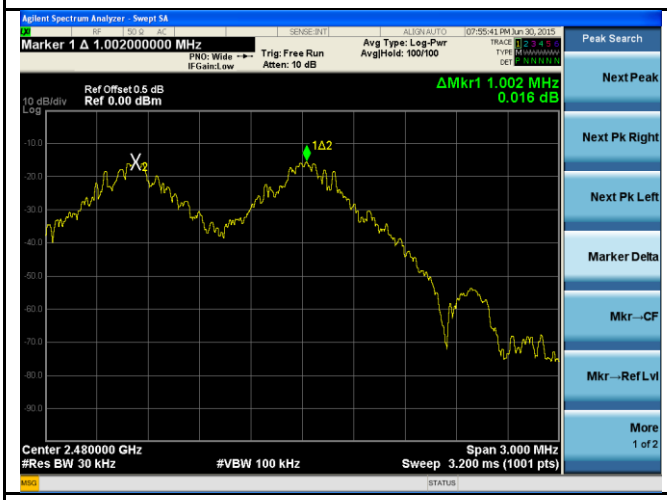
Channel Separation-Low Channel-EDR Mode



Channel Separation-Mid Channel-BDR Mode



Channel Separation-Mid Channel-EDR Mode

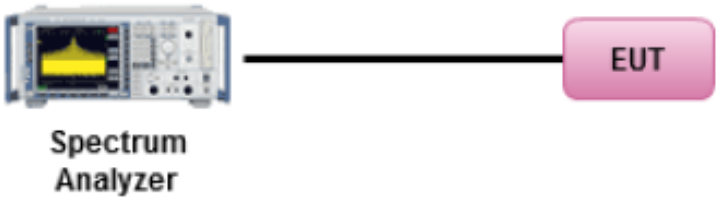


Channel Separation-High Channel-BDR Mode

Channel Separation-High Channel-EDR Mode

10.3 20dB Occupied Bandwidth (Bluetooth BDR/EDR)

Requirement(s):

Spec	Requirement	Applicable
47 CFR §15.247 RSS-210 (A2.6)	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 2/3 of 20 dB bandwidth of the hopping channel, whichever is greater.	☒
Test Setup		
Procedure	20dB Emission bandwidth measurement procedure - Set RBW ≥ 1% of 20dB Bandwidth - Set the video bandwidth (VBW) ≥ RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.	
Test Date	07/02/2015	Environmental condition: Temperature 23oC; Relative Humidity 47%; Atmospheric Pressure 1019mbar
Remark	-	
Result	☐ Pass ☐ Fail	

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

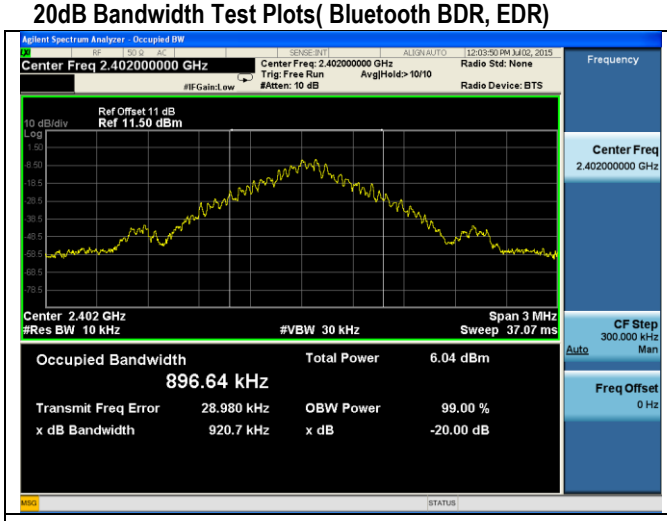
Configuration : Bluetooth mode , BDR Mode

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)
Low	2402	0.9207	0.6138
Mid	2441	0.9207	0.6138
High	2480	0.9207	0.6138

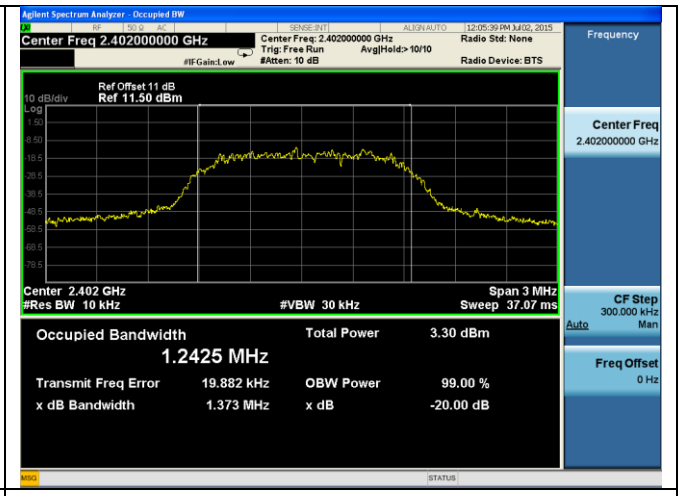
Configuration : Bluetooth mode , EDR mode

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)
Low	2402	1.373	0.9153
Mid	2441	1.369	0.9127
High	2480	1.372	0.9147

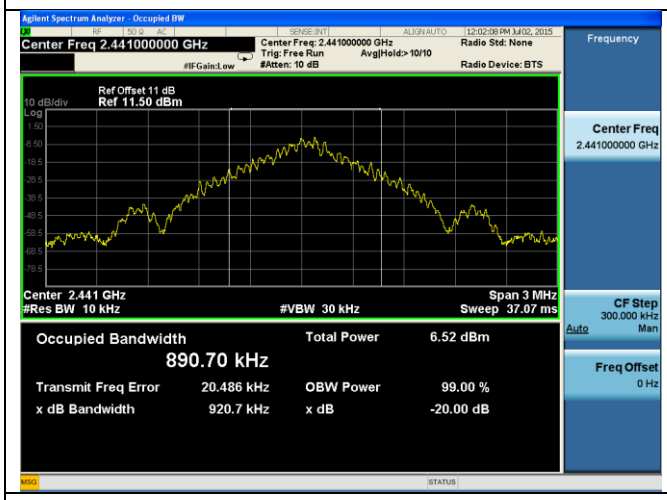
20dB Bandwidth Test Plots(Bluetooth BDR, EDR)



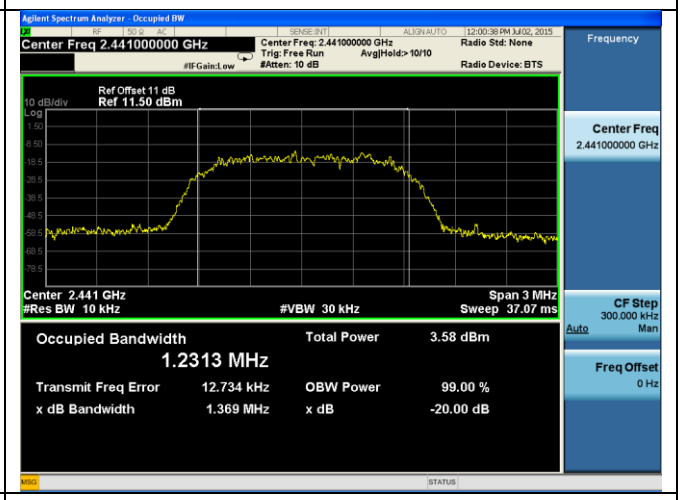
20dB BW –Bluetooth BDR 2402MHz



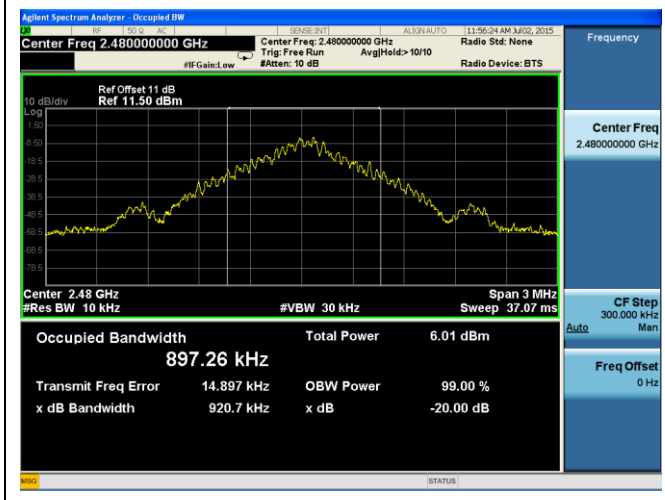
20dB BW –Bluetooth EDR 2402MHz



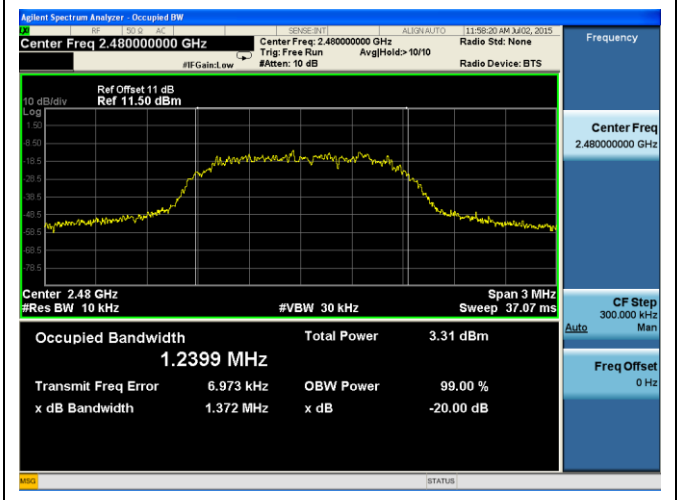
20dB BW –Bluetooth BDR 2441MHz



20dB BW –Bluetooth EDR 2441MHz



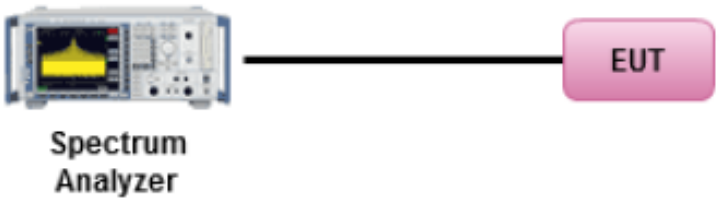
20dB BW –Bluetooth BDR 2480MHz



20dB BW –Bluetooth EDR 2480MHz

10.4 Number of Hopping Channel (Bluetooth BDR/EDR)

Requirement(s):

