

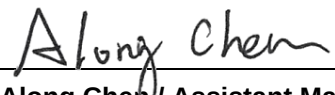
ISED Test Report

IC : 3147A-VELAIF820
Equipment : Bluetooth BT5.4 Dual Model Module
Model No. : Vela IF820
Brand Name : Laird Connectivity
Applicant : Laird Connectivity LLC
Address : W66N220 Commerce Court, Cedarburg, WI
53012 United States Of America
Manufacturer : Laird Connectivity LLC
Address : W66N220 Commerce Court, Cedarburg,
Wisconsin 53012, USA
Standard : RSS-247 Issue 3 August 2023
Received Date : Apr. 18, 2023
Tested Date : Jul. 26 ~ Aug. 09, 2023

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:

Approved by:


Along Chen / Assistant Manager

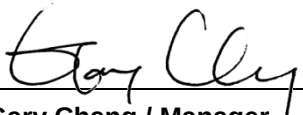

Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
CR341801AE	Rev. 01	Initial issue	Sep. 19, 2023

Summary of Test Results

IC Rules	Test Items	Measured	Result
RSS-Gen Section 8.8	AC Power Line Conducted Emissions	[dBuV]: 0.156MHz 45.31 (Margin -20.38dB) - QP	Pass
RSS-247 Section 5.5 RSS-Gen Section 8.9	Unwanted Emissions	[dBuV/m at 3m]: 173.56MHz 40.15 (Margin -3.35dB) - PK	Pass
RSS-247 Section 5.4 (d)	Conducted Output Power	Power [dBm]: 8.97	Pass
RSS-247 Section 5.2 (a)	6dB Bandwidth	Meet the requirement of limit	Pass
RSS-247 Section 5.2 (b)	Power Spectral Density	Meet the requirement of limit	Pass
N/A	Antenna Requirement	Meet the requirement of limit	Pass

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Product Details

The EUT is available in SA module (integrated antenna) and SC module (IPEX MHF4 connector) variants.

Model Name	Part No.	Module
Vela IF820	453-00171	SA Module, Vela IF820, Integrated Antenna
	453-00172	SC Module, Vela IF820, MHF4

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Freq. (MHz)	Channel Number	Data Rate
2400-2483.5	LE	2402-2480	40	1 Mbps
		2404-2478	37	2 Mbps

Note: Bluetooth LE (Low energy) uses GFSK modulation.

1.1.3 Antenna Details

Ant. No.	Manufacturer	Model	Laird Part Number	Type	Connector	Gain	Cable loss (dB)
1	Laird	NanoBlue	EBL2400A1-10M H4L	PCB Dipole	IPEX MHF4	2dBi	N/A
2	Laird	FlexPIFA	001-0022	PCB Dipole	IPEX MHF4	2dBi	N/A
3	Mag.Layers	EDA-8709-2G4C1-B27-CY	0600-00057	Dipole	IPEX MHF4	2.32dBi	0.7
4	Laird	mFlexPIFA	EFA2400A3S-10 MH4L	PIFA	IPEX MHF4	2dBi	N/A
5	ACX	AD1608	AD1608-A2455A AT/LF	Chip Antenna	N/A	1dBi	N/A

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3Vdc from host
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1.1.5 Accessories

N/A

1.1.6 Test Sample Information

Serial Number of Test Sample	SC module: Radiated Emission: SN 00028 AC Power Line Conducted Emission: SN 00028 Antenna Port Conducted: SN 00028 SA module: Radiated Emission: SN 00042 AC Power Line Conducted Emission: SN 00042 Antenna Port Conducted: SN 00023
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1.1.7 Channel List

Frequency band (MHz)				2402-2480 / BT-LE(1Mbps)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
37	2402	9	2422	18	2442	28	2462
0	2404	10	2424	19	2444	29	2464
1	2406	38	2426	20	2446	30	2466
2	2408	11	2428	21	2448	31	2468
3	2410	12	2430	22	2450	32	2470
4	2412	13	2432	23	2452	33	2472
5	2414	14	2434	24	2454	34	2474
6	2416	15	2436	25	2456	35	2476
7	2418	16	2438	26	2458	36	2478
8	2420	17	2440	27	2460	39	2480

Frequency band (MHz)				2404-2478 / BT-LE(2Mbps)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2404	10	2424	20	2446	30	2466
1	2406	11	2428	21	2448	31	2468
2	2408	12	2430	22	2450	32	2470
3	2410	13	2432	23	2452	33	2472
4	2412	14	2434	24	2454	34	2474
5	2414	15	2436	25	2456	35	2476
6	2416	16	2438	26	2458	36	2478
7	2418	17	2440	27	2460	--	--
8	2420	18	2442	28	2462	--	--
9	2422	19	2444	29	2464	--	--

1.1.8 Test Tool and Duty Cycle

Test Tool	CyBluetool, V1.0	
Modulation Mode	Duty Cycle (%)	Duty Factor (dB)
BT-LE(1Mbps)	86.29%	0.64
BT-LE(2Mbps)	59.69%	2.24

1.1.9 Power Index of Test Tool

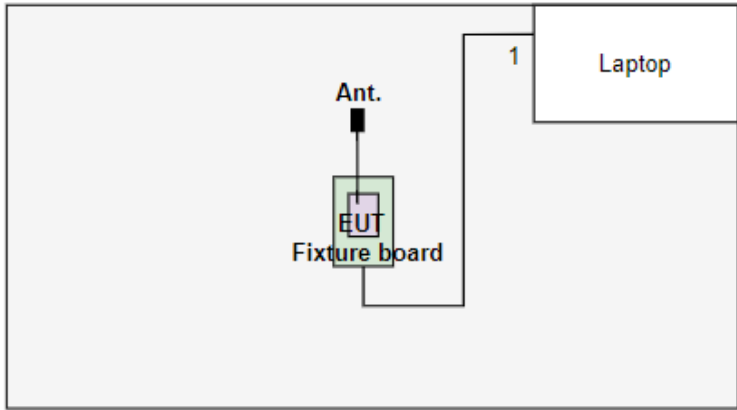
Modulation Mode	Test Frequency (MHz)		
	2402	2440	2480
BT-LE(1Mbps)	default	default	default

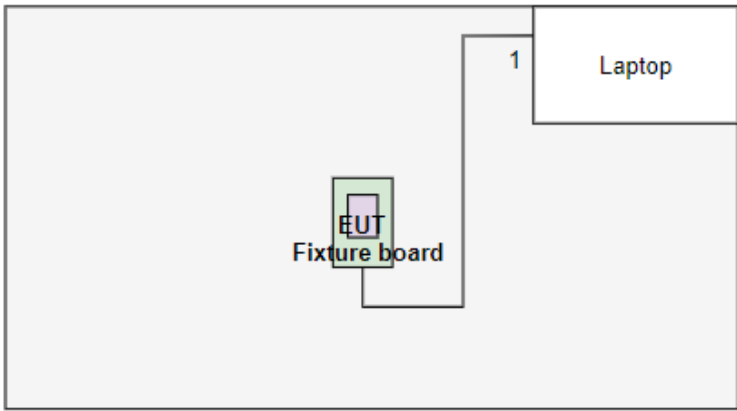
Modulation Mode	Test Frequency (MHz)		
	2404	2440	2478
BT-LE(2Mbps)	default	default	default

1.2 Local Support Equipment List

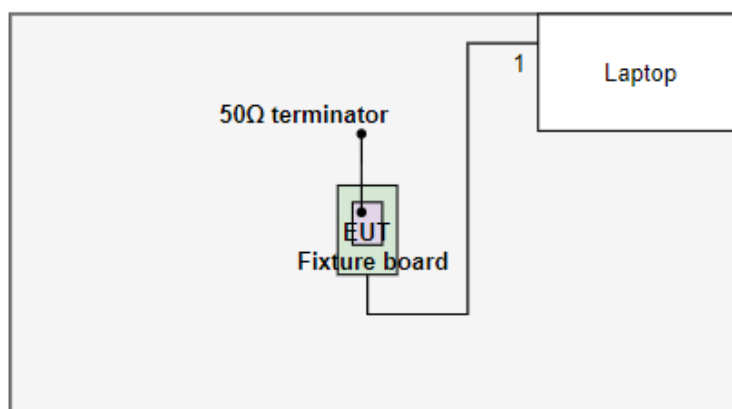
Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Laptop	DELL	Latitude 5400	DoC	---
2	Fixture	---	---	---	Provided by applicant.
3	50Ω terminator	Woken	WTER-18S2	---	---

1.3 Test Setup Chart

Test Setup Diagram (Conducted Emission – SC module)	
	
No.	Signal cable / Length (m)
1	USB, 1m shielded.

Test Setup Diagram (Conducted Emission – SA module)	
	
No.	Signal cable / Length (m)
1	USB, 1m shielded.

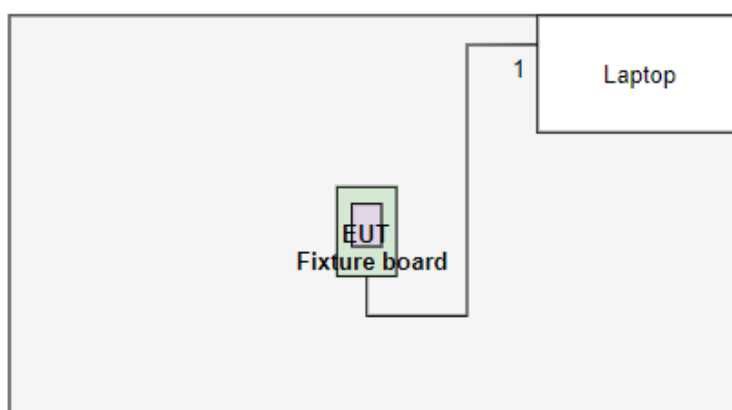
Test Setup Diagram (Radiated Emission – SC module)



No.	Signal cable / Length (m)
-----	---------------------------

1	USB, 1m shielded.
---	-------------------

Test Setup Diagram (Radiated Emission – SA module)



No.	Signal cable / Length (m)
-----	---------------------------

1	USB, 1m shielded.
---	-------------------

1.4 Test Equipment List and Calibration Data

Test Item	Radiated Emission below 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Aug. 04, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 31, 2023	Jul. 30, 2024
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2023	Jun. 27, 2024
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 04, 2022	Oct. 03, 2023
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 04, 2022	Oct. 03, 2023
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 04, 2022	Oct. 03, 2023
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission above 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Jul. 26 ~ Jul. 29, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Nov. 21, 2022	Nov. 20, 2023
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Nov. 25, 2022	Nov. 24, 2023
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 27, 2022	Oct. 26, 2023
Preamplifier	EMC	EMC118A45SE	980898	Jul. 14, 2023	Jul. 13, 2024
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 2024
RF Cable	EMC	EMC104-35M-35M- 8000	210920	Oct. 04, 2022	Oct. 03, 2023
RF Cable	EMC	EMC104-35M-35M- 3000	210922	Oct. 04, 2022	Oct. 03, 2023
HIGHPASS FILTER 3.1-18G	WHK	WHK3.1/18G-10SS	39	Oct. 06, 2022	Oct. 05, 2023
Attenuator	Pasternack	PE7005-10	10-2	Oct. 06, 2022	Oct. 05, 2023
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Aug. 09, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 17, 2023	Feb. 16, 2024
LISN	R&S	ENV216	101579	May 09, 2023	May 08, 2024
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127667	Jan. 03, 2023	Jan. 02, 2024
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 17, 2022	Oct. 16, 2023
50 ohm terminal (Support Unit)	NA	50	01	Jun. 14, 2023	Jun. 13, 2024
Measurement S/W	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Aug. 03 ~ Aug. 04, 2023				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
Attenuator	Pasternack	PE7005-10	10-2	Oct. 06, 2022	Oct. 05, 2023
HIGHPASS FILTER 3.1-18G	WHK	WHK3.1/18G-10SS	39	Oct. 06, 2022	Oct. 05, 2023
LOWPASS FILTER	WI	WLKS1100-12SS	2	Oct. 06, 2022	Oct. 05, 2023
Measurement Software	Sporton	SENSE-15247_FS	V5.10.8	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

RSS-247 Issue 3 August 2023

RSS-Gen Issue 5 February 2021 Amendment 2

ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Power density	± 0.583 dB
Conducted emission	± 2.715 dB
AC conducted emission	± 2.92 dB
Unwanted Emission ≤ 1 GHz	± 3.41 dB
Unwanted Emission > 1 GHz	± 4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Test method	Mode	Test Configuration	Note
AC Power Line Conducted Emissions	BT-LE(1Mbps)	2480	Conducted	TX	1, 2	-
Unwanted Emissions ≤ 1GHz	BT-LE(1Mbps)	2480	Radiated	TX	1, 2	Note 2
Unwanted Emissions > 1GHz	BT-LE(1Mbps) BT-LE(2Mbps)	2402 / 2440 / 2480 2404 / 2440 / 2478	Radiated	TX	1, 2	Note 2
Unwanted Emissions ≤ 1GHz	BT-LE(1Mbps)	2480	Conducted	TX	1	-
Unwanted Emissions > 1GHz	BT-LE(1Mbps) BT-LE(2Mbps)	2402 / 2440 / 2480 2404 / 2440 / 2478	Conducted	TX	1	-
Conducted Output Power 6dB bandwidth Power spectral density	BT-LE(1Mbps) BT-LE(2Mbps)	2402 / 2440 / 2480 2404 / 2440 / 2478	Conducted	TX	1, 2	-

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
2. The 50Ω terminator is connected to antenna port of EUT for radiated emission measurement.
3. Test configurations are listed as below:
 Configuration 1: Laird part number: 453-00171 (SC module)
 Configuration 2: Laird part number: 453-00172 (SA module)

3 Transmitter Test Results

3.1 6dB and Occupied Bandwidth

3.1.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.1.2 Test Procedures

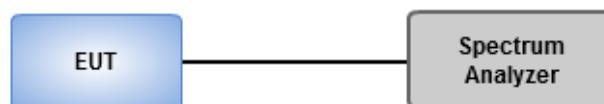
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 1% to 5% of the anticipated emission, Video bandwidth = 3x the RBW.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Sample, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.1.3 Test Setup



3.1.4 Test Results

Ambient Condition	22-23°C / 63-64%	Tested By	Roger Lu
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Refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Limit of Conducted Output Power

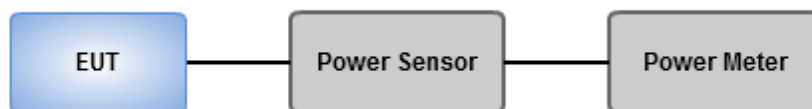
Conducted power shall not exceed 1Watt.

Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.

3.2.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	22-23°C / 63-64%	Tested By	Roger Lu
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Refer to Appendix B.

3.3 Power Spectral Density

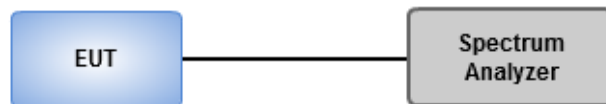
3.3.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.3.2 Test Procedures

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	22-23°C / 63-64%	Tested By	Roger Lu
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Refer to Appendix C.

3.4 Unwanted Emissions in Restricted Frequency Bands

3.4.1 Limit of Unwanted Emissions in Restricted Frequency Bands

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:
Quasi-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.4.2 Test Procedures

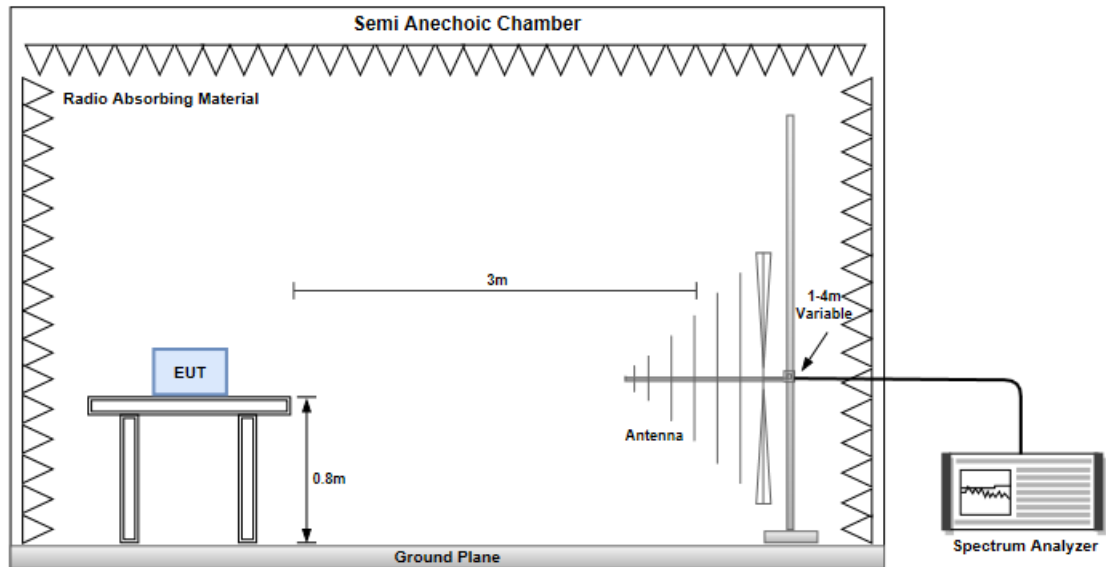
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

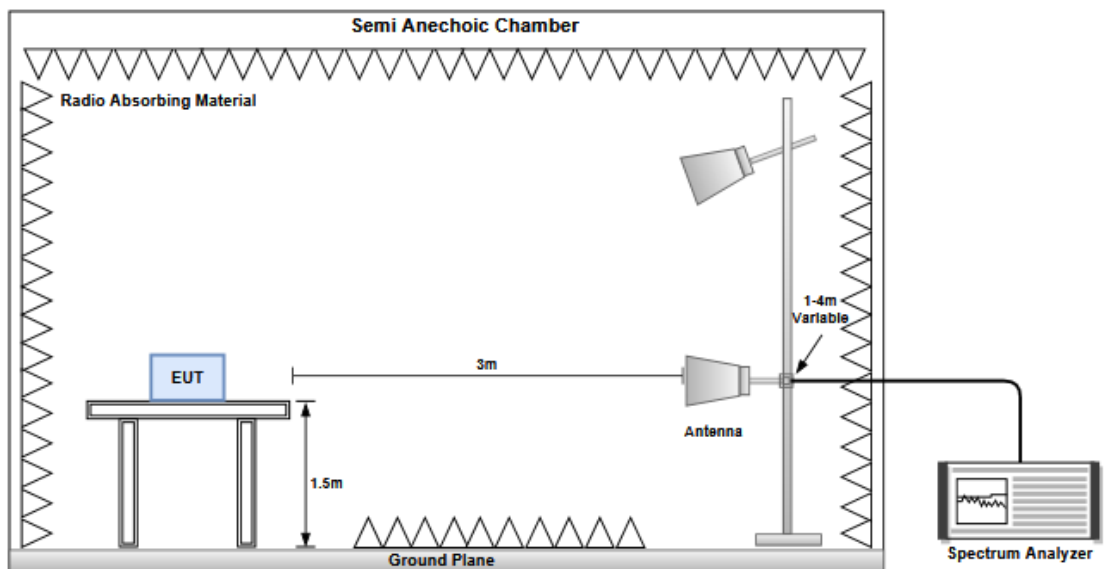
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.4.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.4.4 Test Results

Refer to Appendix D.

3.5 Emissions in non-restricted Frequency Bands

3.5.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.5.2 Test Procedures

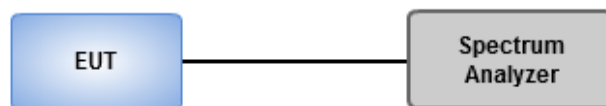
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.5.3 Test Setup



3.5.4 Test Results

Ambient Condition	22-23°C / 63-64%	Tested By	Roger Lu
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Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

3.6.1 Limit of AC Power Line Conducted Emissions

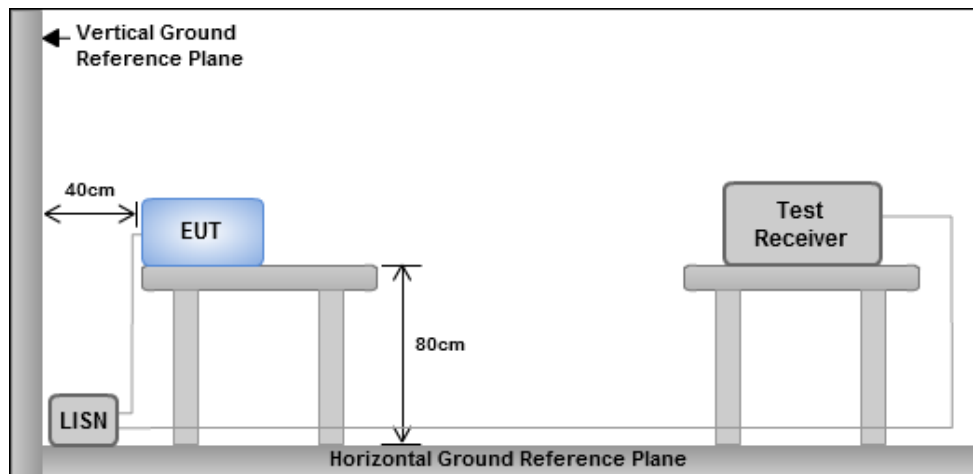
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

3.6.3 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

3.6.4 Test Results

Refer to Appendix F.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan
(R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==

**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	736.25k	1.079M	1M08F1D	726.25k	1.061M
BT-LE(2Mbps)	1.075M	2.081M	2M08F1D	1.07M	2.079M

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

Result

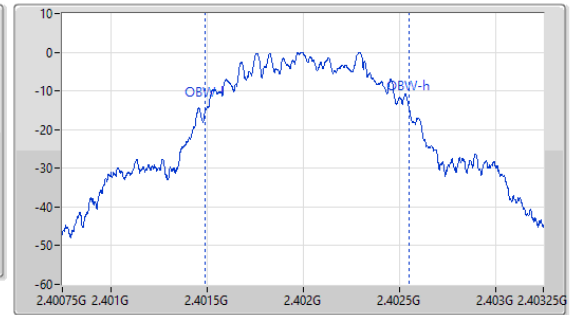
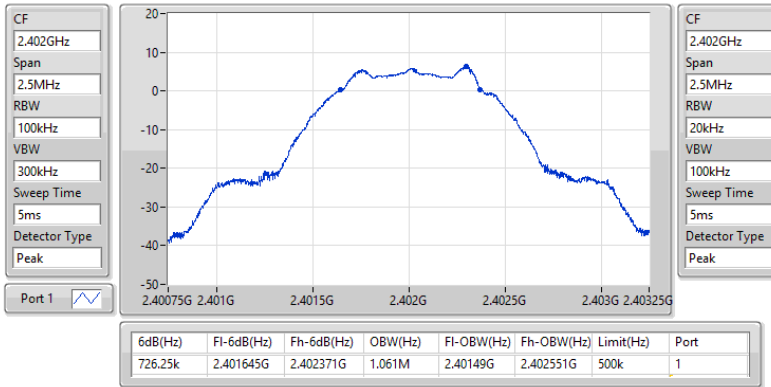
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	726.25k	1.061M
2440MHz	Pass	500k	736.25k	1.079M
2480MHz	Pass	500k	733.75k	1.079M
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	500k	1.075M	2.081M
2440MHz	Pass	500k	1.07M	2.079M
2478MHz	Pass	500k	1.075M	2.081M

Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

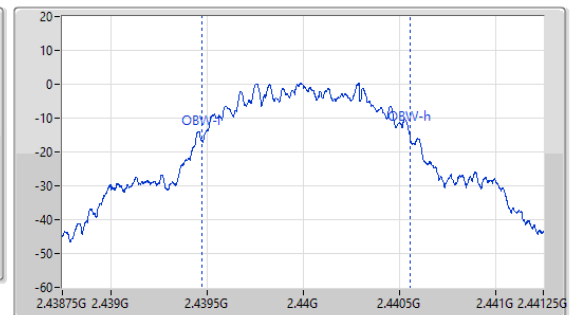
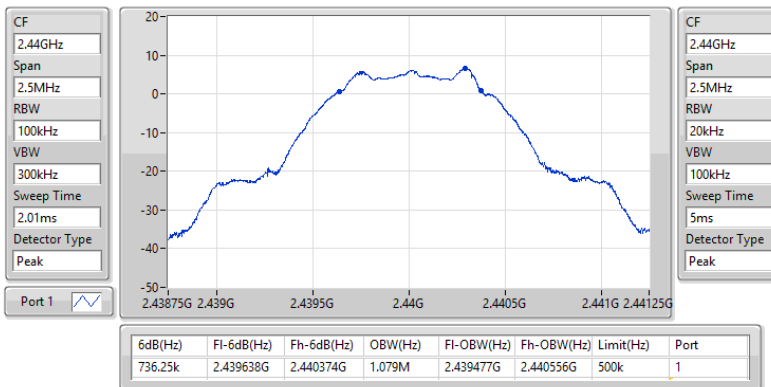
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

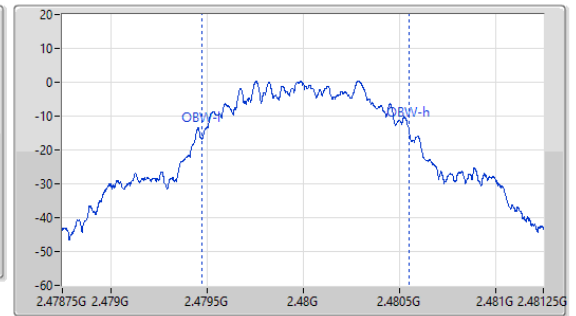
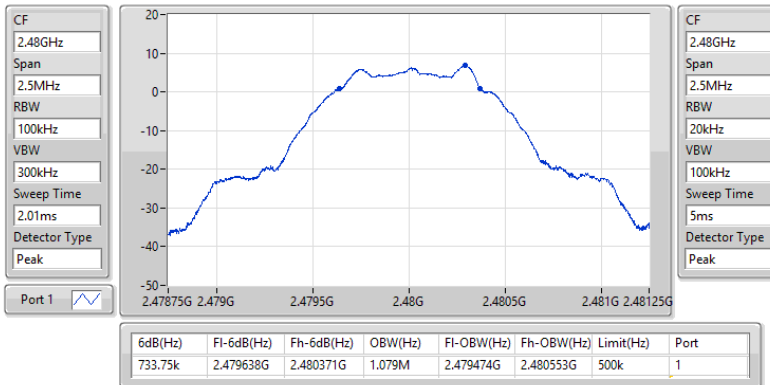
2440MHz



2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

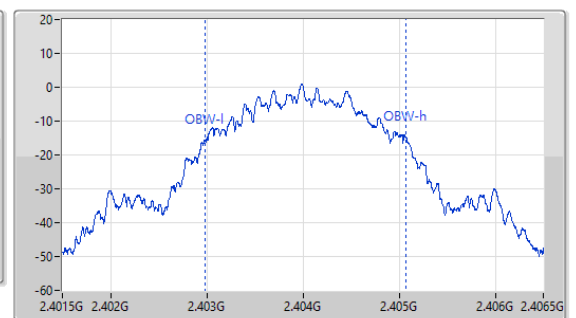
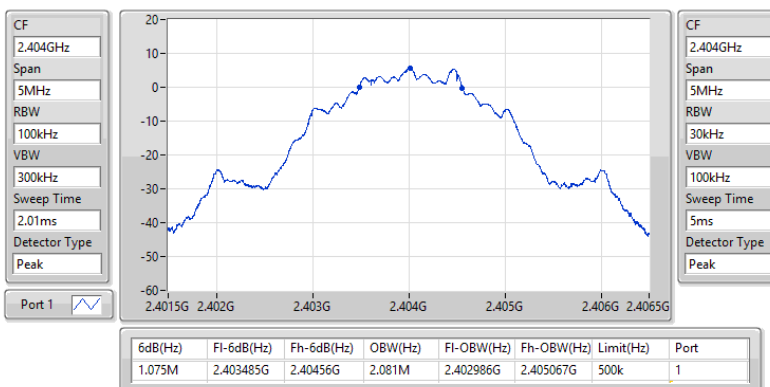
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

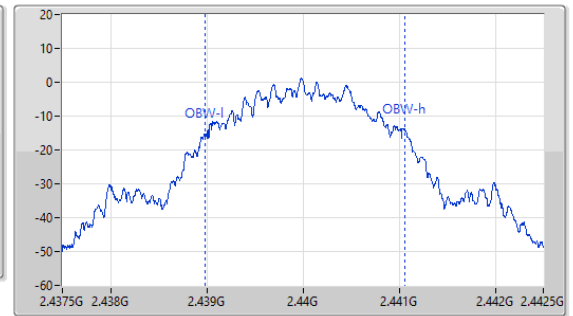
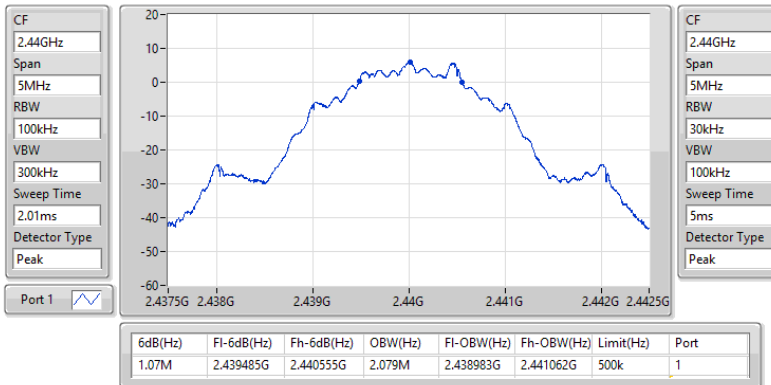
2404MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

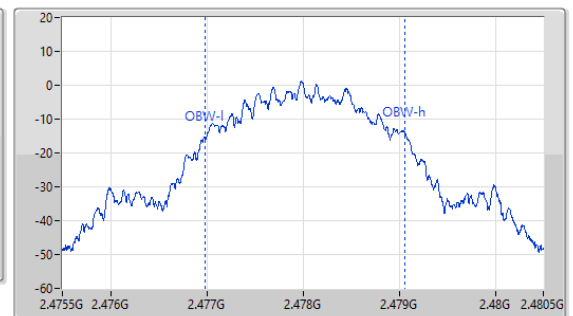
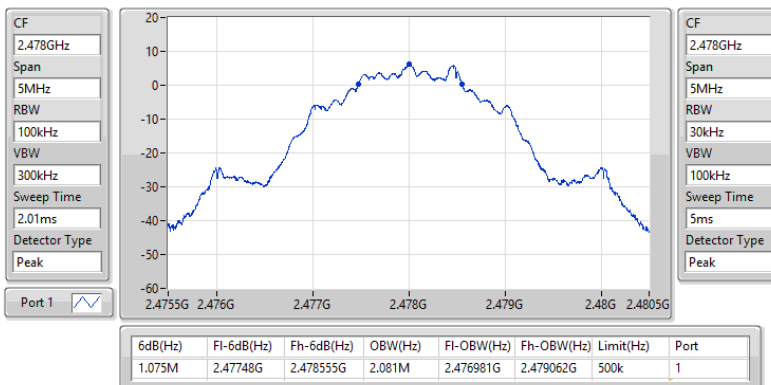
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2478MHz



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	742.5k	1.09M	1M09F1D	733.75k	1.058M
BT-LE(2Mbps)	1.078M	2.087M	2M09F1D	1.073M	2.085M

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

Result

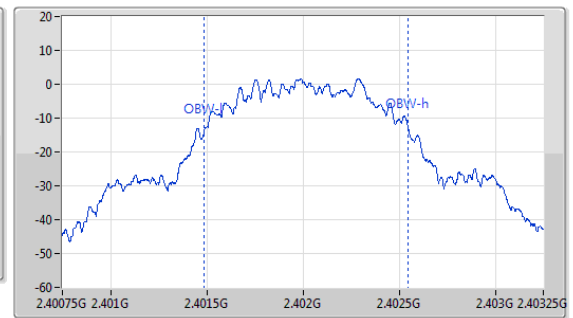
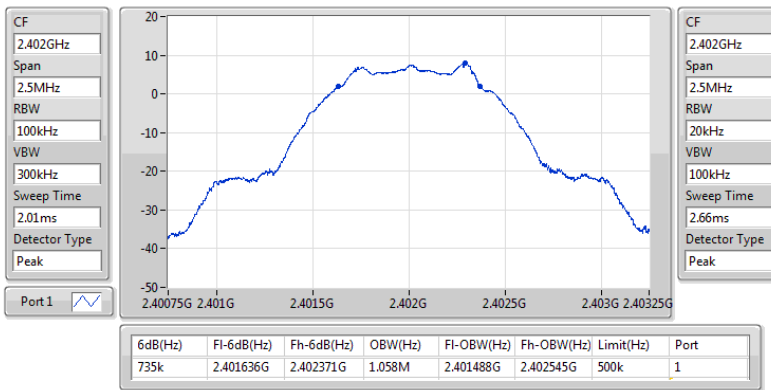
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	735k	1.058M
2440MHz	Pass	500k	733.75k	1.077M
2480MHz	Pass	500k	742.5k	1.09M
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	500k	1.078M	2.087M
2440MHz	Pass	500k	1.073M	2.085M
2478MHz	Pass	500k	1.078M	2.085M

Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

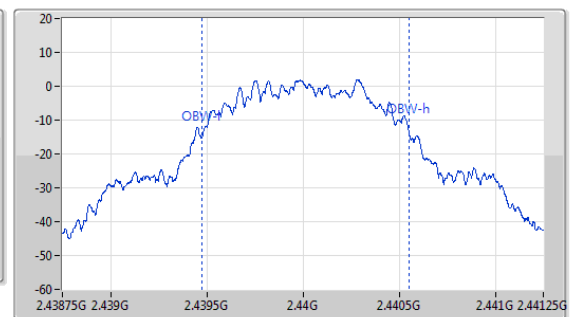
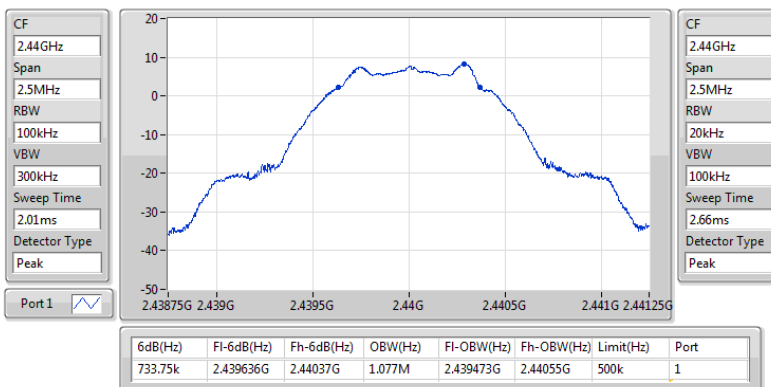
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

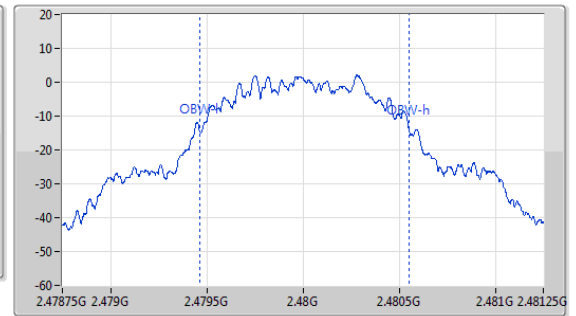
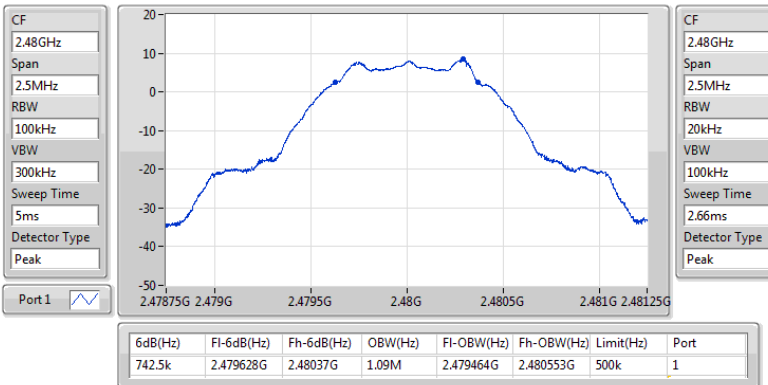
2440MHz



2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

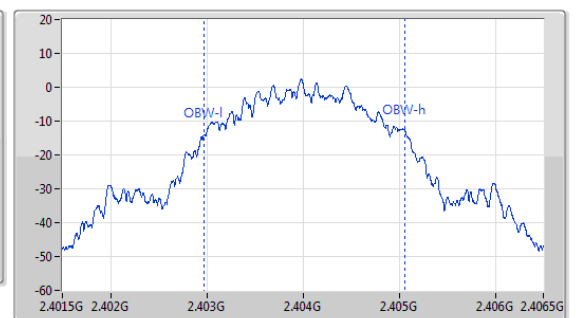
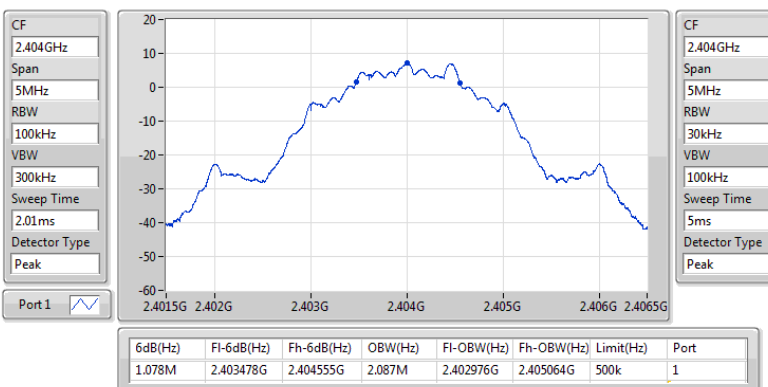
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

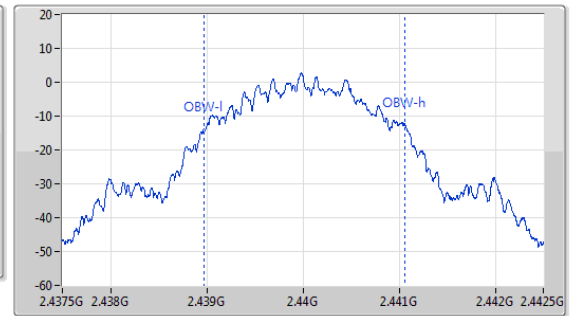
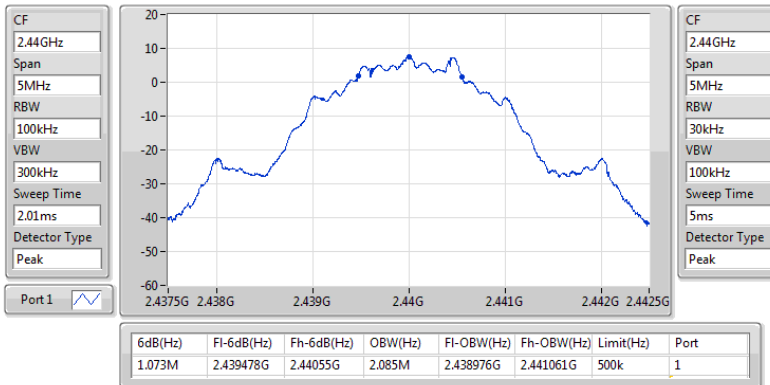
2404MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

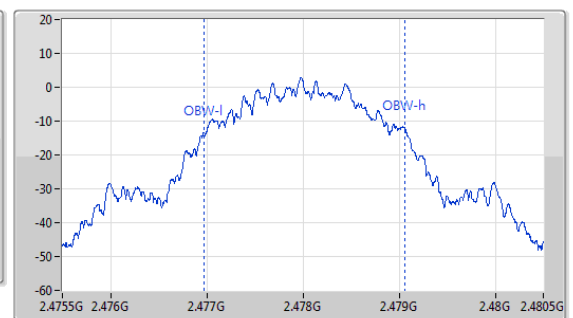
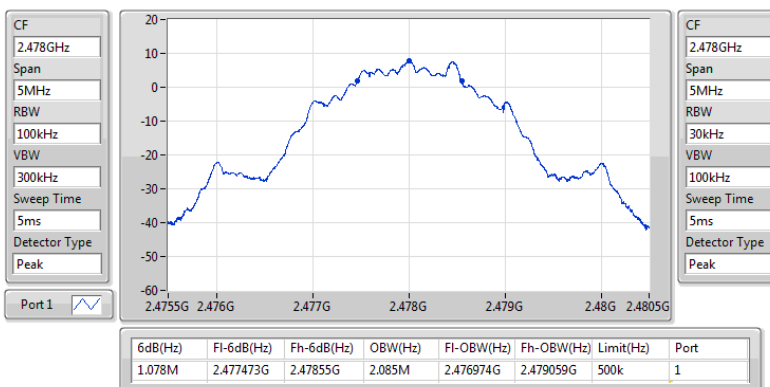
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2478MHz



**Summary**

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	7.35	0.00543
BT-LE(2Mbps)	7.28	0.00535

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.00	6.85	30.00	8.85	36.00
2440MHz	Pass	2.00	7.12	30.00	9.12	36.00
2480MHz	Pass	2.00	7.35	30.00	9.35	36.00
BT-LE(2Mbps)	-	-	-	-	-	-
2404MHz	Pass	2.00	6.83	30.00	8.83	36.00
2440MHz	Pass	2.00	7.11	30.00	9.11	36.00
2478MHz	Pass	2.00	7.28	30.00	9.28	36.00

**Summary**

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	7.21	0.00526
BT-LE(2Mbps)	7.15	0.00519

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.00	6.71	-	8.71	-
2440MHz	Pass	2.00	6.97	-	8.97	-
2480MHz	Pass	2.00	7.21	-	9.21	-
BT-LE(2Mbps)	-	-	-	-	-	-
2404MHz	Pass	2.00	6.69	-	8.69	-
2440MHz	Pass	2.00	6.96	-	8.96	-
2478MHz	Pass	2.00	7.15	-	9.15	-

Note: Average power is for reference only.