Spec	Requirement	Applicable
47 CFR §15.247 RSS-210 (A2.6)	For frequency hopping systems in the 2400-2483.5MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850MHz band: below 1 Watt (inclusive).	☒
Test Setup		
Procedure	Number of hopping frequencies procedure 1. The EUT must have its hopping function enabled 2. Span = the frequency band of operation. 3. Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span. 4. Video (or Average) Bandwidth (VBW) ≥ RBW. 5. Detector = peak. 6. Sweep time = auto couple. 7. Trace mode = max hold. 8. Allow trace to fully stabilize. 9. Save the plot	

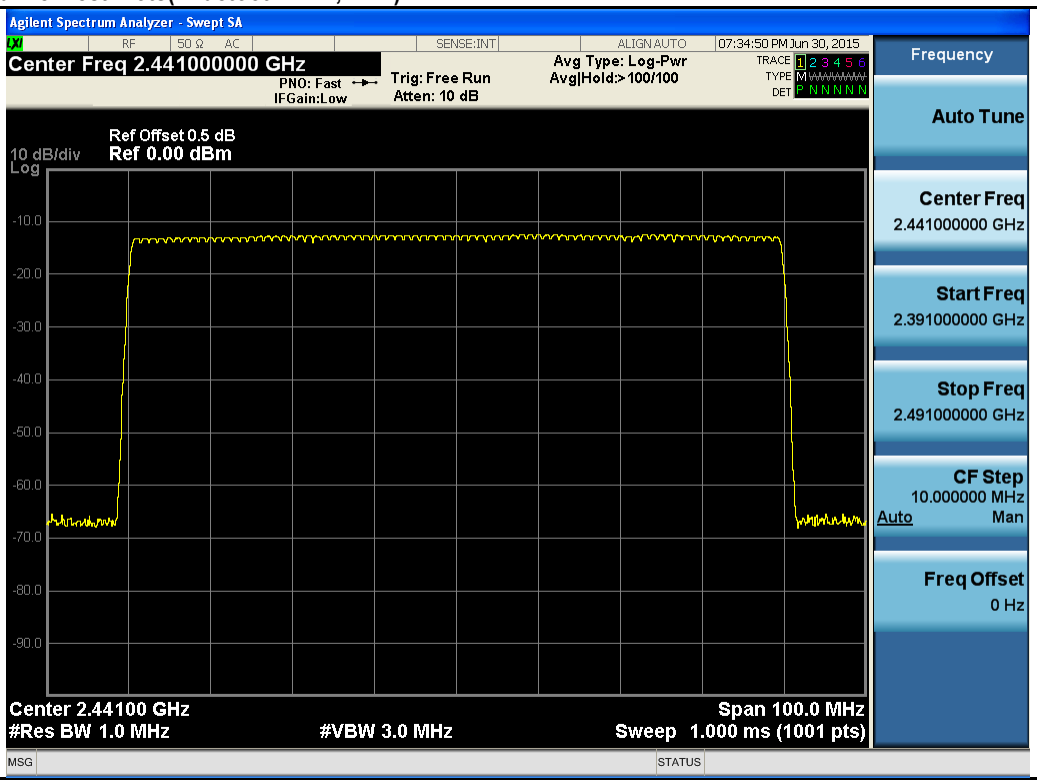
Test Date	07/02/2015	Environmental condition	Temperature 23oC Relative Humidity 47% Atmospheric Pressure 1019mbar
Remark	-		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

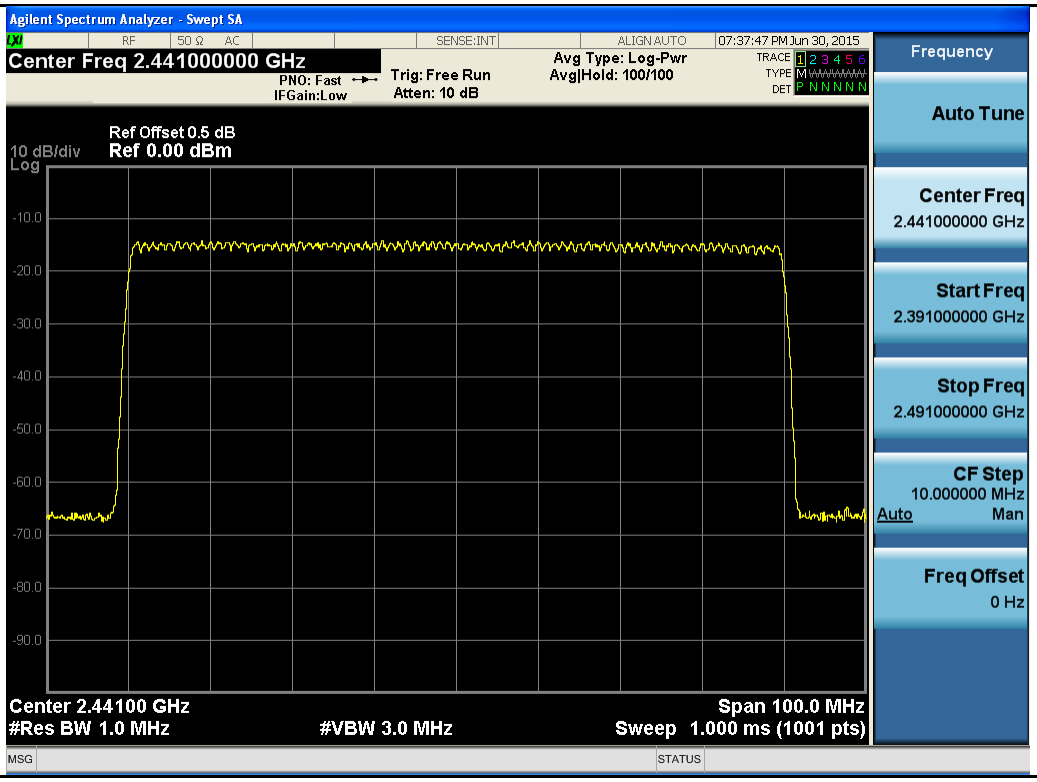
Test Plot ☒ Yes (See below) ☐ N/A

Channel Number	Limit	Pass/Fail
79	15	Pass

Hopping Channel Test Plots(Bluetooth BDR, EDR)



BDR – 79 Channels

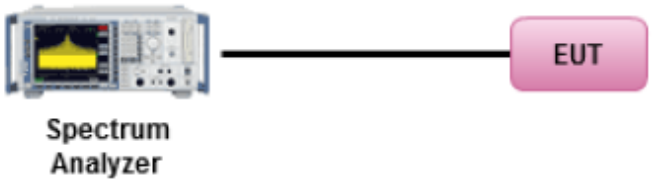


EDR – 79 Channels

10.5 Time of Occupancy (Bluetooth BDR/EDR)

Requirement(s):

Spec	Item	Requirement	Applicable
47 CFR §15.247 RSS-210 (A2.6)		Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions.	☒

Test Setup				
Test Procedure	DA 00-705 Measurement Guidelines for Frequency Hopping Spread Spectrum Systems Channel Separation procedure - The EUT must have its hopping function enabled. - Span = zero span - centered on a hopping channel - RBW = 1 MHz; VBW ≥ RBW - Sweep = as necessary to capture the entire dwell time per hopping channel. - Detector = Peak. - Trace mode = max hold. - If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.			
Test Date	07/02/2015	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	21ºC 46% 1019mbar
Remark	Dwell Time=Pulse time*(1600/6/79)*31.6s			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

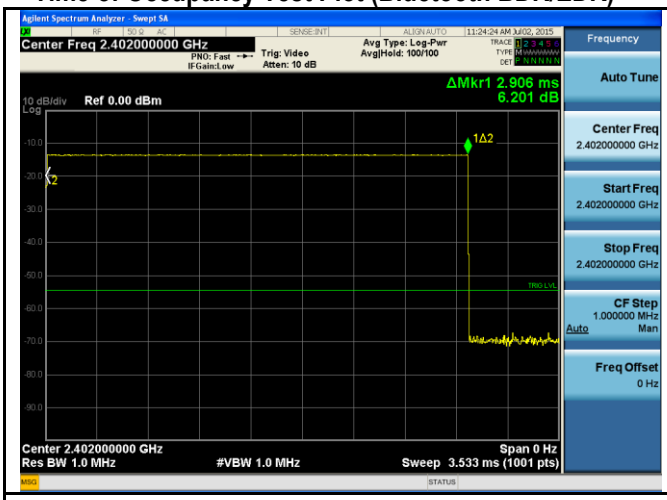
Bluetooth BDR Test Mode

Channel	Channel Frequency (MHz)	On Time (mSec)	Dwell Time (Sec)	Limit (Sec)
Low	2402	2.906	0.310	0.4
Mid	2441	2.906	0.310	0.4
High	2480	2.906	0.310	0.4