**Summary**

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	8.97	0.00789
BT-LE(2Mbps)	8.95	0.00785

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	1.00	8.13	30.00	9.13	36.00
2440MHz	Pass	1.00	8.65	30.00	9.65	36.00
2480MHz	Pass	1.00	8.97	30.00	9.97	36.00
BT-LE(2Mbps)	-	-	-	-	-	-
2404MHz	Pass	1.00	8.12	30.00	9.12	36.00
2440MHz	Pass	1.00	8.64	30.00	9.64	36.00
2478MHz	Pass	1.00	8.95	30.00	9.95	36.00

**Summary**

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	8.86	0.00769
BT-LE(2Mbps)	8.85	0.00767

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
BT-LE(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	1.00	8.03	-	9.03	-
2440MHz	Pass	1.00	8.53	-	9.53	-
2480MHz	Pass	1.00	8.86	-	9.86	-
BT-LE(2Mbps)	-	-	-	-	-	-
2404MHz	Pass	1.00	8.02	-	9.02	-
2440MHz	Pass	1.00	8.52	-	9.52	-
2478MHz	Pass	1.00	8.85	-	9.85	-

Note: Average power is for reference only.

**Summary**

Mode	PD (dBm/3kHz)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-7.10
BT-LE(2Mbps)	-9.40

Result

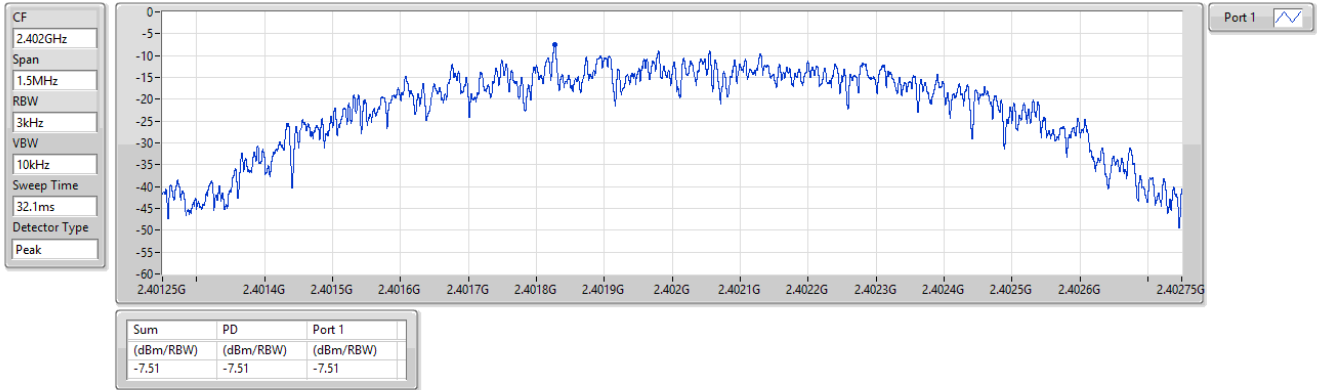
Mode	Result	Antenna Gain (dBi)	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.00	-7.51	8.00
2440MHz	Pass	2.00	-7.23	8.00
2480MHz	Pass	2.00	-7.10	8.00
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	2.00	-9.82	8.00
2440MHz	Pass	2.00	-9.40	8.00
2478MHz	Pass	2.00	-9.43	8.00



2.4-2.4835GHz_BT-LE(1Mbps)

PSD

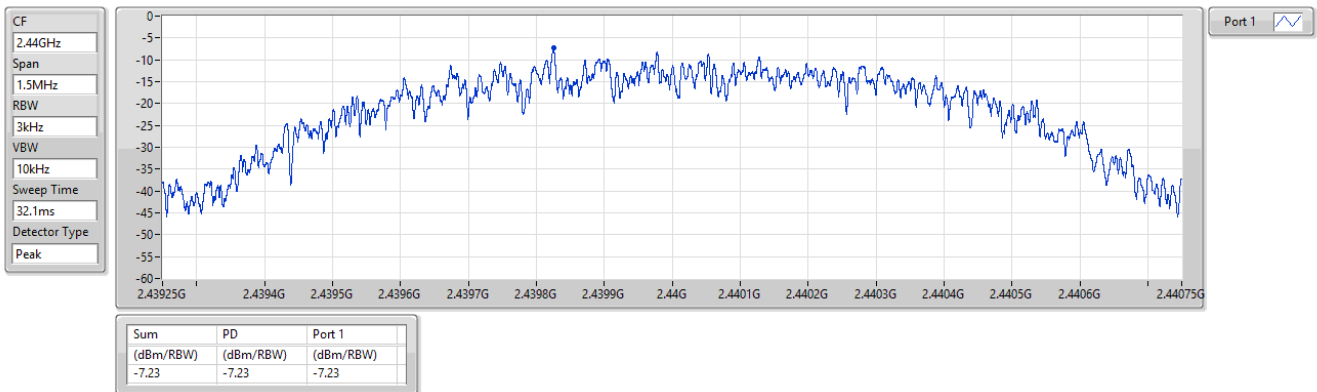
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2440MHz

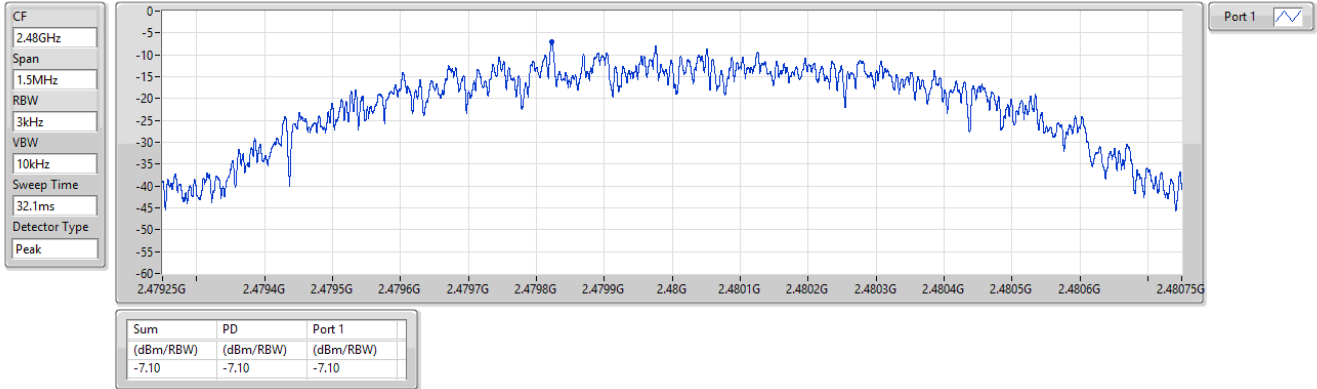




2.4-2.4835GHz_BT-LE(1Mbps)

PSD

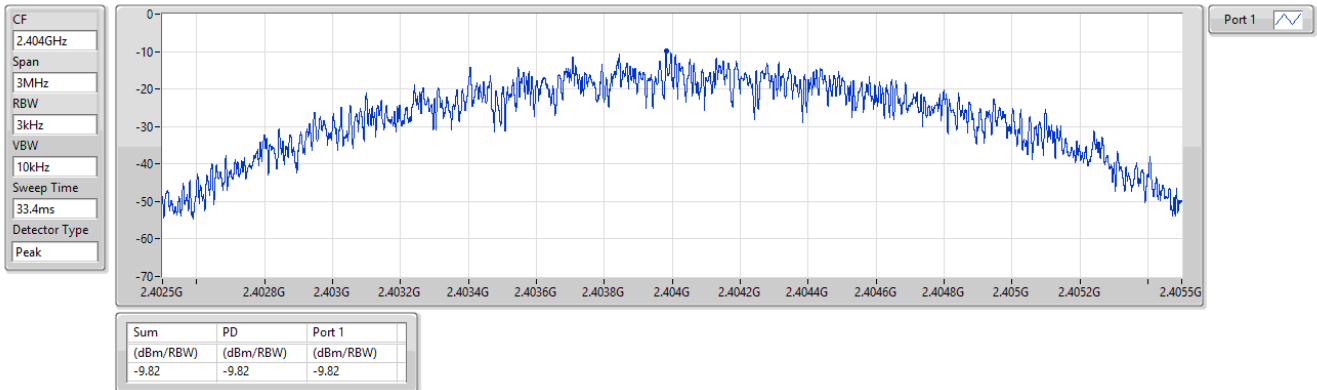
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

PSD

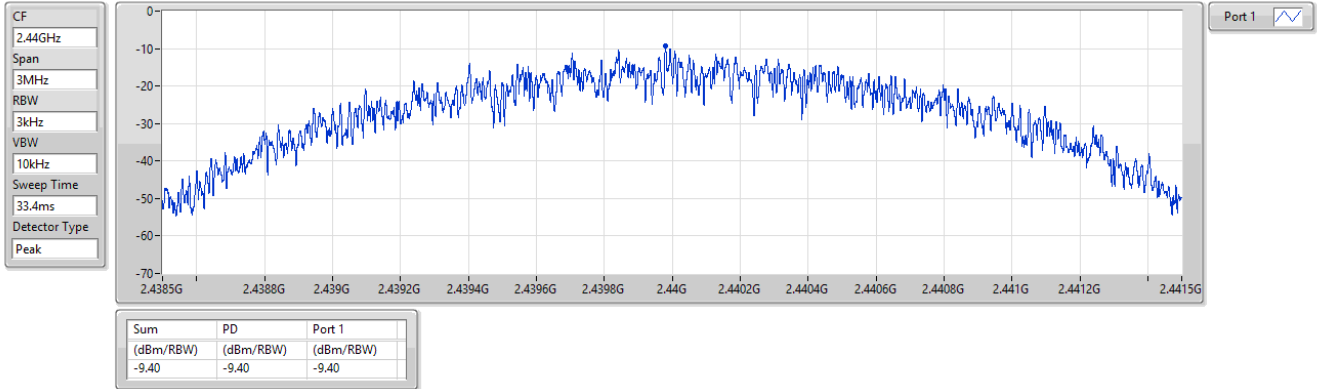
2404MHz



2.4-2.4835GHz_BT-LE(2Mbps)

PSD

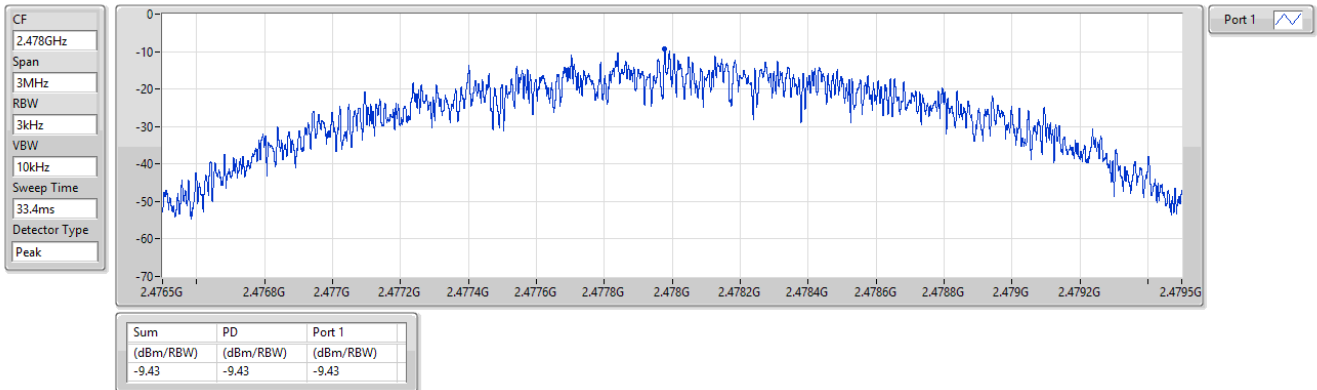
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2478MHz



**Summary**

Mode	PD (dBm/3kHz)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-5.98
BT-LE(2Mbps)	-7.83

Result

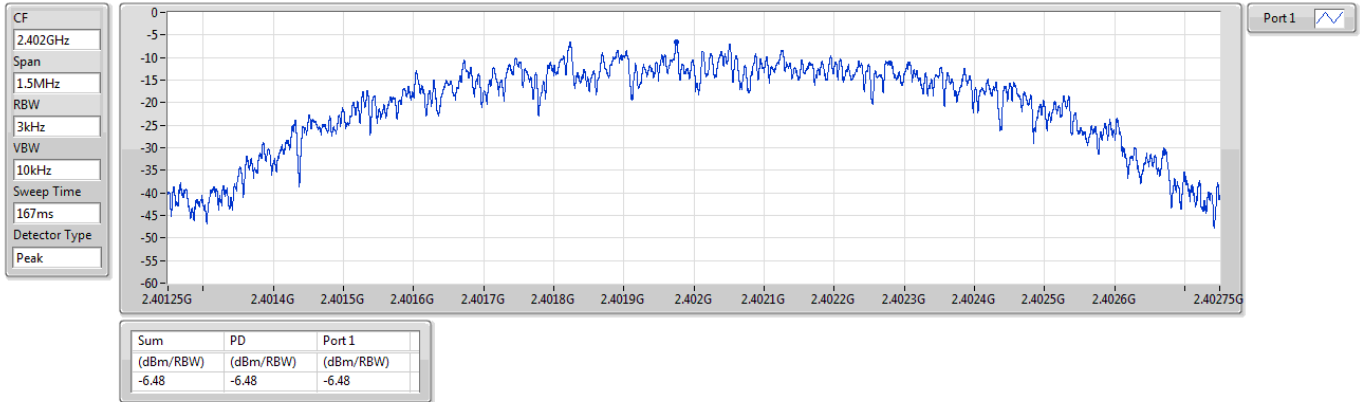
Mode	Result	Antenna Gain (dBi)	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.00	-6.48	8.00
2440MHz	Pass	1.00	-6.15	8.00
2480MHz	Pass	1.00	-5.98	8.00
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	1.00	-8.51	8.00
2440MHz	Pass	1.00	-8.08	8.00
2478MHz	Pass	1.00	-7.83	8.00



2.4-2.4835GHz_BT-LE(1Mbps)

PSD

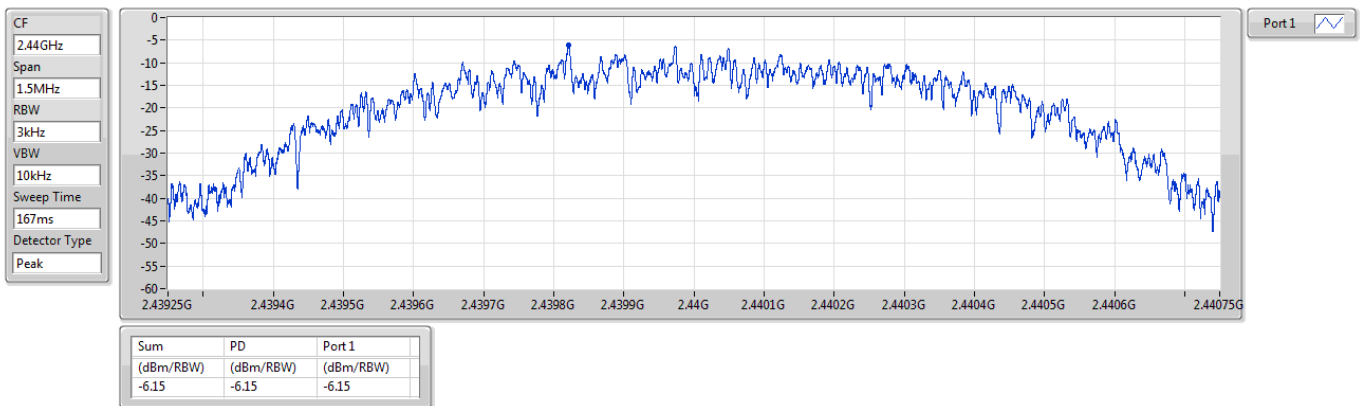
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2440MHz

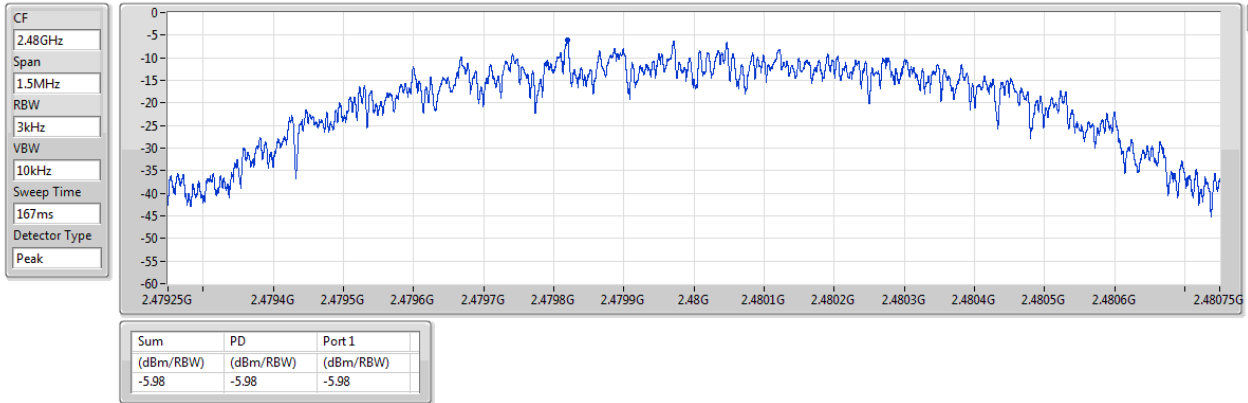




2.4-2.4835GHz_BT-LE(1Mbps)

PSD

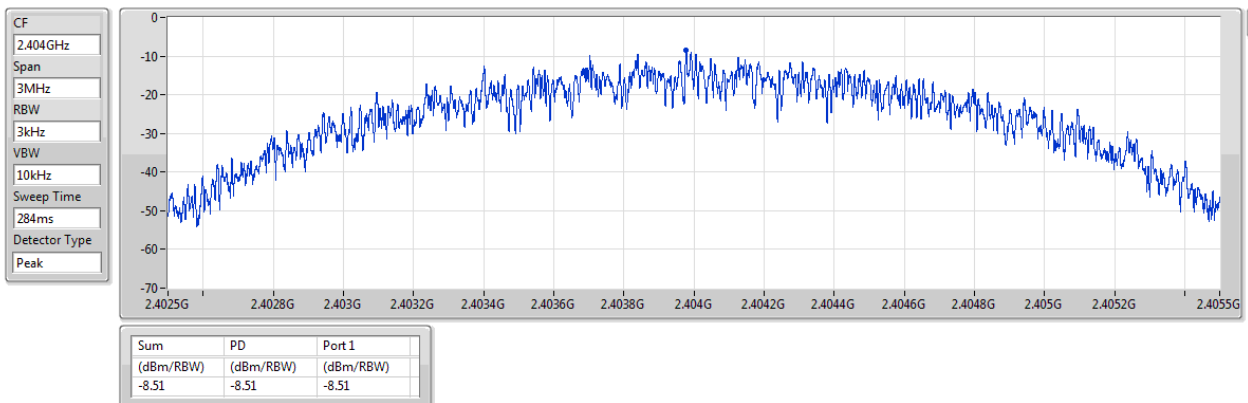
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2404MHz



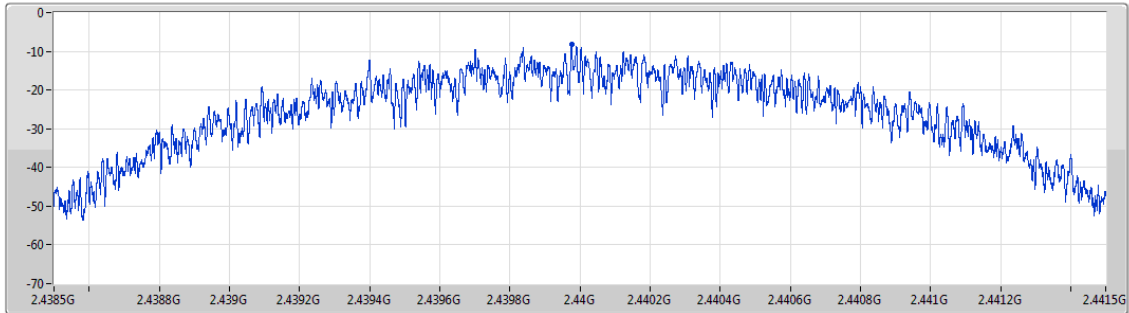


2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2440MHz

CF
2.44GHz
Span
3MHz
RBW
3kHz
VBW
10kHz
Sweep Time
284ms
Detector Type
Peak



Port 1

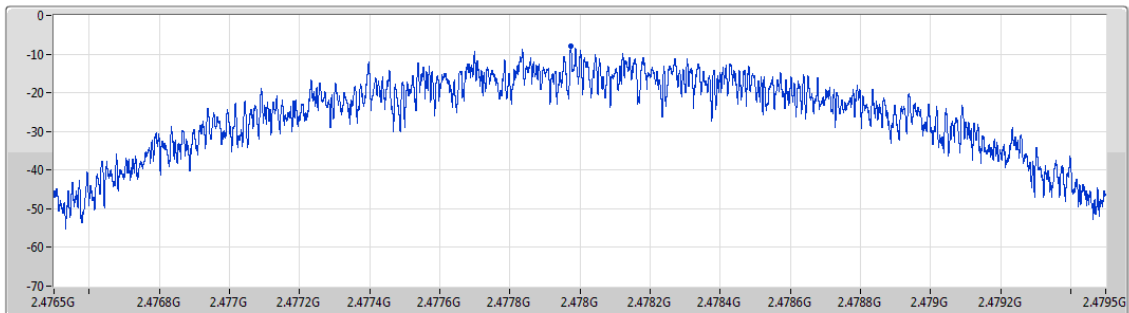
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.08	-8.08	-8.08

2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2478MHz

CF
2.478GHz
Span
3MHz
RBW
3kHz
VBW
10kHz
Sweep Time
284ms
Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.83	-7.83	-7.83



Unwanted Conducted Emissions into Restricted Frequency Bands (30MHz-1GHz) – SC Module

Appendix D.1

Summary

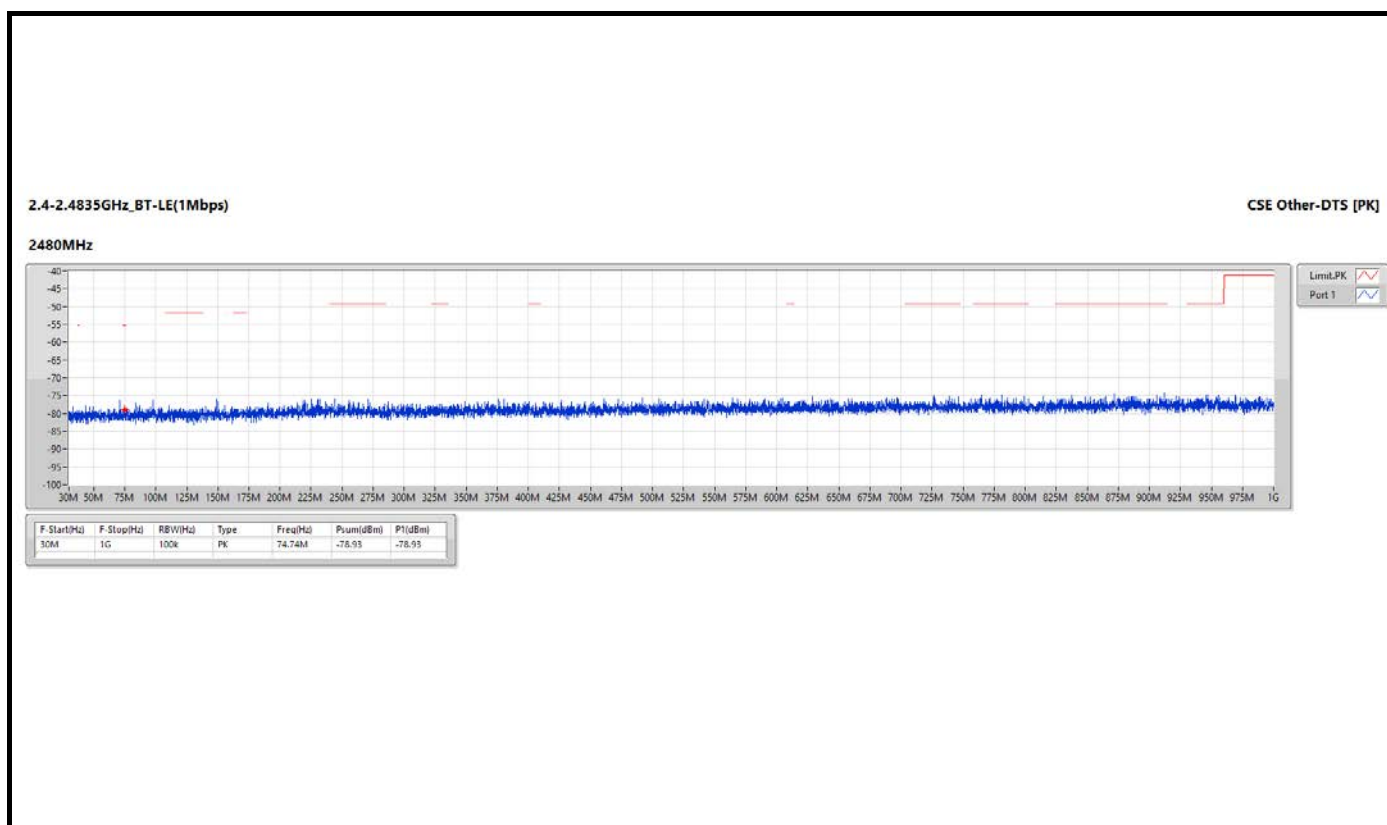
Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	GRF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	30M	1G	PK	74.74M	2.00	-78.93	4.7	-72.23	-55.20	-17.03

DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	GRF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2480MHz	Pass	30M	1G	PK	74.74M	2.00	-78.93	4.7	-72.23	-55.20	-17.03

DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX





**Unwanted Conducted Emissions into Restricted
Frequency Bands (1GHz-3.1GHz) – SC Module**

Appendix D.2

Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.4835G	2.5G	AV	2.48352G	2.00	-58.52	-56.52	-41.20	-15.32
BT-LE(2Mbps)	Pass	2.4835G	2.5G	AV	2.48354G	2.00	-61.37	-59.37	-41.20	-18.17

DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	1G	2.31G	AV	2.13053G	2.00	-68.93	-66.93	-41.20	-25.73
2402MHz	Pass	2.31G	2.39G	AV	2.37792G	2.00	-64.10	-62.10	-41.20	-20.90
2402MHz	Pass	2.4835G	2.5G	AV	2.49932G	2.00	-68.41	-66.41	-41.20	-25.21
2402MHz	Pass	2.5G	3.1G	AV	2.6629G	2.00	-67.81	-65.81	-41.20	-24.61
2402MHz	Pass	1G	2.31G	PK	1.76701G	2.00	-57.63	-55.63	-21.20	-34.43
2402MHz	Pass	2.31G	2.39G	PK	2.38916G	2.00	-53.01	-51.01	-21.20	-29.81
2402MHz	Pass	2.4835G	2.5G	PK	2.49019G	2.00	-56.00	-54.00	-21.20	-32.80
2402MHz	Pass	2.5G	3.1G	PK	2.6872G	2.00	-56.16	-54.16	-21.20	-32.96
2440MHz	Pass	1G	2.31G	AV	2.11628G	2.00	-68.98	-66.98	-41.20	-25.78
2440MHz	Pass	2.31G	2.39G	AV	2.31696G	2.00	-69.12	-67.12	-41.20	-25.92
2440MHz	Pass	2.4835G	2.5G	AV	2.48493G	2.00	-68.26	-66.26	-41.20	-25.06
2440MHz	Pass	2.5G	3.1G	AV	2.69035G	2.00	-67.69	-65.69	-41.20	-24.49
2440MHz	Pass	1G	2.31G	PK	2.27791G	2.00	-57.87	-55.87	-21.20	-34.67
2440MHz	Pass	2.31G	2.39G	PK	2.31052G	2.00	-57.21	-55.21	-21.20	-34.01
2440MHz	Pass	2.4835G	2.5G	PK	2.49833G	2.00	-56.27	-54.27	-21.20	-33.07
2440MHz	Pass	2.5G	3.1G	PK	2.7136G	2.00	-56.64	-54.64	-21.20	-33.44
2480MHz	Pass	1G	2.31G	AV	2.12758G	2.00	-69.20	-67.20	-41.20	-26.00
2480MHz	Pass	2.31G	2.39G	AV	2.33172G	2.00	-69.01	-67.01	-41.20	-25.81
2480MHz	Pass	2.4835G	2.5G	AV	2.48352G	2.00	-58.52	-56.52	-41.20	-15.32
2480MHz	Pass	2.5G	3.1G	AV	2.5039G	2.00	-63.30	-61.30	-41.20	-20.10
2480MHz	Pass	1G	2.31G	PK	2.26808G	2.00	-58.67	-56.67	-21.20	-35.47
2480MHz	Pass	2.31G	2.39G	PK	2.34912G	2.00	-57.74	-55.74	-21.20	-34.54
2480MHz	Pass	2.4835G	2.5G	PK	2.48352G	2.00	-42.17	-40.17	-21.20	-18.97
2480MHz	Pass	2.5G	3.1G	PK	2.5036G	2.00	-56.61	-54.61	-21.20	-33.41
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2404MHz	Pass	1G	2.31G	AV	2.13593G	2.00	-69.13	-67.13	-41.20	-25.93
2404MHz	Pass	2.31G	2.39G	AV	2.37992G	2.00	-65.21	-63.21	-41.20	-22.01
2404MHz	Pass	2.4835G	2.5G	AV	2.49973G	2.00	-68.41	-66.41	-41.20	-25.21
2404MHz	Pass	2.5G	3.1G	AV	2.8243G	2.00	-67.96	-65.96	-41.20	-24.76
2404MHz	Pass	1G	2.31G	PK	2.13708G	2.00	-57.40	-55.40	-21.20	-34.20
2404MHz	Pass	2.31G	2.39G	PK	2.38716G	2.00	-52.33	-50.33	-21.20	-29.13
2404MHz	Pass	2.4835G	2.5G	PK	2.49386G	2.00	-57.03	-55.03	-21.20	-33.83
2404MHz	Pass	2.5G	3.1G	PK	2.6008G	2.00	-57.00	-55.00	-21.20	-33.80
2440MHz	Pass	1G	2.31G	AV	2.12775G	2.00	-69.15	-67.15	-41.20	-25.95
2440MHz	Pass	2.31G	2.39G	AV	2.31356G	2.00	-69.11	-67.11	-41.20	-25.91
2440MHz	Pass	2.4835G	2.5G	AV	2.484G	2.00	-68.07	-66.07	-41.20	-24.87
2440MHz	Pass	2.5G	3.1G	AV	2.62765G	2.00	-68.02	-66.02	-41.20	-24.82
2440MHz	Pass	1G	2.31G	PK	2.14887G	2.00	-58.27	-56.27	-21.20	-35.07
2440MHz	Pass	2.31G	2.39G	PK	2.32644G	2.00	-57.53	-55.53	-21.20	-34.33



**Unwanted Conducted Emissions into Restricted
Frequency Bands (1GHz-3.1GHz) – SC Module**

Appendix D.2

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2440MHz	Pass	2.4835G	2.5G	PK	2.48499G	2.00	-56.38	-54.38	-21.20	-33.18
2440MHz	Pass	2.5G	3.1G	PK	2.6728G	2.00	-56.95	-54.95	-21.20	-33.75
2478MHz	Pass	1G	2.31G	AV	2.13724G	2.00	-69.13	-67.13	-41.20	-25.93
2478MHz	Pass	2.31G	2.39G	AV	2.35644G	2.00	-69.10	-67.10	-41.20	-25.90
2478MHz	Pass	2.4835G	2.5G	AV	2.48354G	2.00	-61.37	-59.37	-41.20	-18.17
2478MHz	Pass	2.5G	3.1G	AV	2.50195G	2.00	-64.67	-62.67	-41.20	-21.47
2478MHz	Pass	1G	2.31G	PK	1.94451G	2.00	-57.84	-55.84	-21.20	-34.64
2478MHz	Pass	2.31G	2.39G	PK	2.358G	2.00	-57.23	-55.23	-21.20	-34.03
2478MHz	Pass	2.4835G	2.5G	PK	2.4835G	2.00	-45.41	-43.41	-21.20	-22.21
2478MHz	Pass	2.5G	3.1G	PK	2.5012G	2.00	-56.11	-54.11	-21.20	-32.91

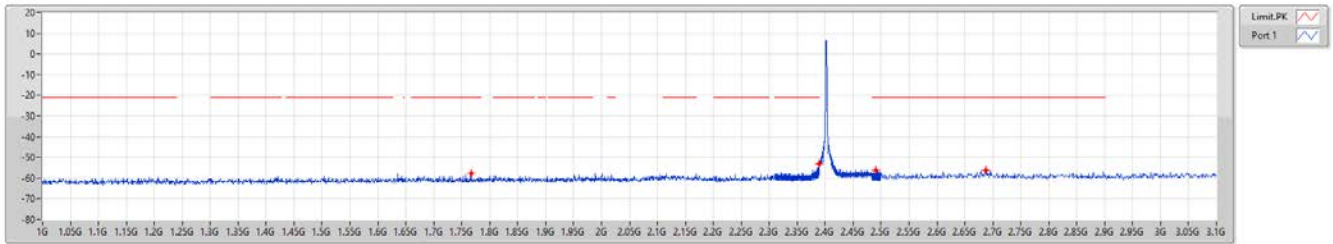
DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX



2.4-2.4835GHz_BT-LE(1Mbps)

CSE Bandedge-DTS [PK]

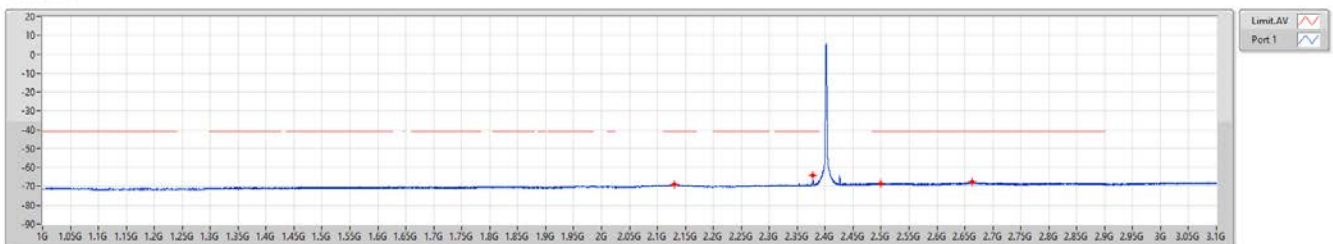
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSE Bandedge-DTS [AV]

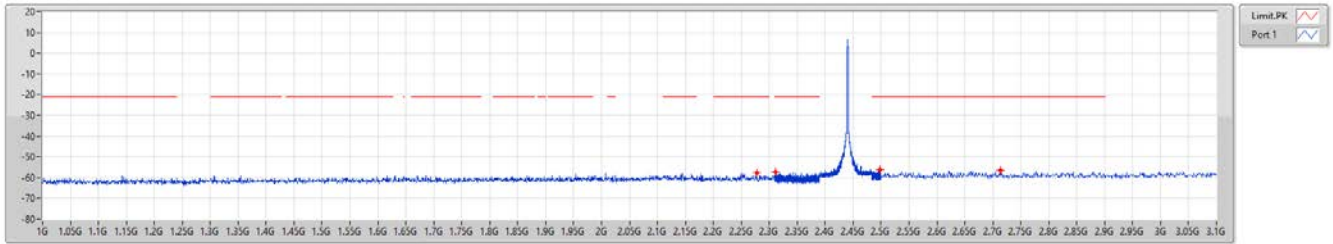
2402MHz



2.4-2.4835GHz BT-LE(1Mbps)

CSE Bandedge-DTS [PK]

2440MHz

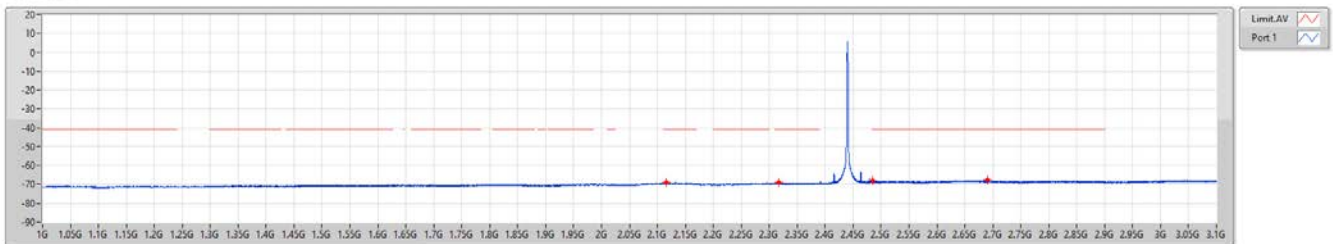


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	PK	2.27791G	-57.87	-57.87
2.31G	2.39G	1M	PK	2.31052G	-57.21	-57.21
2.4835G	2.5G	1M	PK	2.48833G	-56.27	-56.27
2.5G	3.1G	1M	PK	2.7136G	-56.64	-56.64

2.4-2.4835GHz BT-LE(1Mbps)

CSE Bandedge-DTS [AV]

2440MHz



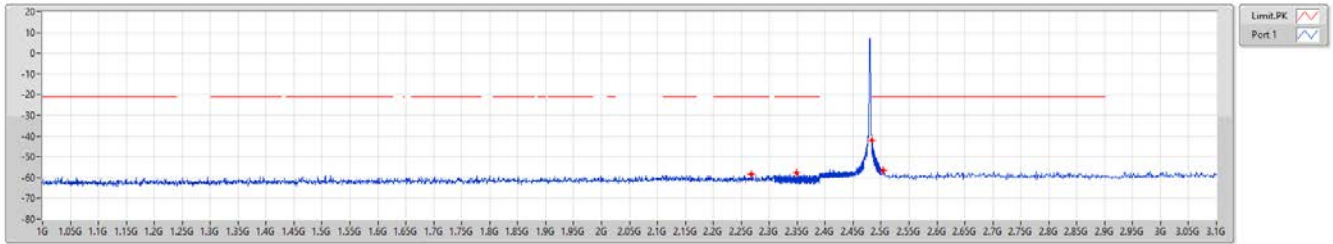
F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	AV	2.11620G	-68.90	-68.90
2.31G	2.39G	1M	AV	2.31696G	-69.12	-69.12
2.4835G	2.5G	1M	AV	2.48493G	-68.26	-68.26
2.5G	3.1G	1M	AV	2.69035G	-67.69	-67.69



2.4-2.4835GHz BT-LE(1Mbps)

CSE Bandedge-DTS [PK]

2480MHz

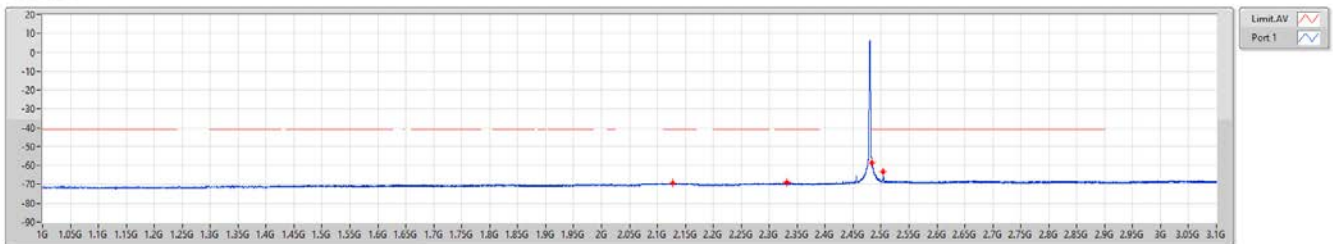


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	PK	2.26000G	-58.67	-58.67
2.31G	2.39G	1M	PK	2.34912G	-57.74	-57.74
2.4835G	2.5G	1M	PK	2.48352G	-42.17	-42.17
2.5G	3.1G	1M	PK	2.5036G	-56.61	-56.61