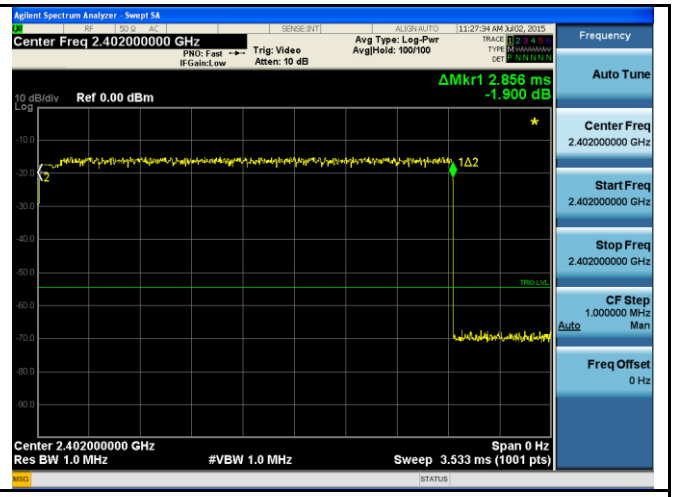
Bluetooth EDR Test Mode

Channel	Channel Frequency (MHz)	On Time (mSec)	Dwell Time (Sec)	Limit (Sec)
Low	2402	2.856	0.305	0.4
Mid	2441	2.856	0.305	0.4
High	2480	2.856	0.305	0.4

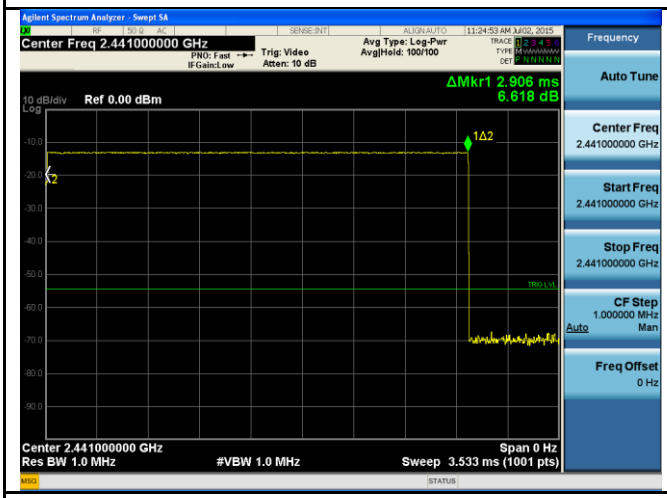
Time of Occupancy Test Plot (Bluetooth BDR/EDR)



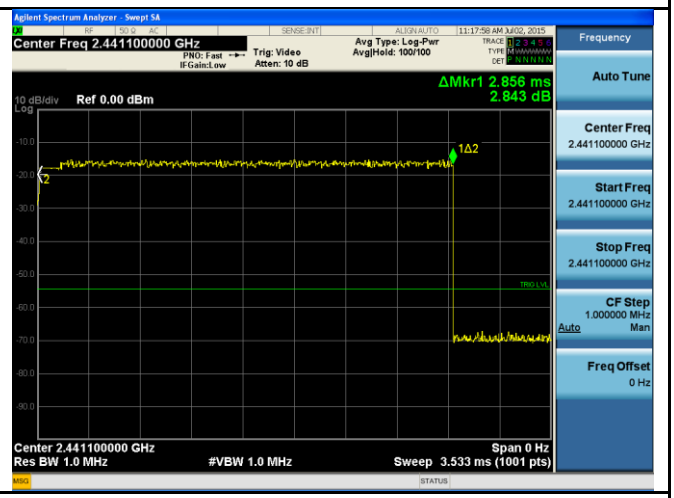
BDR Low Channel (On-Time)



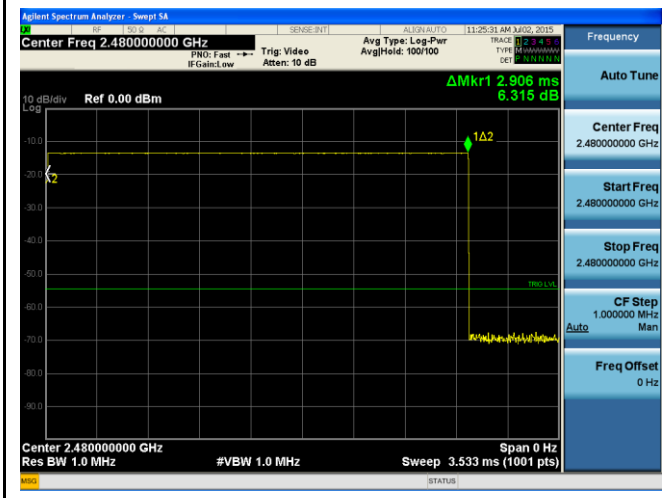
EDR Low Channel (On-Time)



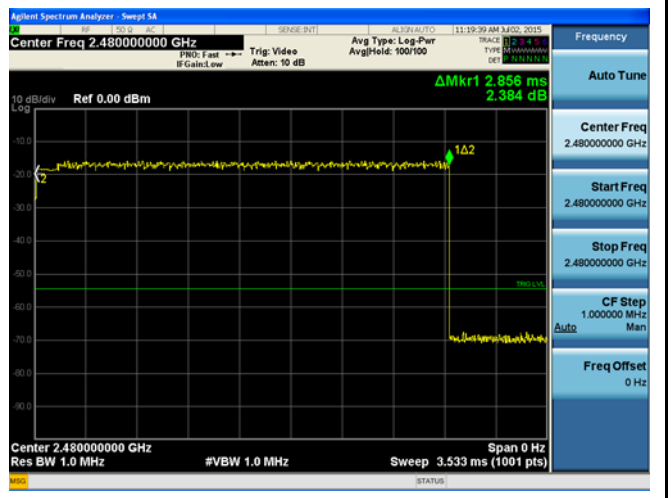
BDR Middle Channel (On-Time)



EDR Middle Channel (On-Time)



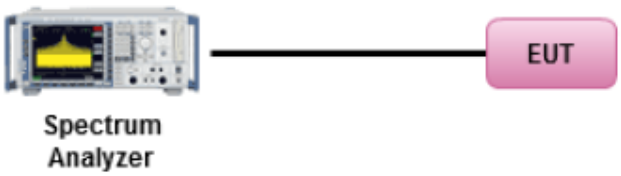
BDR High Channel (On-Time)



EDR High Channel (On-Time)

10.6 Peak Output Power (Bluetooth BDR/EDR)

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247	a)	For frequency hopping systems in the 2400-2483.5MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850MHz band: below 1 Watt (inclusive).	☒
	b)	Power reduction (antenna gain > 6dBi)	☐
§ 15.247		Frequency hopping systems operated in 2400-2483.5MHz with output power not greater than 125mW, the intervals of hopping channel carrier frequencies shall not be less than 25kHz or two thirds of the 20dB bandwidth of the hopping channel, whichever is greater.	☐
Test Setup			
Test Procedure	Maximum output power measurement procedure - Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel. - RBW > 20 dB bandwidth of the emission being measured; - VBW ≥ RBW. - Detector = peak. - Sweep time = auto couple. - Trace mode = max hold. - Allow trace to fully stabilize. - Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.		
Test Date	07/02/2015	Environmental condition	Temperature 21ºC Relative Humidity 46% Atmospheric Pressure 1019mbar
Remark	NONE		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes ☐ N/A

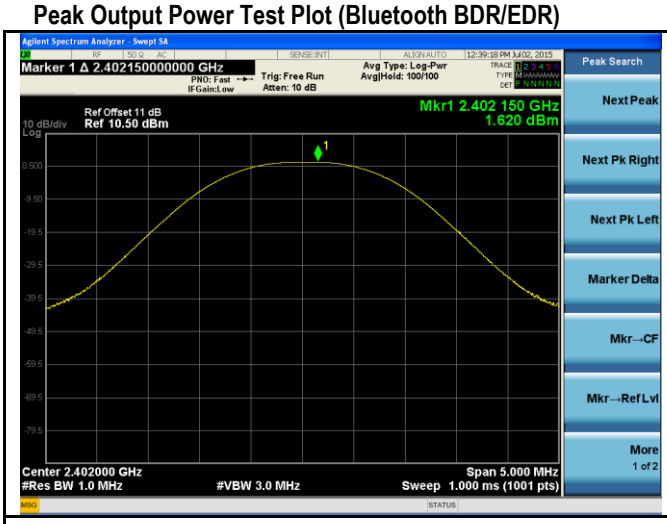
Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
PK output power	>20dB bandwidth	≥ RBW	~ 5 times 20dB bandwidth	Peak	Auto	Maxhold	Including Cable loss and Attenuation

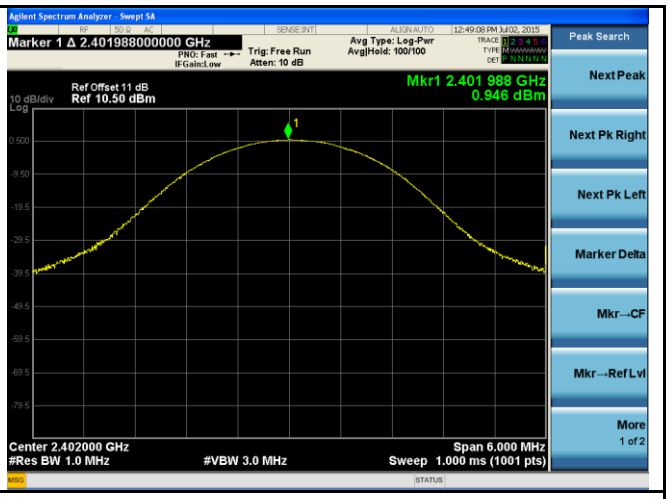
Output Power measurement results

Type	Freq (MHz)	Test mode	CH	Conducted Power (dBm)	Limit (dBm)	Result
Output power	2402	Bluetooth BDR	Low	1.620	≤30	Pass
Output power	2441	Bluetooth BDR	Mid	1.902	≤30	Pass
Output power	2480	Bluetooth BDR	High	1.771	≤30	Pass
Output power	2402	Bluetooth EDR	Low	0.946	≤30	Pass
Output power	2441	Bluetooth EDR	Mid	1.229	≤30	Pass
Output power	2480	Bluetooth EDR	High	1.135	≤30	Pass