2.4-2.4835GHz BT-LE(1Mbps)

CSE Bandedge-DTS [AV]

2480MHz

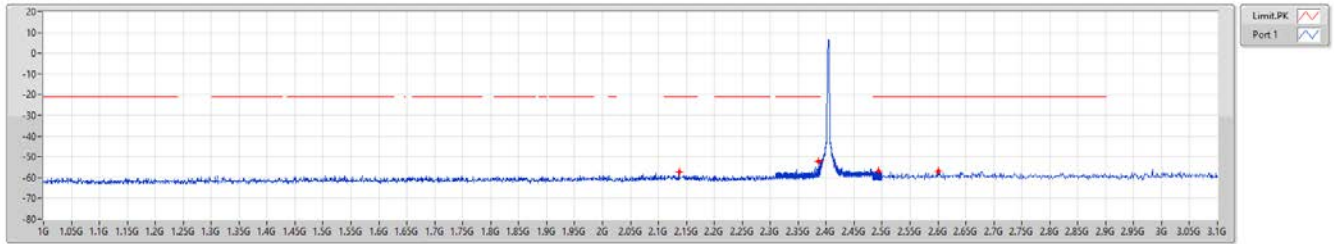


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	AV	2.12750G	-69.20	-69.20
2.31G	2.39G	1M	AV	2.33172G	-69.01	-69.01
2.4835G	2.5G	1M	AV	2.48352G	-58.52	-58.52
2.5G	3.1G	1M	AV	2.5039G	-63.30	-63.30

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [PK]

2404MHz

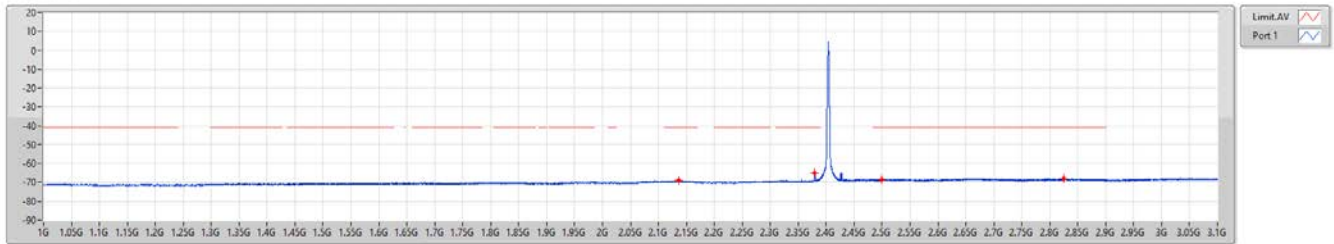


F.Start(Hz)	F.Stop(Hz)	RB(WHz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	PK	2.13700G	-57.40	-57.40
2.31G	2.39G	1M	PK	2.38716G	-52.33	-52.33
2.4835G	2.5G	1M	PK	2.49386G	-57.03	-57.03
2.5G	3.1G	1M	PK	2.6008G	-57.00	-57.00

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [AV]

2404MHz

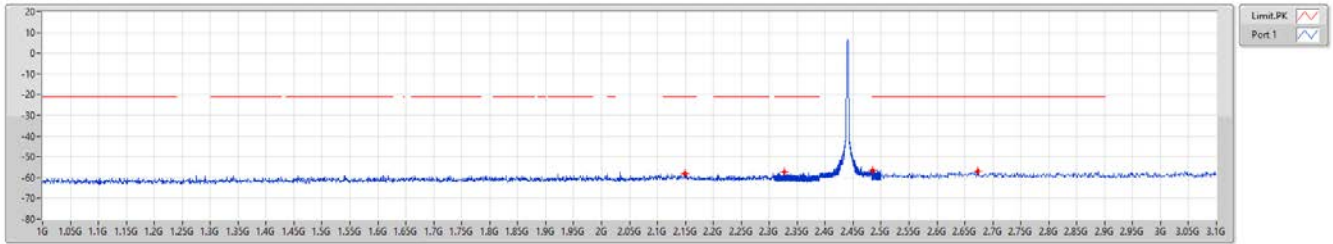


F.Start(Hz)	F.Stop(Hz)	RB(WHz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	AV	2.13593G	-69.13	-69.13
2.31G	2.39G	1M	AV	2.37992G	-65.21	-65.21
2.4835G	2.5G	1M	AV	2.49973G	-68.41	-68.41
2.5G	3.1G	1M	AV	2.8243G	-67.96	-67.96

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [PK]

2440MHz

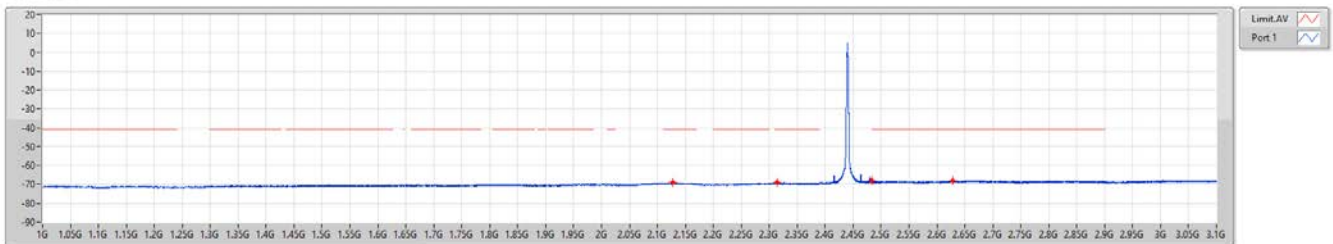


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	PK	2.14007G	-58.27	-58.27
2.31G	2.39G	1M	PK	2.32644G	-57.53	-57.53
2.4835G	2.5G	1M	PK	2.48499G	-56.38	-56.38
2.5G	3.1G	1M	PK	2.6728G	-56.95	-56.95

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [AV]

2440MHz

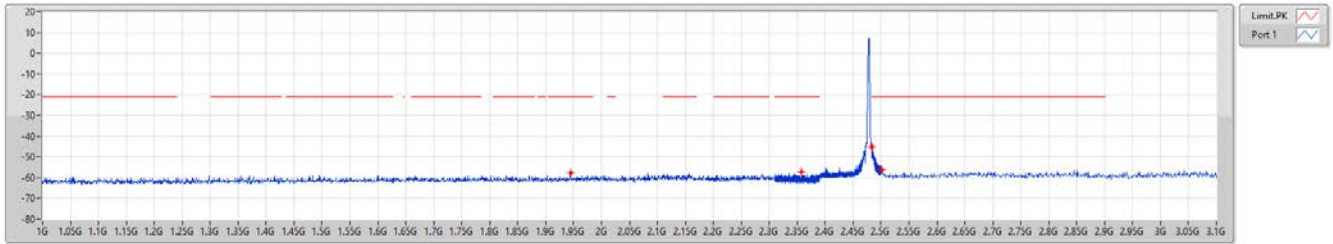


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	AV	2.12775G	-69.15	-69.15
2.31G	2.39G	1M	AV	2.31356G	-69.11	-69.11
2.4835G	2.5G	1M	AV	2.484G	-68.07	-68.07
2.5G	3.1G	1M	AV	2.67285G	-68.02	-68.02

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [PK]

2478MHz

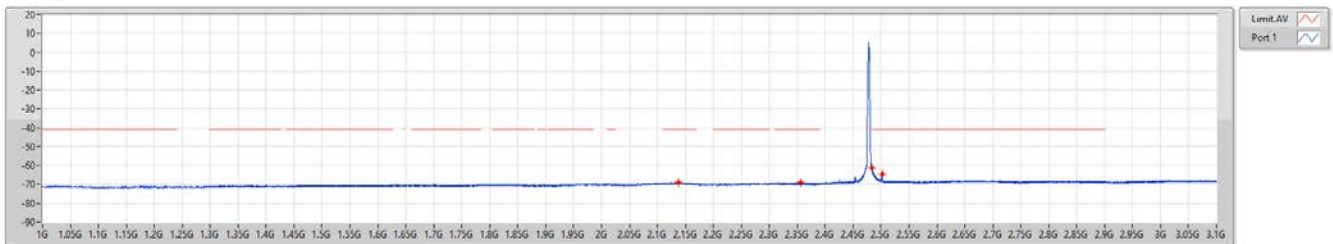


F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	PK	1.94451G	-57.04	-57.04
2.31G	2.39G	1M	PK	2.350G	-57.23	-57.23
2.4835G	2.5G	1M	PK	2.4835G	-45.41	-45.41
2.5G	3.1G	1M	PK	2.5012G	-56.11	-56.11

2.4-2.4835GHz BT-LE(2Mbps)

CSE Bandedge-DTS [AV]

2478MHz



F.Start(Hz)	F.Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Psum(dBm)	P1(dBm)
1G	2.31G	1M	AV	2.13724G	-69.13	-69.13
2.31G	2.39G	1M	AV	2.35644G	-69.10	-69.10
2.4835G	2.5G	1M	AV	2.48354G	-61.37	-61.37
2.5G	3.1G	1M	AV	2.50195G	-64.67	-64.67



Unwanted Conducted Emissions into Restricted Frequency Bands (3.1GHz-25GHz) – SC Module

Appendix D.3

Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	4G	5G	AV	4.804G	2.00	-51.74	-49.74	-41.20	-8.54
BT-LE(2Mbps)	Pass	4G	5G	AV	4.80725G	2.00	-53.79	-51.79	-41.20	-10.59

DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	3.1G	4G	AV	3.99235G	2.00	-75.68	-73.68	-41.20	-32.48
2402MHz	Pass	4G	5G	AV	4.804G	2.00	-51.74	-49.74	-41.20	-8.54
2402MHz	Pass	5G	7G	AV	5.1915G	2.00	-73.98	-71.98	-41.20	-30.78
2402MHz	Pass	7G	8G	AV	7.487G	2.00	-71.19	-69.19	-41.20	-27.99
2402MHz	Pass	8G	25G	AV	19.12544G	2.00	-63.35	-61.35	-41.20	-20.15
2402MHz	Pass	3.1G	4G	PK	3.51378G	2.00	-65.79	-63.79	-21.20	-42.59
2402MHz	Pass	4G	5G	PK	4.8035G	2.00	-47.69	-45.69	-21.20	-24.49
2402MHz	Pass	5G	7G	PK	5.382G	2.00	-63.81	-61.81	-21.20	-40.61
2402MHz	Pass	7G	8G	PK	7.44625G	2.00	-60.58	-58.58	-21.20	-37.38
2402MHz	Pass	8G	25G	PK	18.79606G	2.00	-53.36	-51.36	-21.20	-30.16
2440MHz	Pass	3.1G	4G	AV	3.99348G	2.00	-75.67	-73.67	-41.20	-32.47
2440MHz	Pass	4G	5G	AV	4.87975G	2.00	-52.80	-50.80	-41.20	-9.60
2440MHz	Pass	5G	7G	AV	5.21G	2.00	-74.09	-72.09	-41.20	-30.89
2440MHz	Pass	7G	8G	AV	7.49325G	2.00	-71.30	-69.30	-41.20	-28.10
2440MHz	Pass	8G	25G	AV	19.13872G	2.00	-63.27	-61.27	-41.20	-20.07
2440MHz	Pass	3.1G	4G	PK	3.78963G	2.00	-65.57	-63.57	-21.20	-42.37
2440MHz	Pass	4G	5G	PK	4.88075G	2.00	-48.88	-46.88	-21.20	-25.68
2440MHz	Pass	5G	7G	PK	5.192G	2.00	-63.81	-61.81	-21.20	-40.61
2440MHz	Pass	7G	8G	PK	7.527G	2.00	-61.35	-59.35	-21.20	-38.15
2440MHz	Pass	8G	25G	PK	18.89116G	2.00	-54.43	-52.43	-21.20	-31.23
2480MHz	Pass	3.1G	4G	AV	3.99618G	2.00	-75.66	-73.66	-41.20	-32.46
2480MHz	Pass	4G	5G	AV	4.95975G	2.00	-56.11	-54.11	-41.20	-12.91
2480MHz	Pass	5G	7G	AV	5.1805G	2.00	-73.73	-71.73	-41.20	-30.53
2480MHz	Pass	7G	8G	AV	7.4925G	2.00	-71.16	-69.16	-41.20	-27.96
2480MHz	Pass	8G	25G	AV	19.13659G	2.00	-63.58	-61.58	-41.20	-20.38
2480MHz	Pass	3.1G	4G	PK	3.51423G	2.00	-65.01	-63.01	-21.20	-41.81
2480MHz	Pass	4G	5G	PK	4.96075G	2.00	-51.94	-49.94	-21.20	-28.74
2480MHz	Pass	5G	7G	PK	5.359G	2.00	-64.59	-62.59	-21.20	-41.39
2480MHz	Pass	7G	8G	PK	7.503G	2.00	-61.54	-59.54	-21.20	-38.34
2480MHz	Pass	8G	25G	PK	18.86831G	2.00	-54.40	-52.40	-21.20	-31.20
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2404MHz	Pass	3.1G	4G	AV	3.98043G	2.00	-75.12	-73.12	-41.20	-31.92
2404MHz	Pass	4G	5G	AV	4.80725G	2.00	-53.79	-51.79	-41.20	-10.59



Unwanted Conducted Emissions into Restricted Frequency Bands (3.1GHz-25GHz) – SC Module

Appendix D.3

Mode	Result	F-Start (Hz)	F-Stop (Hz)	Type	Freq (Hz)	DG (dBi)	Psum (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
2404MHz	Pass	5G	7G	AV	5.203G	2.00	-73.64	-71.64	-41.20	-30.44
2404MHz	Pass	7G	8G	AV	7.4935G	2.00	-70.34	-68.34	-41.20	-27.14
2404MHz	Pass	8G	25G	AV	18.80297G	2.00	-62.61	-60.61	-41.20	-19.41
2404MHz	Pass	3.1G	4G	PK	3.74778G	2.00	-65.44	-63.44	-21.20	-42.24
2404MHz	Pass	4G	5G	PK	4.809G	2.00	-48.08	-46.08	-21.20	-24.88
2404MHz	Pass	5G	7G	PK	5.354G	2.00	-63.84	-61.84	-21.20	-40.64
2404MHz	Pass	7G	8G	PK	7.49G	2.00	-60.25	-58.25	-21.20	-37.05
2404MHz	Pass	8G	25G	PK	18.79553G	2.00	-53.63	-51.63	-21.20	-30.43
2440MHz	Pass	3.1G	4G	AV	3.98763G	2.00	-75.24	-73.24	-41.20	-32.04
2440MHz	Pass	4G	5G	AV	4.879G	2.00	-55.21	-53.21	-41.20	-12.01
2440MHz	Pass	5G	7G	AV	5.212G	2.00	-73.87	-71.87	-41.20	-30.67
2440MHz	Pass	7G	8G	AV	7.48275G	2.00	-70.26	-68.26	-41.20	-27.06
2440MHz	Pass	8G	25G	AV	18.81306G	2.00	-62.60	-60.60	-41.20	-19.40
2440MHz	Pass	3.1G	4G	PK	3.99618G	2.00	-64.78	-62.78	-21.20	-41.58
2440MHz	Pass	4G	5G	PK	4.87925G	2.00	-49.03	-47.03	-21.20	-25.83
2440MHz	Pass	5G	7G	PK	5.1705G	2.00	-63.74	-61.74	-21.20	-40.54
2440MHz	Pass	7G	8G	PK	7.45325G	2.00	-60.28	-58.28	-21.20	-37.08
2440MHz	Pass	8G	25G	PK	18.78703G	2.00	-53.86	-51.86	-21.20	-30.66
2478MHz	Pass	3.1G	4G	AV	3.9793G	2.00	-75.53	-73.53	-41.20	-32.33
2478MHz	Pass	4G	5G	AV	4.957G	2.00	-58.14	-56.14	-41.20	-14.94
2478MHz	Pass	5G	7G	AV	5.213G	2.00	-73.90	-71.90	-41.20	-30.70
2478MHz	Pass	7G	8G	AV	7.49075G	2.00	-70.35	-68.35	-41.20	-27.15
2478MHz	Pass	8G	25G	AV	18.79447G	2.00	-62.57	-60.57	-41.20	-19.37
2478MHz	Pass	3.1G	4G	PK	3.99235G	2.00	-65.32	-63.32	-21.20	-42.12
2478MHz	Pass	4G	5G	PK	4.957G	2.00	-51.84	-49.84	-21.20	-28.64
2478MHz	Pass	5G	7G	PK	5.1925G	2.00	-63.67	-61.67	-21.20	-40.47
2478MHz	Pass	7G	8G	PK	7.449G	2.00	-59.99	-57.99	-21.20	-36.79
2478MHz	Pass	8G	25G	PK	18.89434G	2.00	-52.89	-50.89	-21.20	-29.69

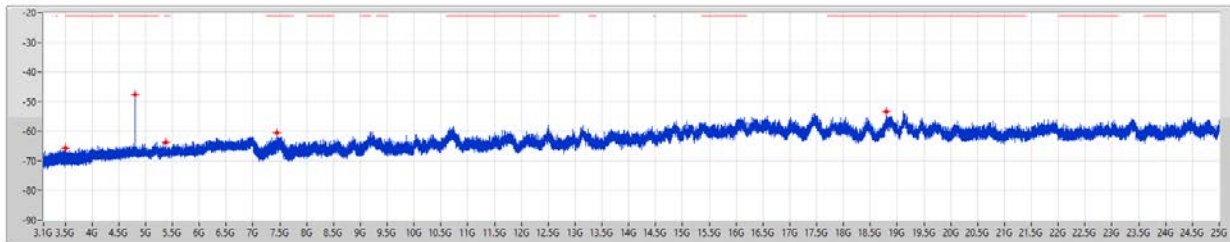
DG = Directional Gain ; PX=Port X; Psum=P1+P2+...PX



2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [PK]

2402MHz



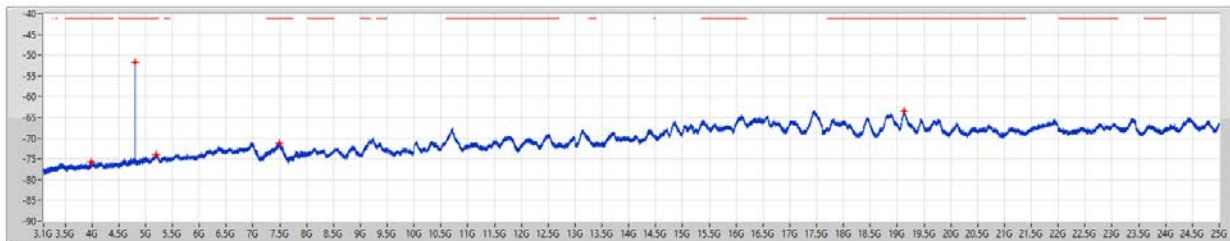
Limit PK
Port 1

F-Start(Freq)	F-Stop(Freq)	REW(Freq)	Type	Freq(Freq)	Pmin(dBm)	P1(dBm)
3.1G	4G	1M	PK	3.51378G	-65.79	-65.79
4G	5G	1M	PK	4.8035G	-67.69	-67.69
5G	7G	1M	PK	5.382G	-63.81	-63.81
7G	8G	1M	PK	7.44625G	-60.58	-60.58
8G	25G	1M	PK	18.79606G	-53.36	-53.36

2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [AV]

2402MHz



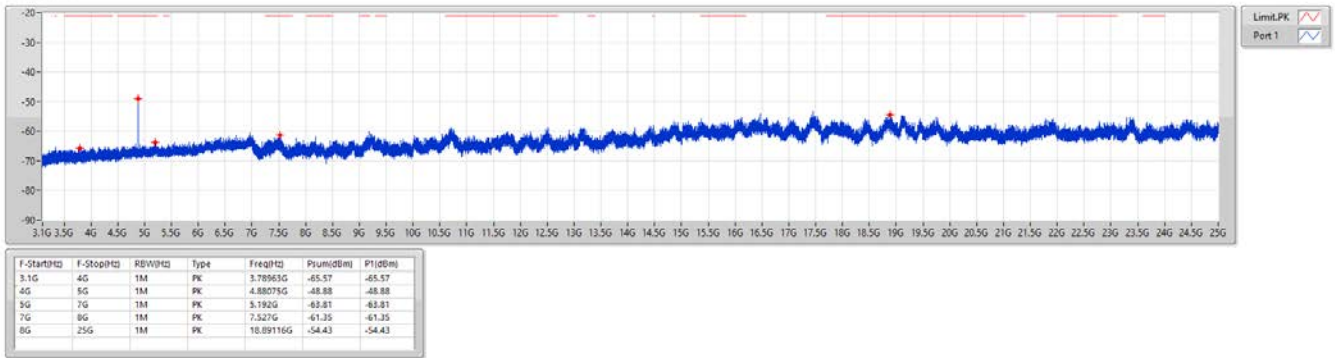
Limit AV
Port 1

F-Start(Freq)	F-Stop(Freq)	REW(Freq)	Type	Freq(Freq)	Pmin(dBm)	P1(dBm)
3.1G	4G	1M	AV	3.59235G	-75.68	-75.68
4G	5G	1M	AV	4.804G	-61.74	-61.74
5G	7G	1M	AV	5.1913G	-73.98	-73.98
7G	8G	1M	AV	7.487G	-71.19	-71.19
8G	25G	1M	AV	19.12544G	-63.35	-63.35

2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [PK]

2440MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [AV]

2440MHz

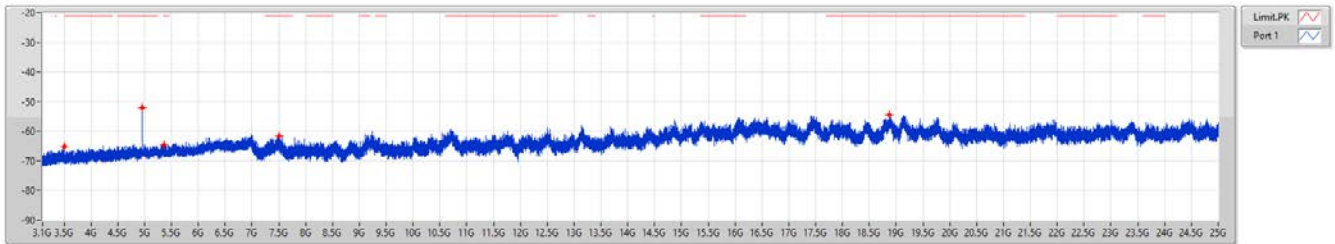




2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [PK]

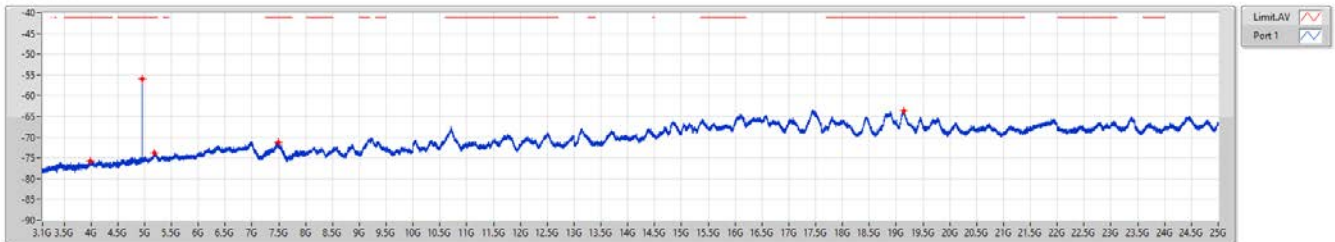
2480MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSE-DTS [AV]

2480MHz

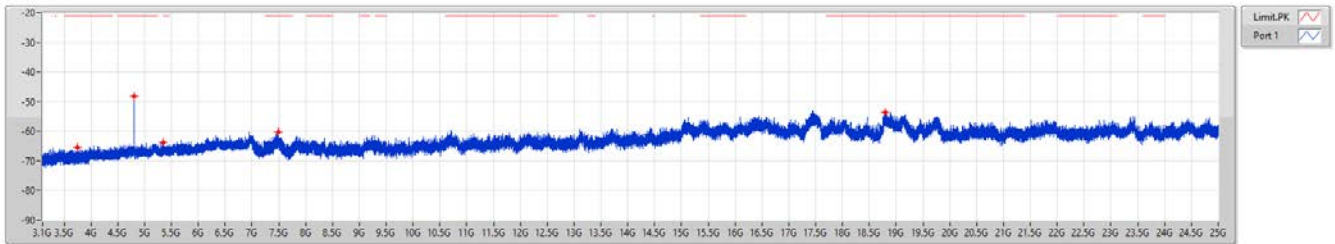




2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [PK]

2404MHz

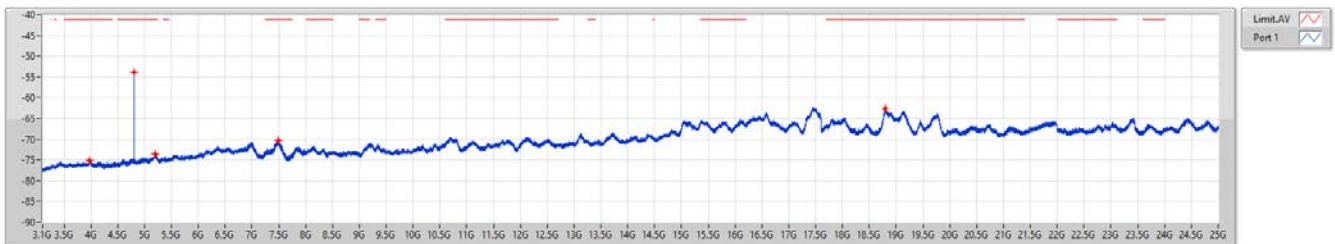


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Pmax(dBm)	P1(dBm)
3.1G	4G	1M	PK	3.74779G	-65.44	-65.44
4G	5G	1M	PK	4.809G	-68.08	-68.08
5G	7G	1M	PK	5.354G	-63.84	-63.84
7G	8G	1M	PK	7.49G	-60.25	-60.25
8G	25G	1M	PK	18.79553G	-53.63	-53.63

2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [AV]

2404MHz

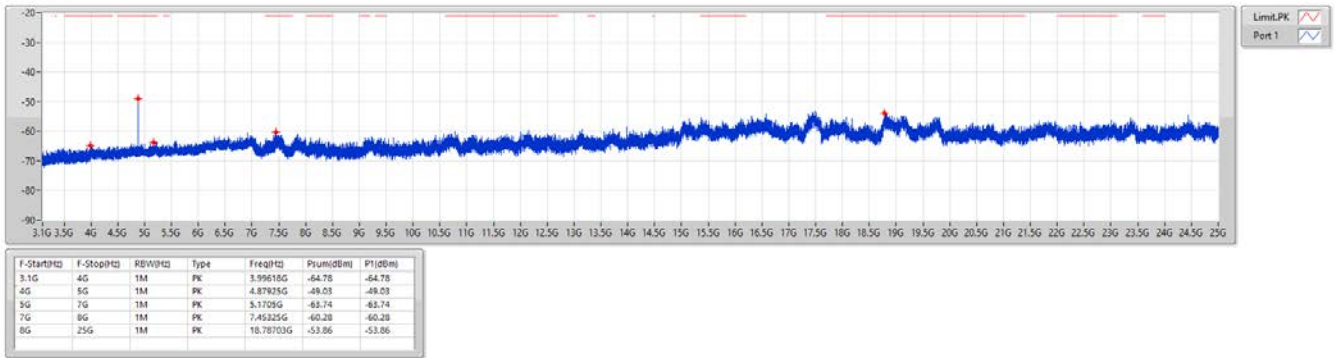


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	Type	Freq(Hz)	Pmax(dBm)	P1(dBm)
3.1G	4G	1M	AV	3.9043G	-75.12	-75.12
4G	5G	1M	AV	4.80735G	-53.79	-53.79
5G	7G	1M	AV	5.203G	-73.84	-73.84
7G	8G	1M	AV	7.4935G	-70.34	-70.34
8G	25G	1M	AV	18.80297G	-62.61	-62.61

2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [PK]

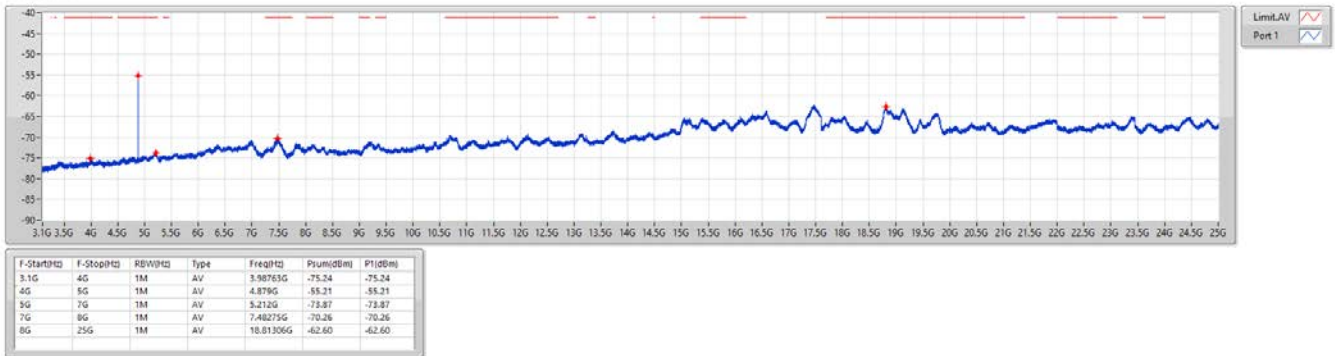
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [AV]

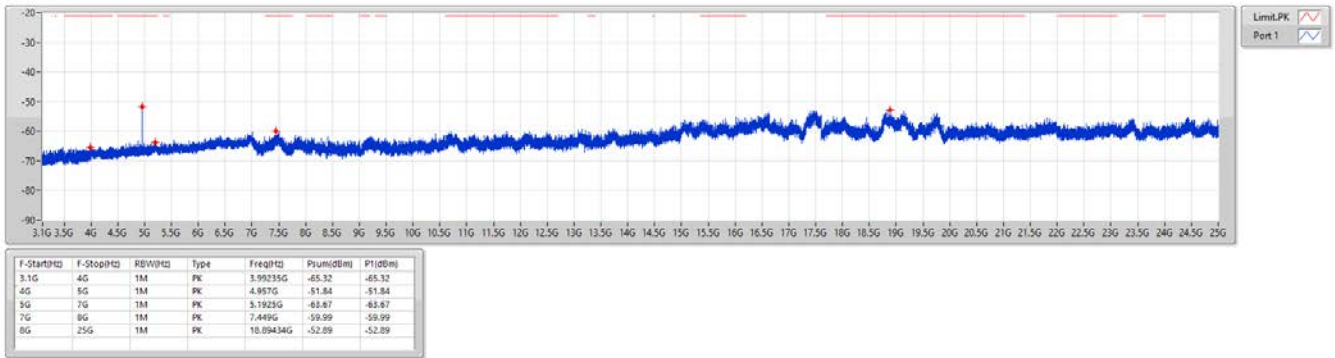
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [PK]

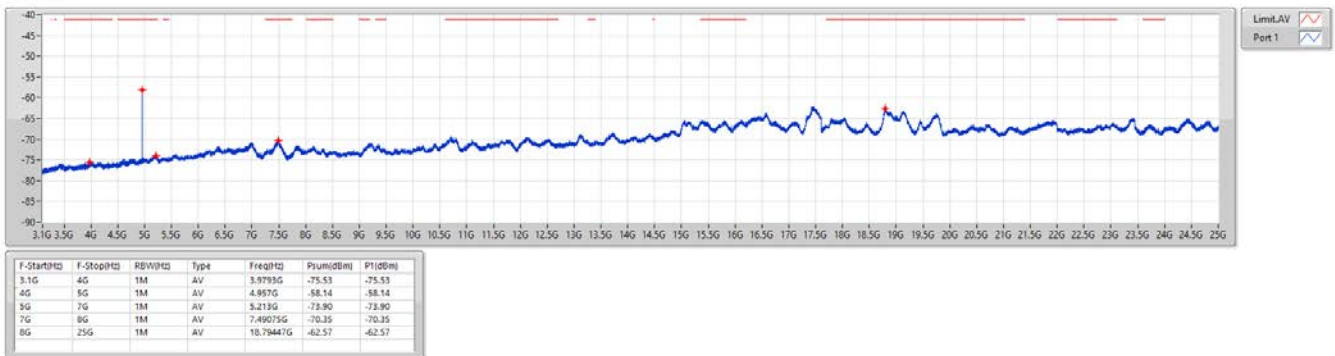
2478MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSE-DTS [AV]

2478MHz





Unwanted Emissions (Below 1GHz)

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):25 Humidity(%):61			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):25 Humidity(%):61			
Level (dBUV/m)			



Unwanted Emissions (Above 1GHz)

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2440
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2440
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2480
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2480
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2404
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2404
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2440
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2440
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2478																																																																																										
Polarization	Horizontal																																																																																												
Test By :Sean Yu Temperature(°C):24 Humidity(%):63																																																																																													
Level (dBUV/m) 90 80 70 60 50 40 30 20 10 0 1000 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 CLASS-B CLASS-B (AVG) 2 4 6 1 3 5 Frequency (MHz) <table><tr><th></th><th>Freq.</th><th>Emission</th><th>Limit</th><th>Margin</th><th>SA</th><th>Factor</th><th>Remark</th><th>ANT</th><th>Turn</th></tr><tr><th></th><th>MHz</th><th>level</th><th>dBuV/m</th><th>dB</th><th>reading</th><th>dB/m</th><th></th><th>High</th><th>Table</th></tr><tr><th></th><th></th><th>dBuV/m</th><th></th><th></th><th>dBuV</th><th></th><th></th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>1500.00</td><td>28.81</td><td>54.00</td><td>-25.19</td><td>35.55</td><td>-6.74</td><td>Average</td><td>100</td><td>178</td></tr><tr><td>2</td><td>1500.00</td><td>41.90</td><td>74.00</td><td>-32.10</td><td>48.64</td><td>-6.74</td><td>Peak</td><td>100</td><td>178</td></tr><tr><td>3</td><td>4956.00</td><td>31.90</td><td>54.00</td><td>-22.10</td><td>32.25</td><td>-0.35</td><td>Average</td><td>100</td><td>341</td></tr><tr><td>4</td><td>4956.00</td><td>45.13</td><td>74.00</td><td>-28.87</td><td>45.48</td><td>-0.35</td><td>Peak</td><td>100</td><td>341</td></tr><tr><td>5</td><td>7434.00</td><td>37.01</td><td>54.00</td><td>-16.99</td><td>31.86</td><td>5.15</td><td>Average</td><td>100</td><td>204</td></tr><tr><td>6</td><td>7434.00</td><td>50.27</td><td>74.00</td><td>-23.73</td><td>45.12</td><td>5.15</td><td>Peak</td><td>100</td><td>204</td></tr></table> Note 1: Emission Level (dBUV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).					Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn		MHz	level	dBuV/m	dB	reading	dB/m		High	Table			dBuV/m			dBuV			cm	deg	1	1500.00	28.81	54.00	-25.19	35.55	-6.74	Average	100	178	2	1500.00	41.90	74.00	-32.10	48.64	-6.74	Peak	100	178	3	4956.00	31.90	54.00	-22.10	32.25	-0.35	Average	100	341	4	4956.00	45.13	74.00	-28.87	45.48	-0.35	Peak	100	341	5	7434.00	37.01	54.00	-16.99	31.86	5.15	Average	100	204	6	7434.00	50.27	74.00	-23.73	45.12	5.15	Peak	100	204
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																																				
	MHz	level	dBuV/m	dB	reading	dB/m		High	Table																																																																																				
		dBuV/m			dBuV			cm	deg																																																																																				
1	1500.00	28.81	54.00	-25.19	35.55	-6.74	Average	100	178																																																																																				
2	1500.00	41.90	74.00	-32.10	48.64	-6.74	Peak	100	178																																																																																				
3	4956.00	31.90	54.00	-22.10	32.25	-0.35	Average	100	341																																																																																				
4	4956.00	45.13	74.00	-28.87	45.48	-0.35	Peak	100	341																																																																																				
5	7434.00	37.01	54.00	-16.99	31.86	5.15	Average	100	204																																																																																				
6	7434.00	50.27	74.00	-23.73	45.12	5.15	Peak	100	204																																																																																				



Unwanted Radiated Emissions into Restricted Frequency Bands – SC Module

Appendix D.4

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2478
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):24 Humidity(%):63			
Level (dBuV/m) </			



Unwanted Emissions (Below 1GHz)

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Horizontal		
Test By :Sean Yu Temperature(°C):25 Humidity(%):61			
Level (dBUV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Vertical		
Test By :Sean Yu Temperature(°C):25 Humidity(%):61			
Level (dBUV/m)			



Unwanted Emissions (Above 1GHz)

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2402
Polarization	Vertical		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2440
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBuV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2440
Polarization	Vertical		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2480
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (1Mbps)	Test Freq. (MHz)	2480
Polarization	Vertical		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2404
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2404
Polarization	Vertical		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBuV/m) <			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2440
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2440
Polarization	Vertical		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBuV/m) </			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2478
Polarization	Horizontal		
Test By :Roger Lu Temperature(°C):25 Humidity(%):65			
Level (dBUV/m)			



Unwanted Radiated Emissions into Restricted Frequency Bands – SA Module

Appendix D.5

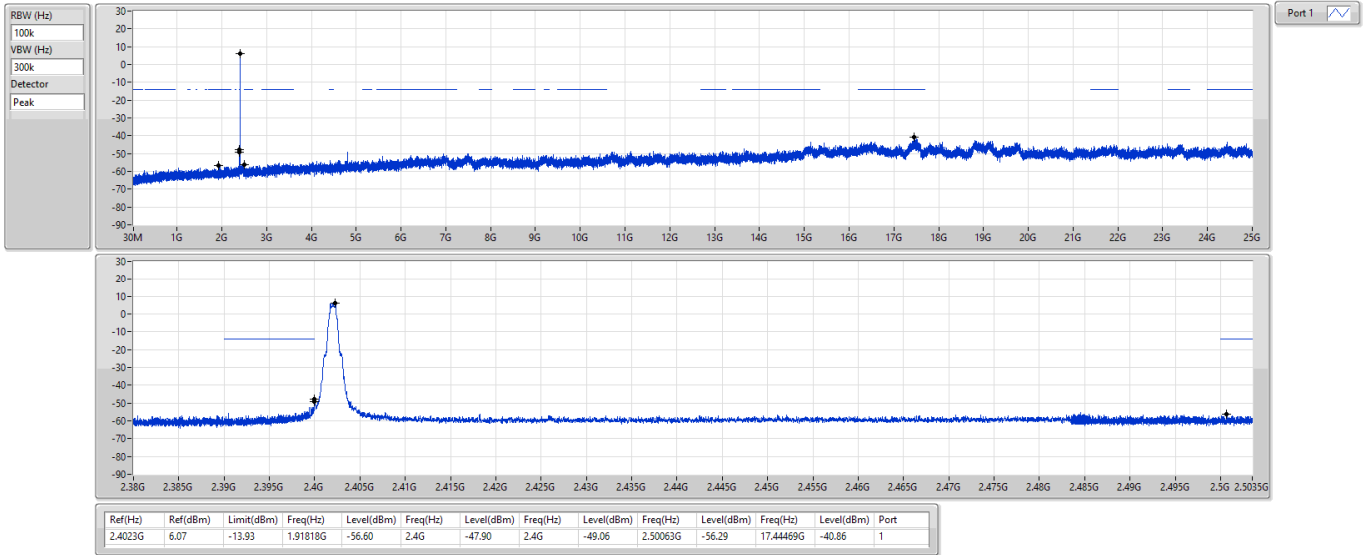
Modulation	BT-LE (2Mbps)	Test Freq. (MHz)	2478																																																																						
Polarization	Vertical																																																																								
Test By :Roger Lu Temperature(°C):25 Humidity(%):65																																																																									
Level (dBUV/m) 1 2 3 4 5 6 1000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 25000 Frequency (MHz) CLASS-B CLASS-B (AVG) <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBUV/m</th><th>Limit dBUV/m</th><th>Margin dB</th><th>SA reading dBUV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>2483.50</td><td>36.78</td><td>54.00</td><td>-17.22</td><td>41.56</td><td>-4.78</td><td>Average</td><td>126</td><td>102</td></tr><tr><td>2</td><td>2483.50</td><td>51.60</td><td>74.00</td><td>-22.40</td><td>56.38</td><td>-4.78</td><td>Peak</td><td>126</td><td>102</td></tr><tr><td>3</td><td>4956.00</td><td>33.25</td><td>54.00</td><td>-20.75</td><td>33.60</td><td>-0.35</td><td>Average</td><td>225</td><td>188</td></tr><tr><td>4</td><td>4956.00</td><td>44.78</td><td>74.00</td><td>-29.22</td><td>45.13</td><td>-0.35</td><td>Peak</td><td>225</td><td>188</td></tr><tr><td>5</td><td>7434.00</td><td>37.27</td><td>54.00</td><td>-16.73</td><td>32.12</td><td>5.15</td><td>Average</td><td>100</td><td>60</td></tr><tr><td>6</td><td>7434.00</td><td>50.27</td><td>74.00</td><td>-23.73</td><td>45.12</td><td>5.15</td><td>Peak</td><td>100</td><td>60</td></tr></table> Note 1: Emission Level (dBUV/m) = SA Reading (dBUV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).					Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg	1	2483.50	36.78	54.00	-17.22	41.56	-4.78	Average	126	102	2	2483.50	51.60	74.00	-22.40	56.38	-4.78	Peak	126	102	3	4956.00	33.25	54.00	-20.75	33.60	-0.35	Average	225	188	4	4956.00	44.78	74.00	-29.22	45.13	-0.35	Peak	225	188	5	7434.00	37.27	54.00	-16.73	32.12	5.15	Average	100	60	6	7434.00	50.27	74.00	-23.73	45.12	5.15	Peak	100	60
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg																																																																
1	2483.50	36.78	54.00	-17.22	41.56	-4.78	Average	126	102																																																																
2	2483.50	51.60	74.00	-22.40	56.38	-4.78	Peak	126	102																																																																
3	4956.00	33.25	54.00	-20.75	33.60	-0.35	Average	225	188																																																																
4	4956.00	44.78	74.00	-29.22	45.13	-0.35	Peak	225	188																																																																
5	7434.00	37.27	54.00	-16.73	32.12	5.15	Average	100	60																																																																
6	7434.00	50.27	74.00	-23.73	45.12	5.15	Peak	100	60																																																																