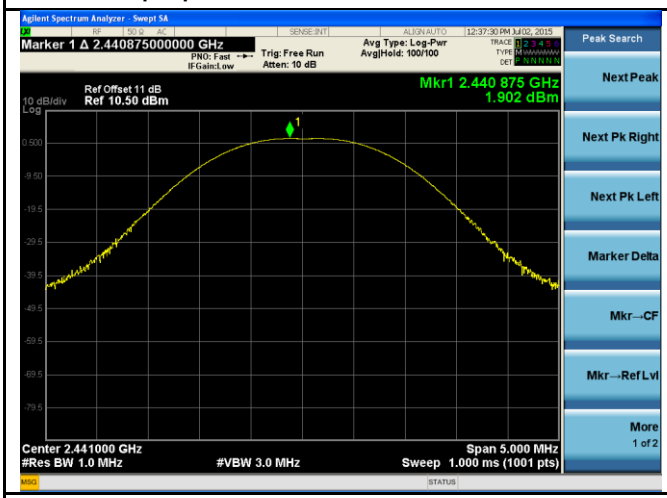
Peak Output Power Test Plot (Bluetooth BDR/EDR)



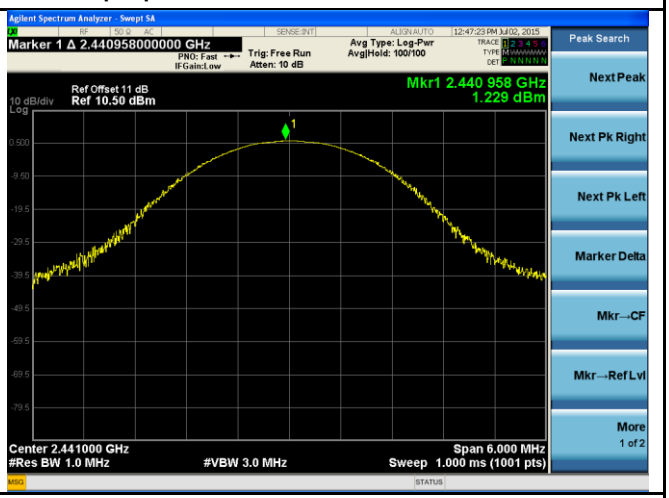
Output power - Low CH 2402 - Basic data rate



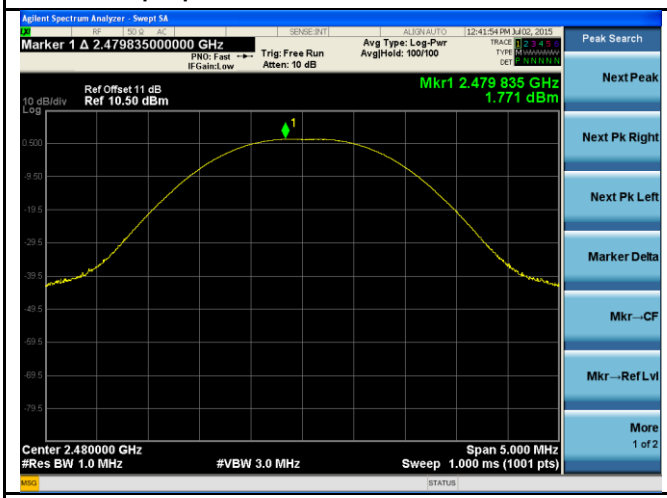
Output power - Low CH 2402 - Enhanced data rate



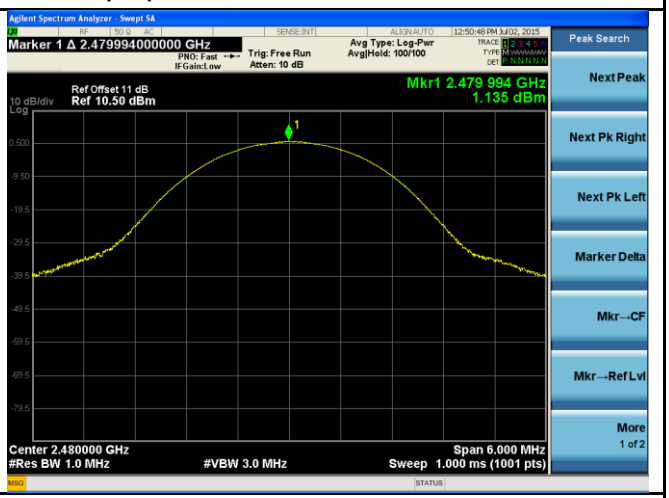
Output power - Mid CH 2441 - Basic data rate



Output power - Mid CH 2441 - Enhanced data rate



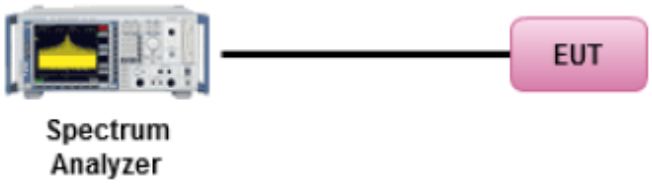
Output power - High CH 2480 - Basic data rate



Output power - High CH 2480 - Enhanced data rate

10.7 Band Edge (Bluetooth BDR/EDR)

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247	d)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209 (a) is not required ☒ 20 dB down ☐ 30 dB down	☒
Test Setup			
Test Procedure	Band Edge measurement procedure 1. Set the EUT to maximum power setting and enable the EUT transmit continuously. 2. Band edge emissions must be at least 30 dB down from the highest emission level within the authorized band as a measured. The attunation shall be be 30 dB instead of 20 dB when RMS conducted output power procedure is used. 3. Change modulation and channel bandwidth then repeat step 1 to 2. 4. Measured and record the results in the test report.		
Test Date	07/02/2015	Environmental condition	Temperature 22°C Relative Humidity 46% Atmospheric Pressure 1020mbar
Remark	-		
Result	☒ Pass ☐ Fail		

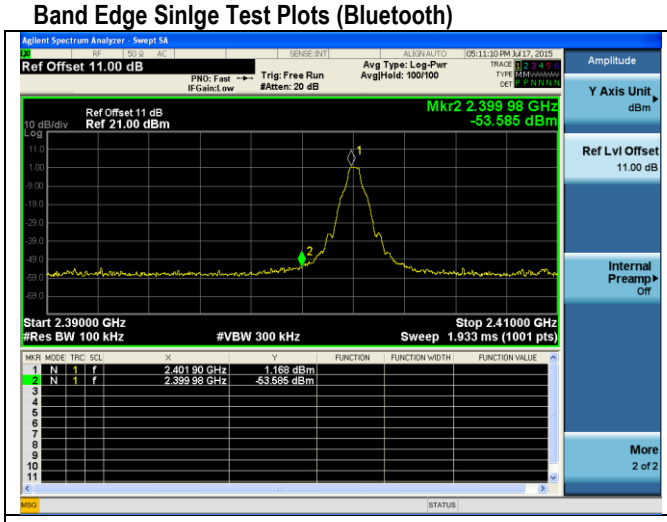
Equipment Setting

TEST	RBW	VBW	SPAN	Detector	SWEEP	Trace	NOTES
Band Edge	100KHz	≥3 x RBW	135 MHz / 55 MHz	Peak	Auto	Peak MAX	-

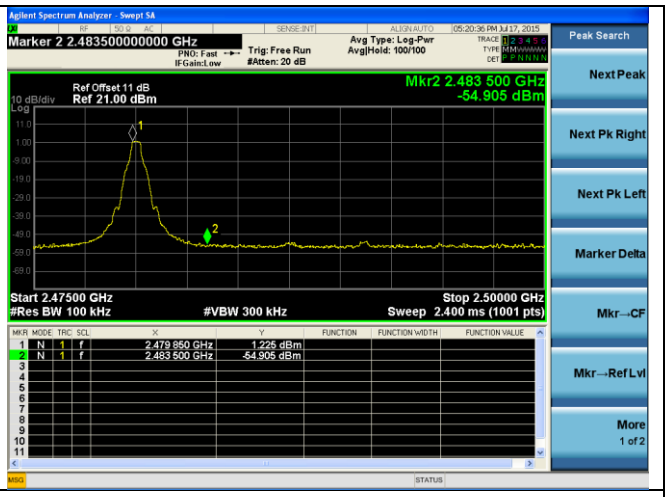
Test Data ☐ Yes ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