2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

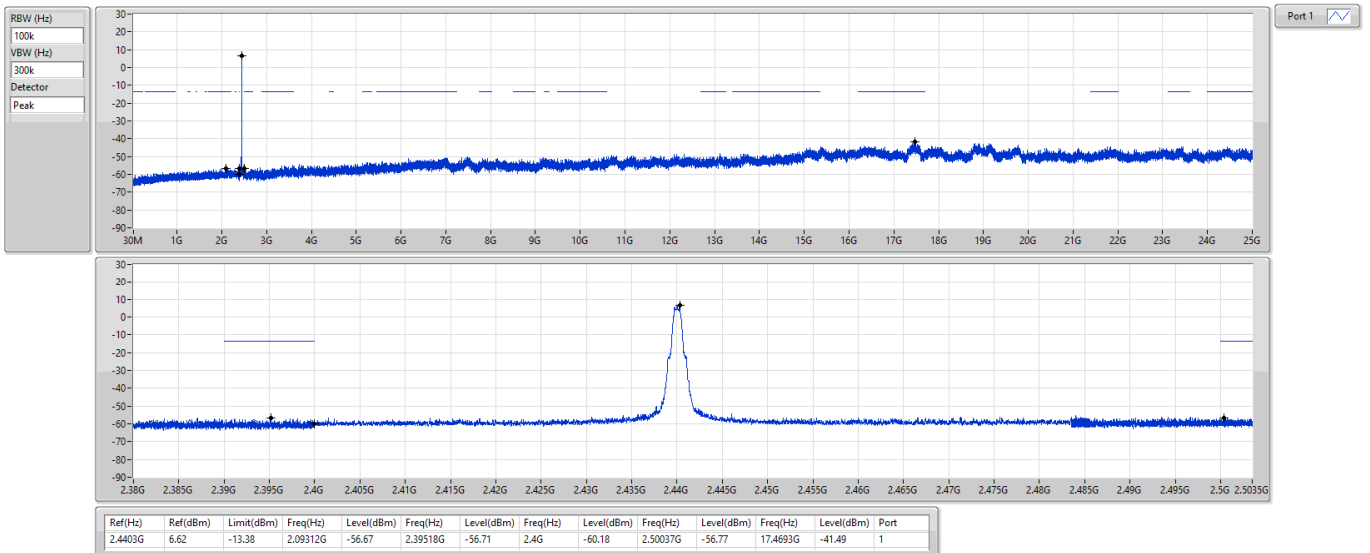
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

2440MHz

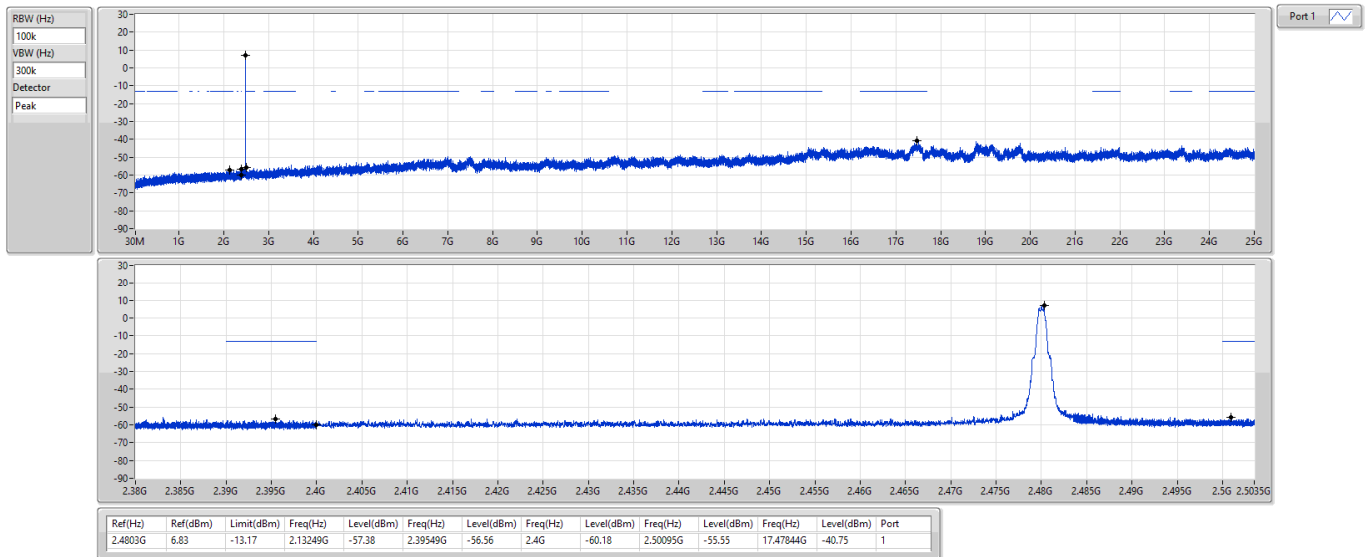




2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

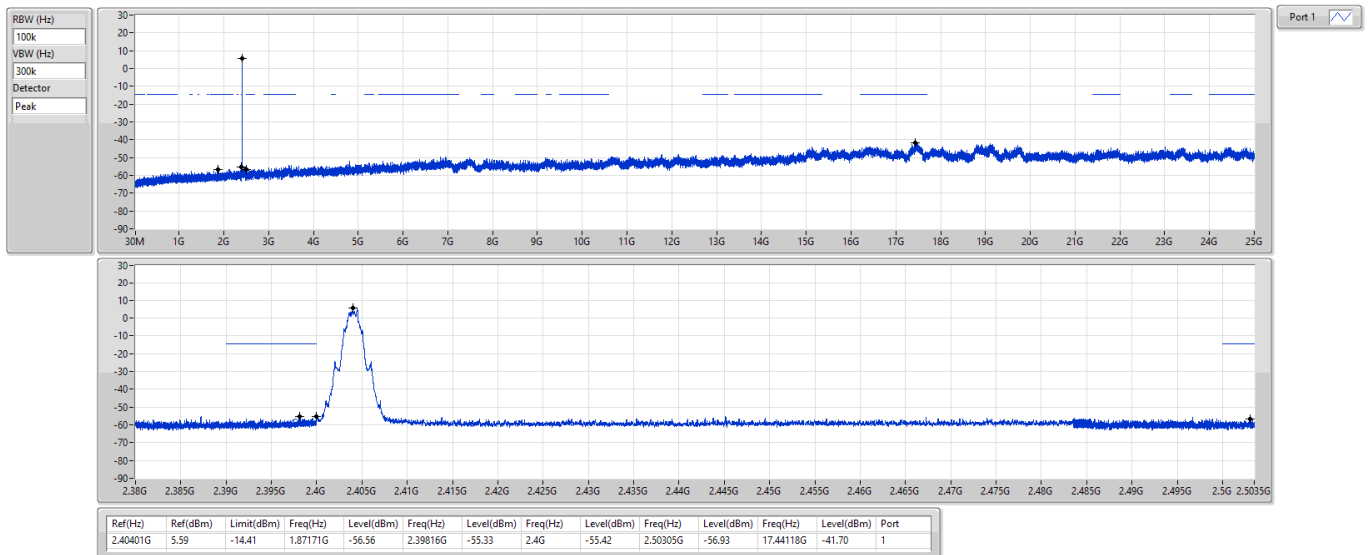
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2404MHz

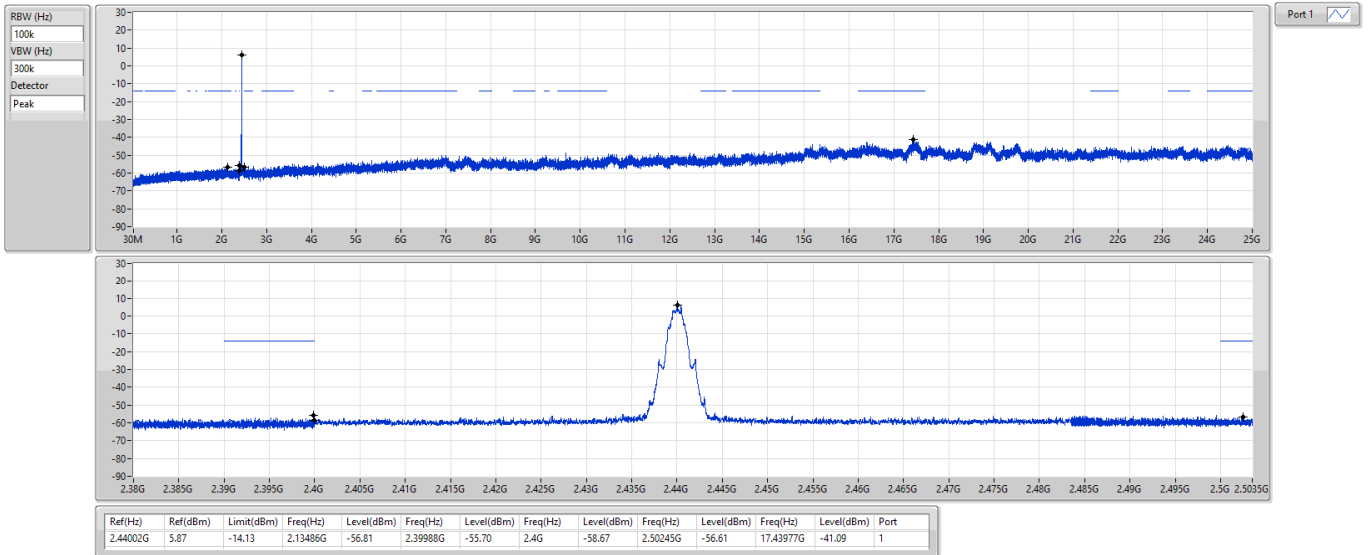




2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

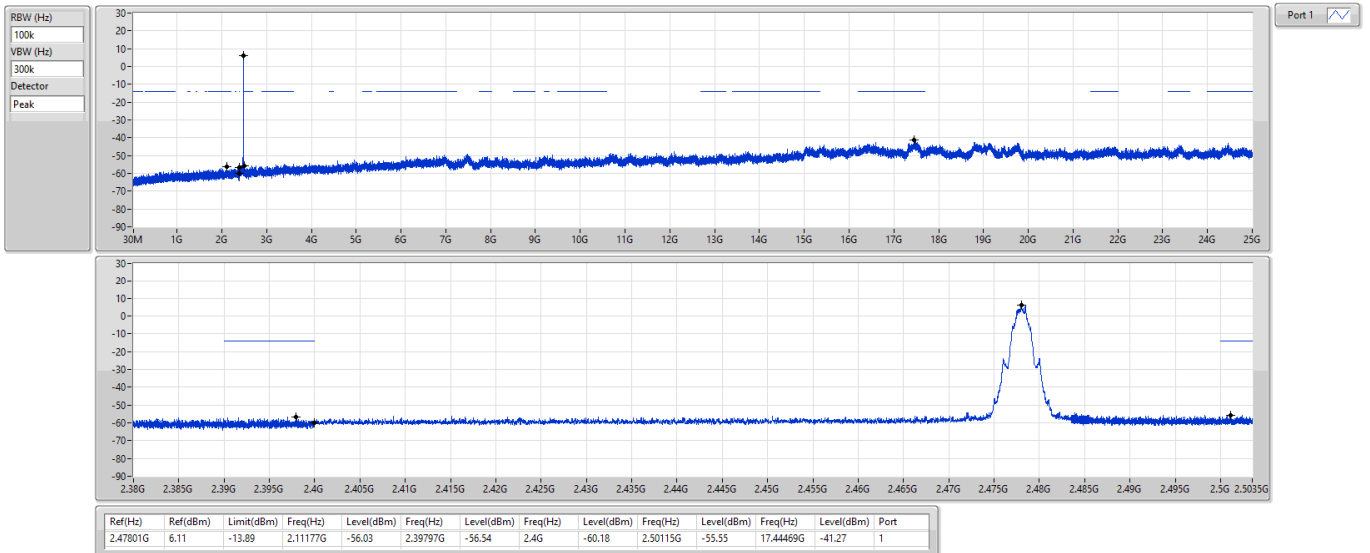
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

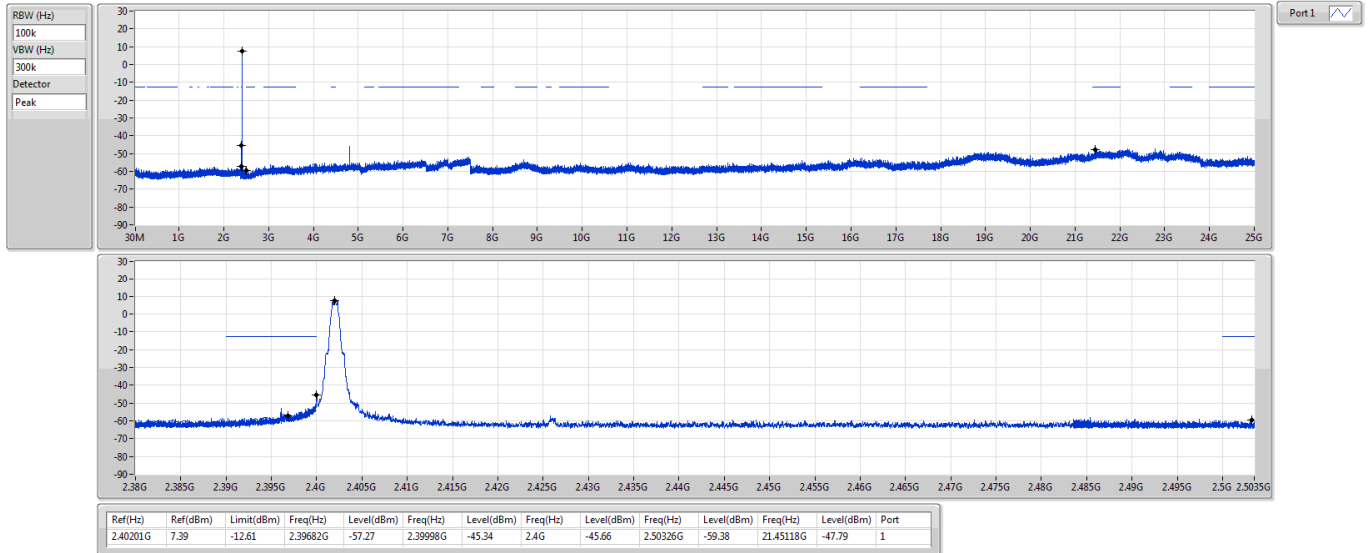
2478MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

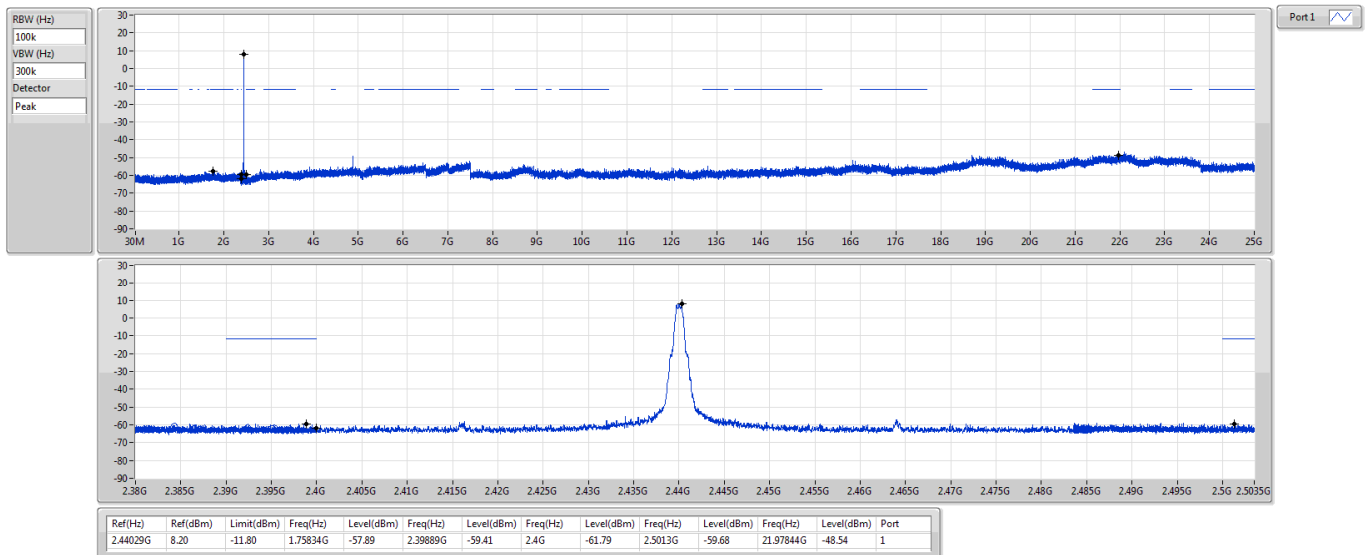
2402MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