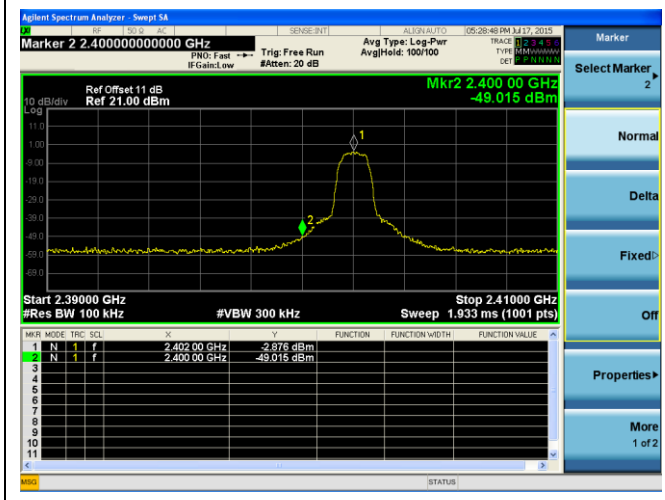
Band Edge Sinlge Test Plots (Bluetooth)



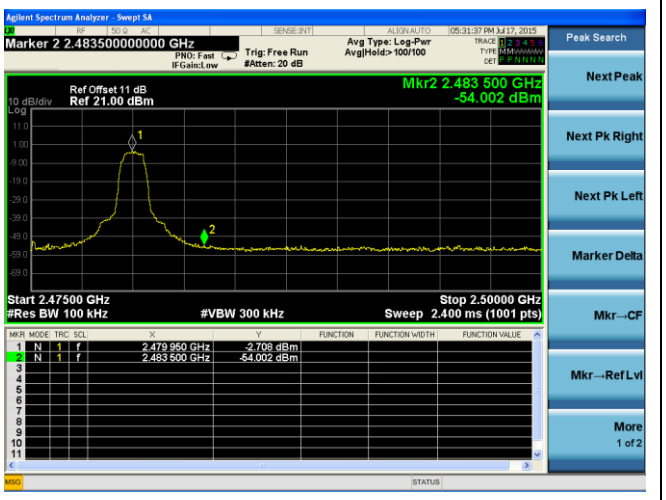
Band Edge-Single-BDR Low



Band Edge-Single-BDR High

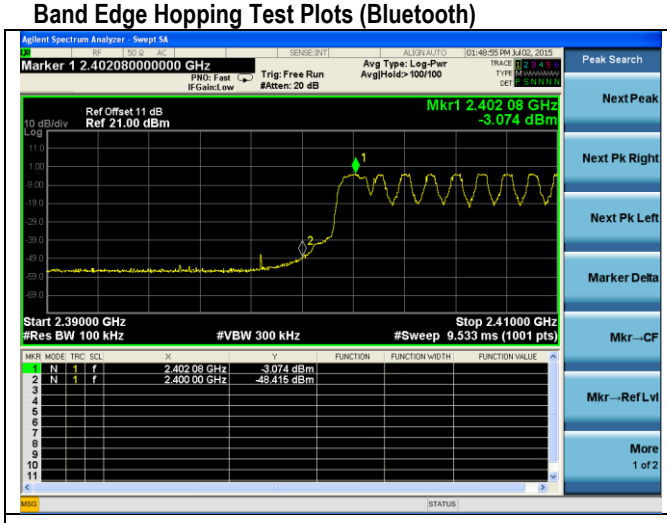


Band Edge-Single-EDR Low

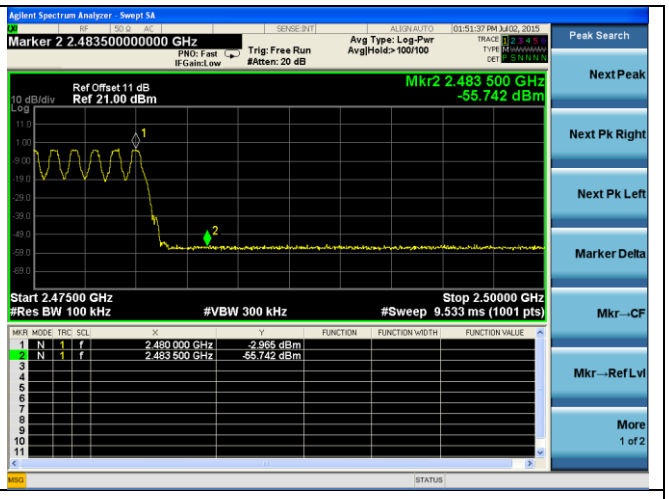


Band Edge-Single-EDR High

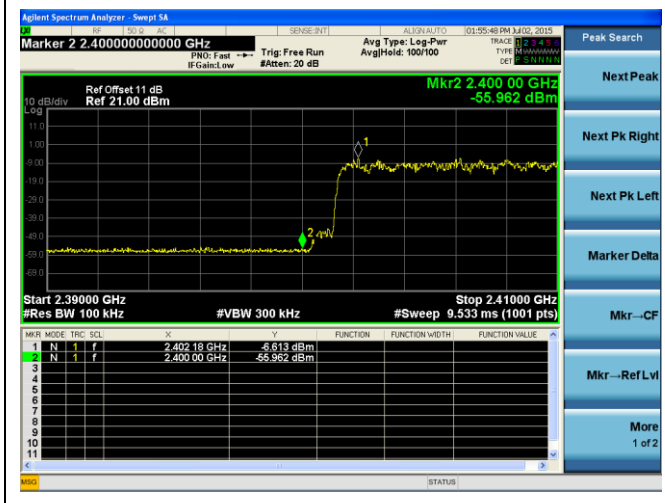
Band Edge Hopping Test Plots (Bluetooth)



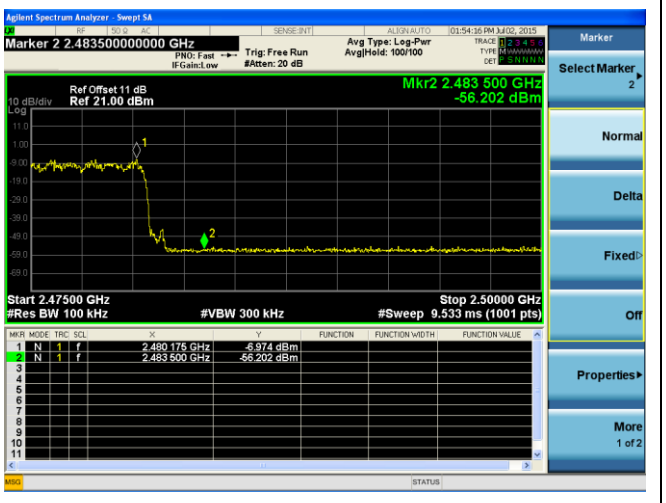
Band Edge-Hopping-BDR Low



Band Edge-Hopping-BDR High



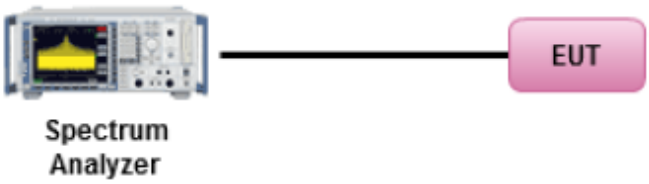
Band Edge-Hopping-EDR Low



Band Edge-Hopping-EDR High

10.8 99% Occupied Bandwidth (BT-BDR/EDR)

Requirement(s):

Spec	Requirement	Applicable
RSS Gen 4.6.1	The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual. The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth	☒
Test Setup		
Procedure	1. EUT was set for low , mid, high channel with modulated mode and highest RF output power. 2. The spectrum analyzer was connected to the antenna terminal.	
Test Date	07/02/2015	Environmental condition: Temperature 23oC; Relative Humidity 47%; Atmospheric Pressure 1019mbar
Remark	-	
Result	☒ Pass ☐ Fail	

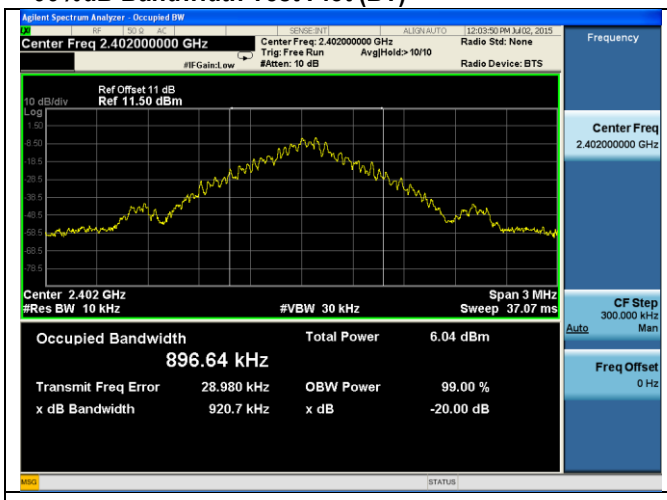
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

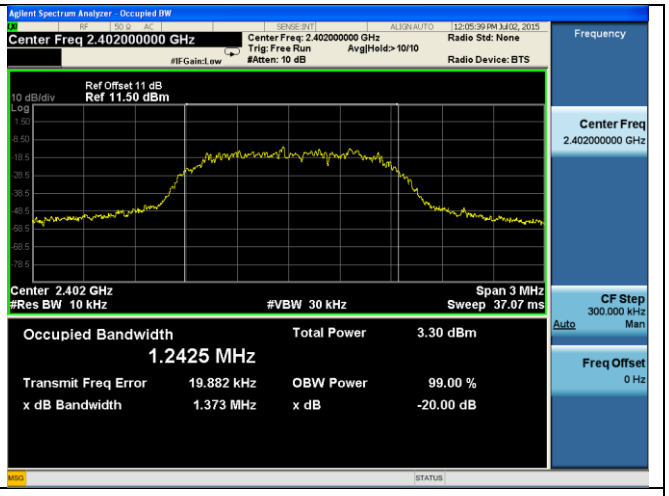
99%dB Bandwidth measurement result for BT (BDR/EDR)

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
99% BW	BT-BDR	2402	Low	0.8966	N/A	N/A
99% BW	BT-BDR	2441	Mid	0.8907	N/A	N/A
99% BW	BT-BDR	2480	High	0.8973	N/A	N/A
99% BW	BT_EDR	2402	Low	1.2425	N/A	N/A
99% BW	BT_EDR	2441	Mid	1.2313	N/A	N/A
99% BW	BT_EDR	2480	High	1.2399	N/A	N/A

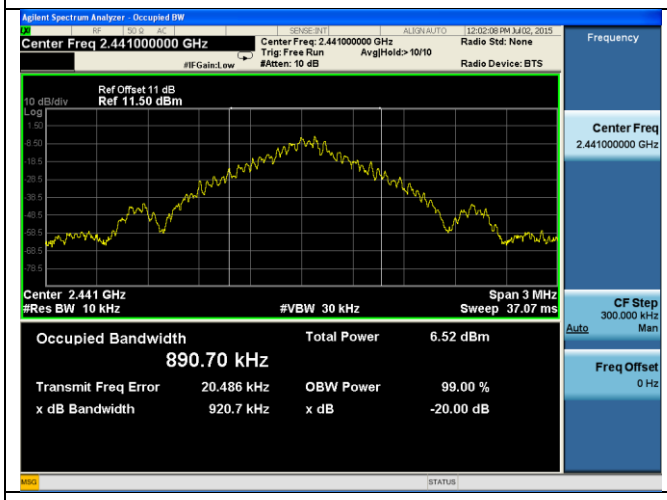
99%dB Bandwidth Test Plot (BT)



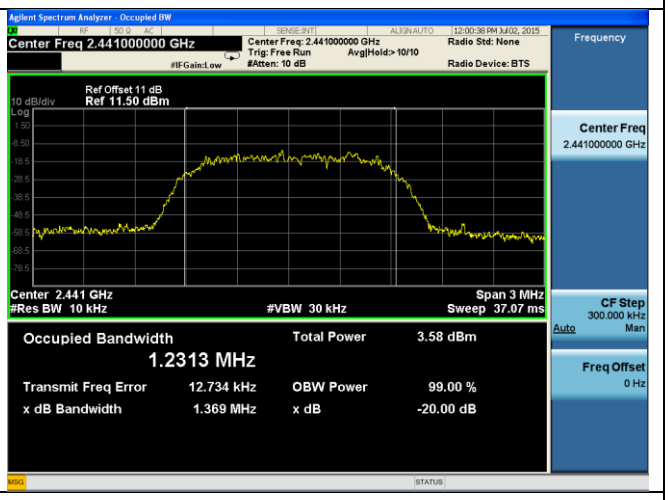
99% BW –Bluetooth BDR 2402MHz



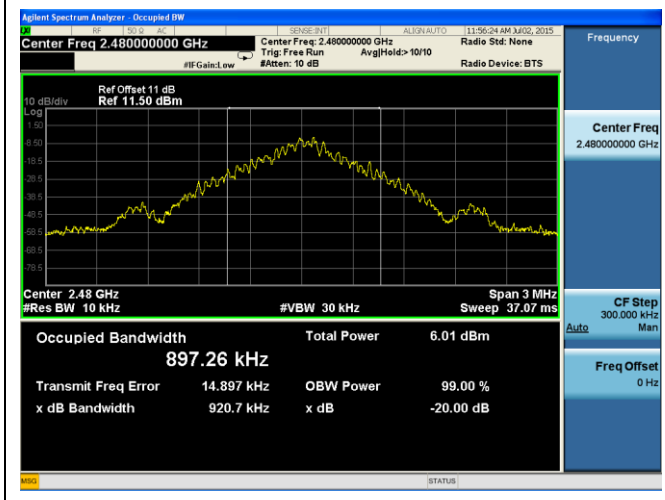
99% BW –Bluetooth EDR 2402MHz



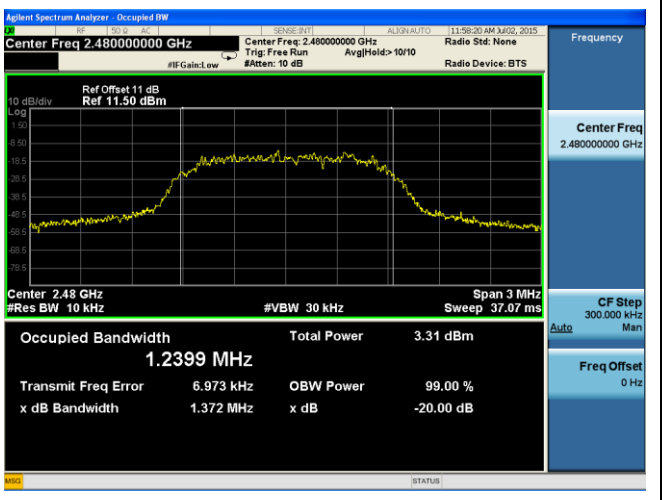
99% BW –Bluetooth BDR 2441MHz



99% BW –Bluetooth EDR 2441MHz



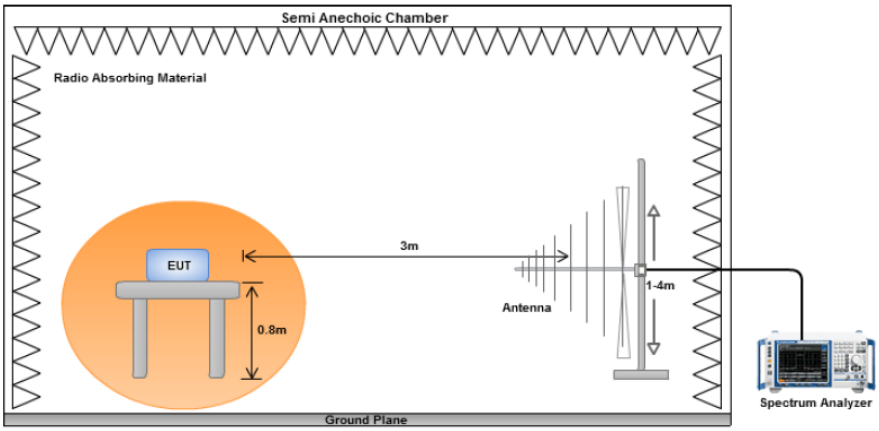
99% BW –Bluetooth BDR 2480MHz



99% BW –Bluetooth EDR 2480MHz

10.9 Transmitter Radiated Spurious Emissions Below 1GHz

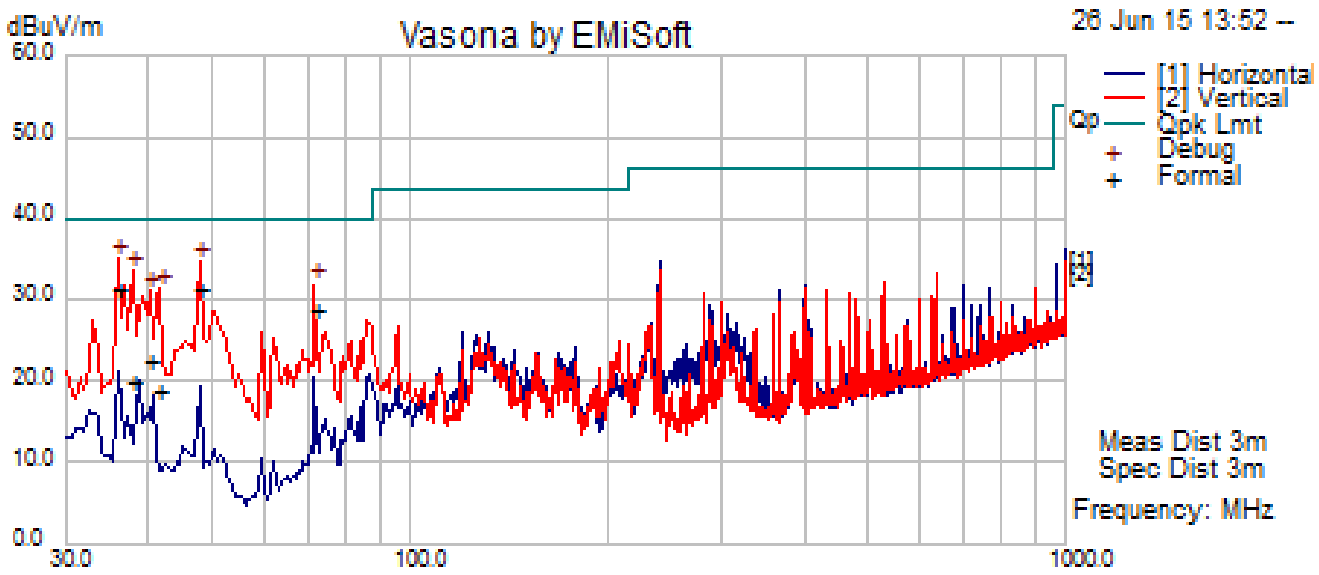
Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS210(A8.5)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges **Frequency range (MHz)** / **Field Strength (uV/m)** 30 – 88 / 100 88 – 216 / 150 216 960 / 200 Above 960 / 500	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