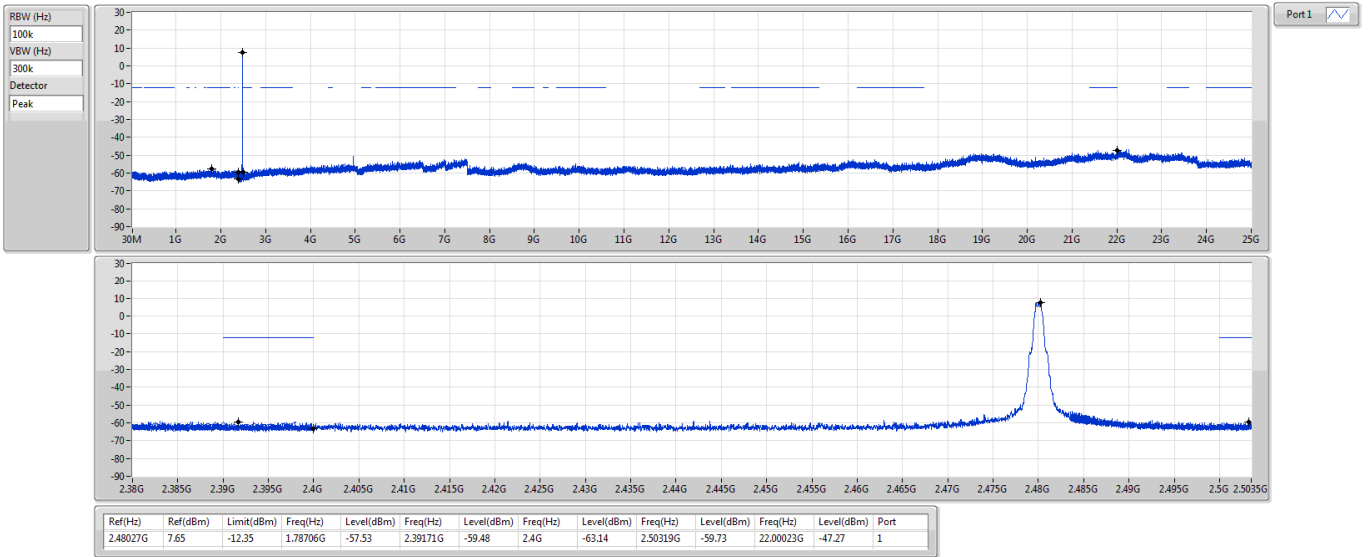
2440MHz



2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

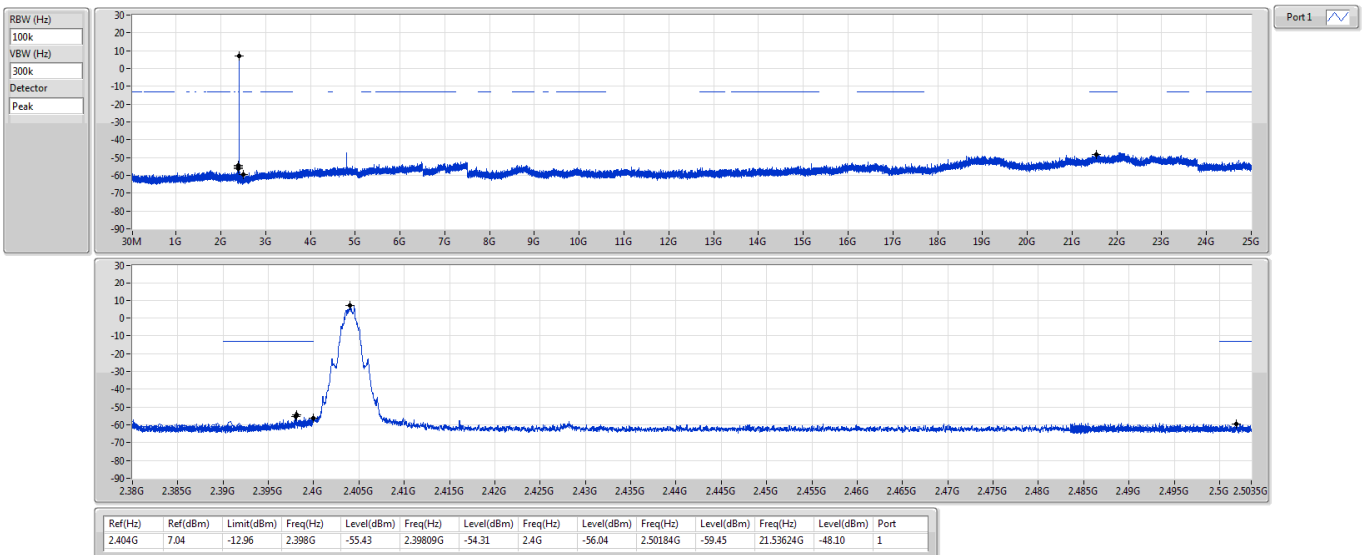
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2404MHz

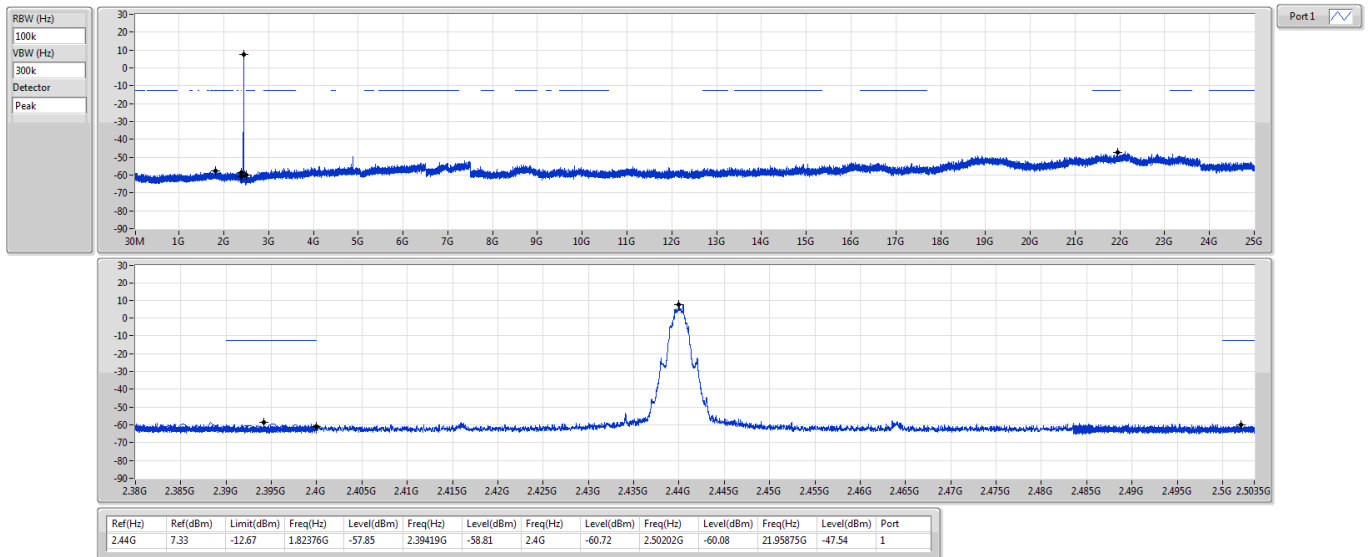




2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

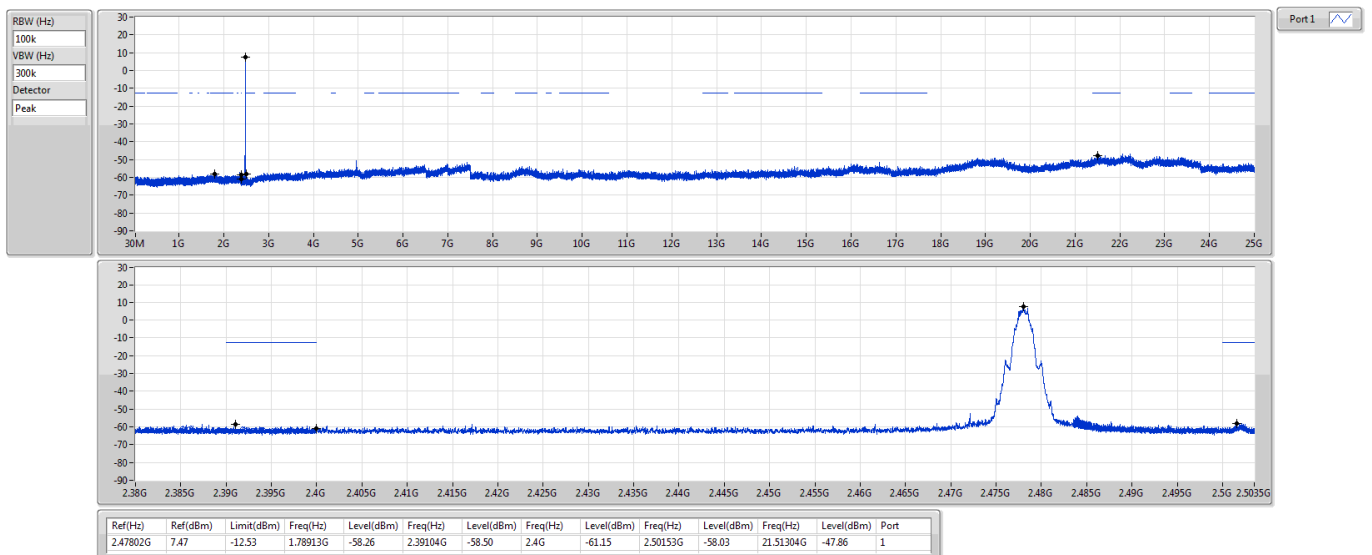
2440MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2478MHz





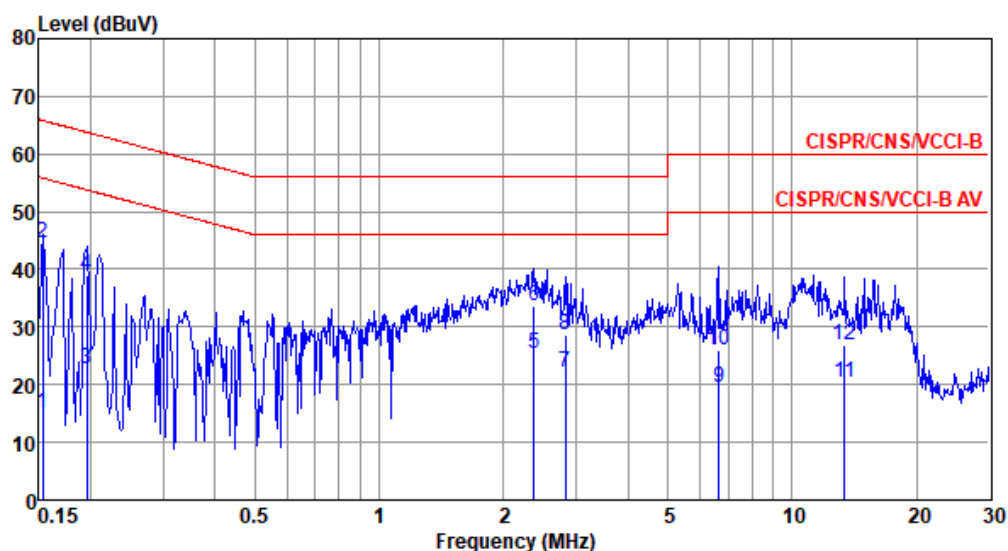
SC Module

Modulation	BT-LE(1Mbps)	Test Freq. (MHz)	2480
Power Phase	Line		

Test by : Wish Yu

Temperature: 23°C

Humidity: 63%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.153	14.92	55.82	-40.90	5.23	9.63	0.06	0.00	Average
2	0.153	44.68	65.82	-21.14	34.99	9.63	0.06	0.00	QP
3	0.195	22.73	53.80	-31.07	13.05	9.62	0.06	0.00	Average
4	0.195	38.90	63.80	-24.90	29.22	9.62	0.06	0.00	QP
5*	2.371	25.33	46.00	-20.67	15.56	9.63	0.14	0.00	Average
6	2.371	33.74	56.00	-22.26	23.97	9.63	0.14	0.00	QP
7	2.824	22.16	46.00	-23.84	12.37	9.64	0.15	0.00	Average
8	2.824	28.75	56.00	-27.25	18.96	9.64	0.15	0.00	QP
9	6.662	19.61	50.00	-30.39	9.66	9.67	0.28	0.00	Average
10	6.662	25.99	60.00	-34.01	16.04	9.67	0.28	0.00	QP
11	13.408	20.45	50.00	-29.55	10.34	9.69	0.42	0.00	Average
12	13.408	26.96	60.00	-33.04	16.85	9.69	0.42	0.00	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) - Limit Line (dBuV).

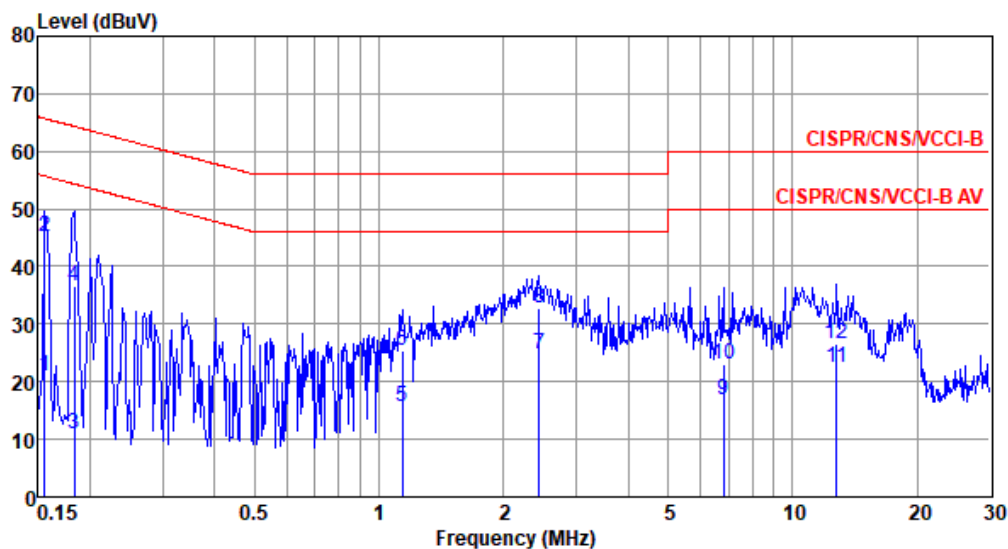


Modulation	BT-LE(1Mbps)	Test Freq. (MHz)	2480
Power Phase	Neutral		

Test by : Wish Yu

Temperature: 23°C

Humidity: 63%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.156	21.07	55.69	-34.62	11.38	9.63	0.06	0.00	Average
2*	0.156	45.31	65.69	-20.38	35.62	9.63	0.06	0.00	QP
3	0.183	10.91	54.33	-43.42	1.22	9.63	0.06	0.00	Average
4	0.183	36.67	64.33	-27.66	26.98	9.63	0.06	0.00	QP
5	1.141	15.79	46.00	-30.21	6.05	9.63	0.11	0.00	Average
6	1.141	25.26	56.00	-30.74	15.52	9.63	0.11	0.00	QP
7	2.435	24.68	46.00	-21.32	14.90	9.64	0.14	0.00	Average
8	2.435	32.88	56.00	-23.12	23.10	9.64	0.14	0.00	QP
9	6.805	16.94	50.00	-33.06	6.98	9.68	0.28	0.00	Average
10	6.805	22.93	60.00	-37.07	12.97	9.68	0.28	0.00	QP
11	12.784	22.54	50.00	-27.46	12.39	9.74	0.41	0.00	Average
12	12.784	26.64	60.00	-33.36	16.49	9.74	0.41	0.00	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).



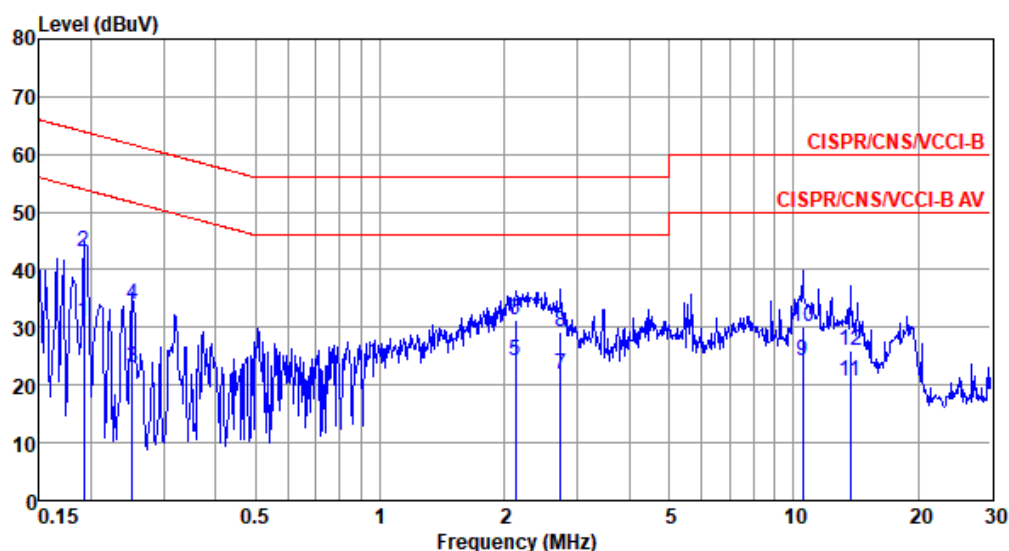
SA Module

Modulation	BT-LE(1Mbps)	Test Freq. (MHz)	2480
Power Phase	Line		

Test by : Wish Yu

Temperature: 23°C

Humidity: 63%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.192	31.05	53.93	-22.88	21.37	9.62	0.06	0.00	Average
2*	0.192	43.10	63.93	-20.83	33.42	9.62	0.06	0.00	QP
3	0.252	23.04	51.69	-28.65	13.36	9.62	0.06	0.00	Average
4	0.252	34.08	61.69	-27.61	24.40	9.62	0.06	0.00	QP
5	2.121	24.34	46.00	-21.66	14.58	9.63	0.13	0.00	Average
6	2.121	31.39	56.00	-24.61	21.63	9.63	0.13	0.00	QP
7	2.736	21.86	46.00	-24.14	12.07	9.64	0.15	0.00	Average
8	2.736	29.09	56.00	-26.91	19.30	9.64	0.15	0.00	QP
9	10.508	24.32	50.00	-25.68	14.26	9.69	0.37	0.00	Average
10	10.508	30.19	60.00	-29.81	20.13	9.69	0.37	0.00	QP
11	13.695	20.56	50.00	-29.44	10.45	9.69	0.42	0.00	Average
12	13.695	26.00	60.00	-34.00	15.89	9.69	0.42	0.00	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

Modulation	BT-LE(1Mbps)	Test Freq. (MHz)	2480																																																																																																																																		
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Level (dBUV) Frequency (MHz) <table><thead><tr><th></th><th>Freq MHz</th><th>Level dBUV</th><th>Limit Line dBUV</th><th>Over Limit dB</th><th>Read Level dBUV</th><th>Factor dB</th><th>Cable loss dB</th><th>Aux dB</th><th>Remark</th></tr></thead><tbody><tr><td>1</td><td>0.183</td><td>26.83</td><td>54.33</td><td>-27.50</td><td>17.14</td><td>9.63</td><td>0.06</td><td>0.00</td><td>Average</td></tr><tr><td>2</td><td>0.183</td><td>39.18</td><td>64.33</td><td>-25.15</td><td>29.49</td><td>9.63</td><td>0.06</td><td>0.00</td><td>QP</td></tr><tr><td>3</td><td>1.135</td><td>17.40</td><td>46.00</td><td>-28.60</td><td>7.66</td><td>9.63</td><td>0.11</td><td>0.00</td><td>Average</td></tr><tr><td>4</td><td>1.135</td><td>24.52</td><td>56.00</td><td>-31.48</td><td>14.78</td><td>9.63</td><td>0.11</td><td>0.00</td><td>QP</td></tr><tr><td>5*</td><td>2.178</td><td>25.22</td><td>46.00</td><td>-20.78</td><td>15.44</td><td>9.64</td><td>0.14</td><td>0.00</td><td>Average</td></tr><tr><td>6</td><td>2.178</td><td>31.01</td><td>56.00</td><td>-24.99</td><td>21.23</td><td>9.64</td><td>0.14</td><td>0.00</td><td>QP</td></tr><tr><td>7</td><td>2.721</td><td>19.60</td><td>46.00</td><td>-26.40</td><td>9.81</td><td>9.64</td><td>0.15</td><td>0.00</td><td>Average</td></tr><tr><td>8</td><td>2.721</td><td>25.71</td><td>56.00</td><td>-30.29</td><td>15.92</td><td>9.64</td><td>0.15</td><td>0.00</td><td>QP</td></tr><tr><td>9</td><td>5.447</td><td>17.97</td><td>50.00</td><td>-32.03</td><td>8.06</td><td>9.67</td><td>0.24</td><td>0.00</td><td>Average</td></tr><tr><td>10</td><td>5.447</td><td>24.10</td><td>60.00</td><td>-35.90</td><td>14.19</td><td>9.67</td><td>0.24</td><td>0.00</td><td>QP</td></tr><tr><td>11</td><td>11.080</td><td>22.33</td><td>50.00</td><td>-27.67</td><td>12.23</td><td>9.72</td><td>0.38</td><td>0.00</td><td>Average</td></tr><tr><td>12</td><td>11.080</td><td>26.52</td><td>60.00</td><td>-33.48</td><td>16.42</td><td>9.72</td><td>0.38</td><td>0.00</td><td>QP</td></tr></tbody></table>					Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark	1	0.183	26.83	54.33	-27.50	17.14	9.63	0.06	0.00	Average	2	0.183	39.18	64.33	-25.15	29.49	9.63	0.06	0.00	QP	3	1.135	17.40	46.00	-28.60	7.66	9.63	0.11	0.00	Average	4	1.135	24.52	56.00	-31.48	14.78	9.63	0.11	0.00	QP	5*	2.178	25.22	46.00	-20.78	15.44	9.64	0.14	0.00	Average	6	2.178	31.01	56.00	-24.99	21.23	9.64	0.14	0.00	QP	7	2.721	19.60	46.00	-26.40	9.81	9.64	0.15	0.00	Average	8	2.721	25.71	56.00	-30.29	15.92	9.64	0.15	0.00	QP	9	5.447	17.97	50.00	-32.03	8.06	9.67	0.24	0.00	Average	10	5.447	24.10	60.00	-35.90	14.19	9.67	0.24	0.00	QP	11	11.080	22.33	50.00	-27.67	12.23	9.72	0.38	0.00	Average	12	11.080	26.52	60.00	-33.48	16.42	9.72	0.38	0.00	QP
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