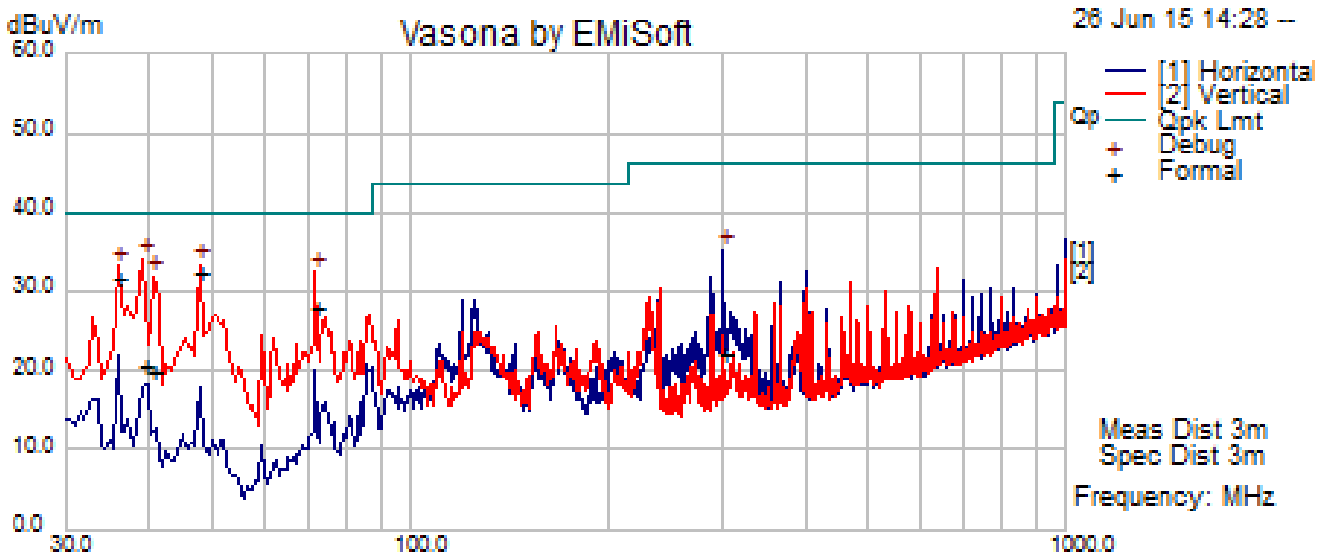
Test specification:	Radiated Spurious Emissions (30MHz – 1000MHz)			
Environmental Conditions:	Temp(°C):	20	Result:	☒ Pass ☐ Fail
	Humidity (%):	36		
	Atmospheric(mbar):	1021		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	06/26/2015			
Remarks:	**Bluetooth BDR – 2441MHz**			



Quasi Max Measurement

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
48.01	60.93	1.12	-28.47	33.58	Quasi Max	V	101.00	252.00	40.00	-6.42	Pass
35.99	53.91	1.04	-22.50	32.45	Quasi Max	V	100.00	26.00	40.00	-7.55	Pass
40.81	46.29	1.07	-25.48	21.88	Quasi Max	V	124.00	45.00	40.00	-18.12	Pass
119.62	39.80	1.98	-24.82	16.96	Quasi Max	H	178.00	285.00	43.52	-26.56	Pass
71.96	56.28	1.48	-30.04	27.72	Quasi Max	V	100.00	187.00	40.00	-12.28	Pass
300.00	55.31	2.96	-25.17	33.10	Quasi Max	H	120.00	108.00	46.02	-12.92	Pass

Test specification:	Radiated Spurious Emissions (30MHz – 1000MHz)			
Environmental Conditions:	Temp(°C):	20	Result:	☒ Pass ☐ Fail
	Humidity (%):	36		
	Atmospheric(mbar):	1021		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	06/26/2015			
Remarks:	**Bluetooth EDR – 2441MHz**			

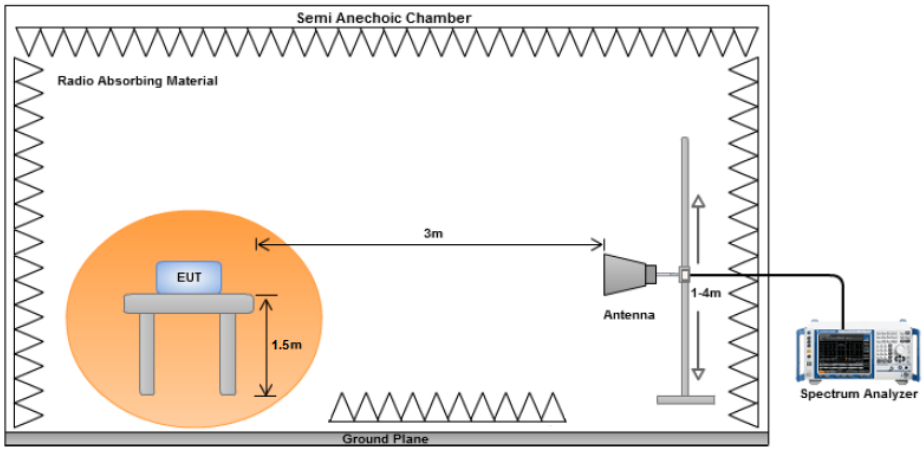


Quasi Max Measurement

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
39.16	44.47	1.06	-24.98	20.55	Quasi Max	V	167.00	208.00	40.00	-19.45	Pass
48.02	59.61	1.12	-28.48	32.25	Quasi Max	V	103.00	163.00	40.00	-7.75	Pass
36.00	53.15	1.04	-22.51	31.68	Quasi Max	V	111.00	304.00	40.00	-8.32	Pass
71.96	56.58	1.48	-30.04	28.02	Quasi Max	V	116.00	152.00	40.00	-11.98	Pass
40.78	44.17	1.07	-25.46	19.78	Quasi Max	V	160.00	356.00	40.00	-20.22	Pass
299.85	44.31	2.96	-25.17	22.10	Quasi Max	H	118.00	217.00	46.02	-23.92	Pass

10.10 Transmitter Radiated Spurious Emissions > 1GHz & Restricted band & non-restricted band emission

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS210(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☒ 20 dB down ☐ 30 dB down	☒
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 26GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test specification:	Radiated Spurious Emissions (above 1GHz)			
Environmental Conditions:	Temp(°C):	20	Result:	☒ Pass ☐ Fail
	Humidity (%):	36		
	Atmospheric(mbar):	1021		
Mains Power:	120VA, 60Hz			
Tested by:	Teody Manansala			
Test Date:	06/24/2015			
Remarks:	**Bluetooth BDR/EDR**			

Bluetooth BDR – 2402MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1033.37	44.61	2.46	9.62	56.69	Peak Max	H	166.00	239.00	74.00	-17.31	Pass
17981.78	39.59	13.00	10.89	63.48	Peak Max	H	190.00	28.00	74.00	-10.52	Pass
4048.38	39.86	5.87	12.01	57.75	Peak Max	H	109.00	249.00	74.00	-16.25	Pass
14898.67	42.48	13.80	7.36	63.64	Peak Max	H	136.00	222.00	74.00	-10.36	Pass
1033.37	31.95	2.46	9.62	44.03	Average Max	H	166.00	239.00	54.00	-9.97	Pass
17981.78	26.75	13.00	10.89	50.64	Average Max	H	190.00	28.00	54.00	-3.36	Pass
4048.38	26.86	5.87	12.01	44.75	Average Max	H	109.00	249.00	54.00	-9.25	Pass
14898.67	29.46	13.80	7.36	50.63	Average Max	H	136.00	222.00	54.00	-3.37	Pass

Bluetooth BDR – 2441MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
3999.67	39.51	5.83	12.23	57.56	Peak Max	V	135.00	253.00	74.00	-16.44	Pass
2088.28	45.48	3.67	11.20	60.35	Peak Max	H	101.00	79.00	74.00	-13.65	Pass
17660.78	40.42	13.00	10.56	63.99	Peak Max	V	131.00	245.00	74.00	-10.01	Pass
14695.00	42.01	13.45	7.90	63.36	Peak Max	H	131.00	208.00	74.00	-10.64	Pass
3999.67	26.78	5.83	12.23	44.84	Average Max	V	135.00	253.00	54.00	-9.16	Pass
2088.28	30.35	3.67	11.20	45.22	Average Max	H	101.00	79.00	54.00	-8.78	Pass
17660.78	27.18	13.00	10.56	50.75	Average Max	V	131.00	245.00	54.00	-3.25	Pass
14695.00	29.12	13.45	7.90	50.47	Average Max	H	131.00	208.00	54.00	-3.53	Pass

Bluetooth BDR – 2480MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1047.98	44.46	2.47	9.60	56.53	Peak Max	H	269.00	201.00	74.00	-17.47	Pass
2037.29	42.54	3.48	11.36	57.37	Peak Max	V	183.00	34.00	74.00	-16.63	Pass
4048.03	40.39	5.87	12.02	58.27	Peak Max	H	247.00	158.00	74.00	-15.73	Pass
12686.41	42.52	12.65	8.40	63.57	Peak Max	V	167.00	347.00	74.00	-10.43	Pass
1047.98	31.59	2.47	9.60	43.66	Average Max	H	269.00	201.00	54.00	-10.34	Pass
2037.29	29.66	3.48	11.36	44.50	Average Max	V	183.00	34.00	54.00	-9.50	Pass
4048.03	26.75	5.87	12.02	44.64	Average Max	H	247.00	158.00	54.00	-9.36	Pass
12686.41	28.52	12.65	8.40	49.57	Average Max	V	167.00	347.00	54.00	-4.43	Pass

Bluetooth EDR – 2402MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1015.21	45.03	2.45	9.65	57.13	Peak Max	V	113.00	313.00	74.00	-16.87	Pass
3981.70	39.95	5.82	12.16	57.94	Peak Max	H	230.00	72.00	74.00	-16.06	Pass
2107.52	42.52	3.75	11.14	57.40	Peak Max	H	133.00	95.00	74.00	-16.60	Pass
12482.62	42.00	13.01	8.37	63.38	Peak Max	V	196.00	1.00	74.00	-10.62	Pass
1015.21	32.00	2.45	9.65	44.10	Average Max	V	113.00	313.00	54.00	-9.90	Pass
3981.70	26.45	5.82	12.16	44.44	Average Max	H	230.00	72.00	54.00	-9.56	Pass
2107.52	29.98	3.75	11.14	44.86	Average Max	H	133.00	95.00	54.00	-9.14	Pass
12482.62	28.55	13.01	8.37	49.92	Average Max	V	196.00	1.00	54.00	-4.08	Pass

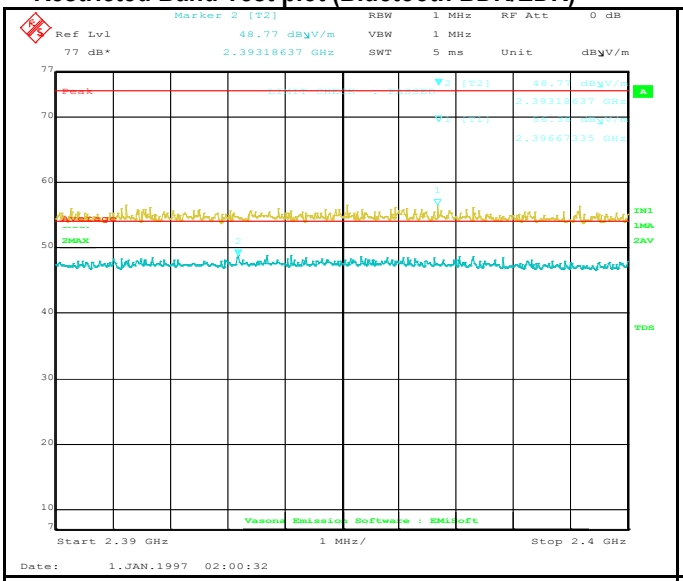
Bluetooth EDR – 2441MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1002.58	44.89	2.44	9.67	57.01	Peak Max	H	149.00	265.00	74.00	-16.99	Pass
17642.97	40.29	13.00	10.55	63.83	Peak Max	H	293.00	314.00	74.00	-10.17	Pass
2106.71	43.15	3.74	11.14	58.03	Peak Max	H	209.00	52.00	74.00	-15.97	Pass
4119.11	39.86	5.93	11.70	57.50	Peak Max	H	101.00	294.00	74.00	-16.50	Pass
1002.58	31.90	2.44	9.67	44.02	Average Max	H	149.00	265.00	54.00	-9.98	Pass
17642.97	27.02	13.00	10.55	50.57	Average Max	H	293.00	314.00	54.00	-3.43	Pass
2106.71	30.00	3.74	11.14	44.88	Average Max	H	209.00	52.00	54.00	-9.12	Pass
4119.11	26.67	5.93	11.70	44.30	Average Max	H	101.00	294.00	54.00	-9.70	Pass

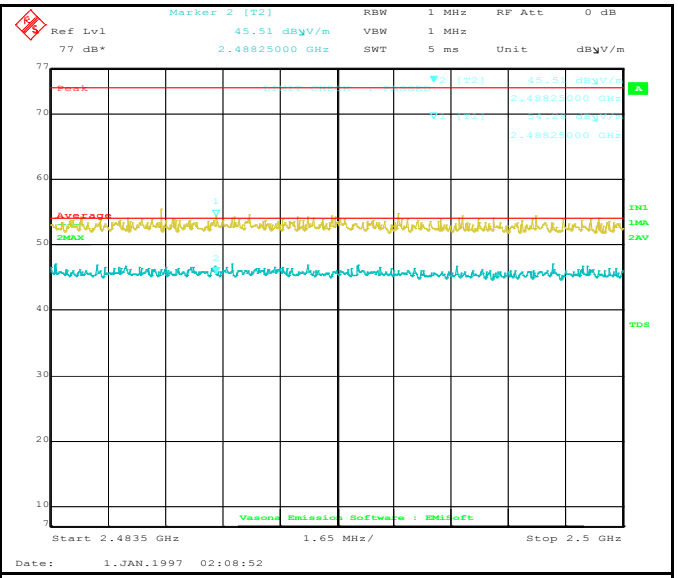
Bluetooth EDR – 2480MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
2039.56	42.54	3.49	11.35	57.37	Peak Max	V	247.00	5.00	74.00	-16.63	Pass
4015.22	40.06	5.84	12.16	58.07	Peak Max	H	263.00	175.00	74.00	-15.93	Pass
17915.11	39.47	13.00	10.82	63.30	Peak Max	V	192.00	175.00	74.00	-10.70	Pass
14798.52	42.28	13.63	7.62	63.53	Peak Max	V	205.00	0.00	74.00	-10.47	Pass
2039.56	29.59	3.49	11.35	44.43	Average Max	V	247.00	5.00	54.00	-9.57	Pass
4015.22	26.65	5.84	12.16	44.65	Average Max	H	263.00	175.00	54.00	-9.35	Pass
17915.11	26.83	13.00	10.82	50.65	Average Max	V	192.00	175.00	54.00	-3.35	Pass
14798.52	29.36	13.63	7.62	50.61	Average Max	V	205.00	0.00	54.00	-3.39	Pass

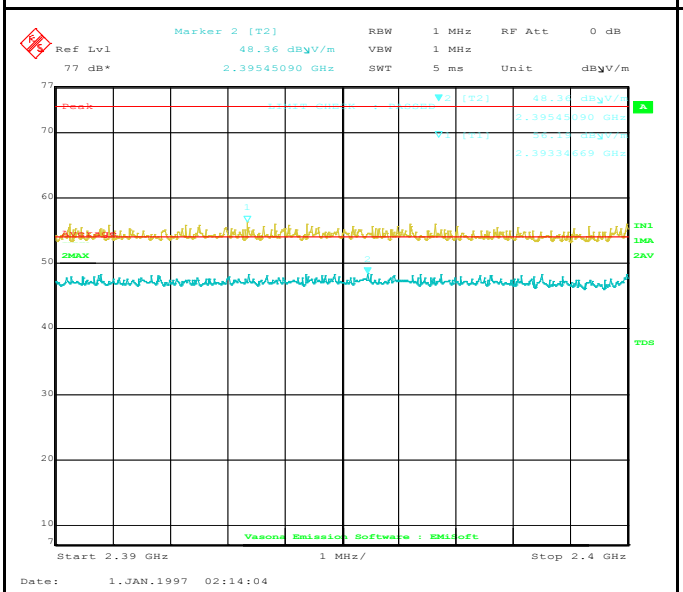
Restricted Band Test plot (Bluetooth BDR/EDR)



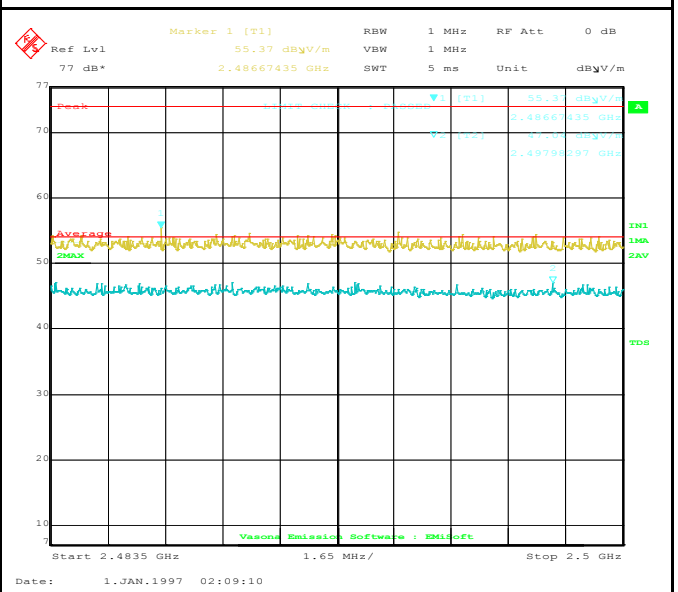
Restricted Band Low BDR



Restricted Band High BDR



Restricted Band Low EDR



Restricted Band High EDR

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	05/26/2015	1 Year	05/26/2016	☑
V-LISN (150 kHz – 30 MHz)	NNLK 8129	8129-190	08/11/2014	1 Year	08/11/2015	☑
LISN (9 kHz – 30 MHz)	MN2050B	1018	07/31/2014	1 Year	07/31/2015	☑
Radiated Emissions						
R & S Receiver	ESL6	100178	05/27/2015	1 Year	05/27/2016	☑
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/11/2014	1 Year	08/11/2015	☑
Horn Antenna (1-26.5GHz)	3115	10SL0059	08/11/2014	1 Year	08/11/2015	☑
Horn Antenna (18-40 GHz)	AH-840	101013	02/19/2015	1 Year	02/19/2016	☐
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	02/19/2015	1 Year	02/19/2016	☑
Microwave Preamplifier (18-40 GHz)	PA-840	181251	08/11/2014	1 Year	08/11/2015	☐
3 Meters SAC	3M	N/A	08/29/2014	1 Year	08/29/2015	☑
10 Meters SAC	10M	N/A	09/05/2014	1 Year	09/05/2015	☑
RF Conducted Measurement						
Spectrum Analyzer	N9010A	MY50210206	08/13/2014	1 Year	08/13/2015	☑
Power Meter	7002-006	10SL0189	4/30/2015	1 Year	4/30/2016	☐

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		**Radio & Telecommunications Terminal Equipment:** EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		**(Phase II)** OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		**Radio:** Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		**Radio**: A1. Terminal equipment for purpose of calling **Telecom**: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		**EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI **EMS:** KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measurement
Australia CAB Recognition		**EMC:** AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radio communications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2