

FCC Radio Test Report

FCC ID : TLZ-XB644NF

Equipment : IEEE 802.11 1X1 a/b/g/n/ac/ax Wireless LAN + Bluetooth 5.4
+ 802.15.4 Tri-radio M.2 2230 Module

Brand Name : AzureWave

Model Name : AW-XB644NF

Applicant : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City ,
Taiwan 231

Manufacturer : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City ,
Taiwan 231

Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 01, 2024, and testing was started from Aug. 13, 2024 and completed on Aug. 22, 2024. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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


Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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[illegible]

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	20dB Bandwidth	PASS	-
3.2	15.247(a)	Carrier Frequency Separation	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	PASS	-
3.5	15.247(a)	Time of Occupancy (Dwell Time)	PASS	-
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.7	15.247(d)	Emissions in Restricted Frequency Bands	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:

None

Reviewed by: Ben Tseng

Report Producer: Julie Tseng

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Version	Ch. Frequency (MHz)	Channel Number
2400-2483.5	BR / EDR	2402-2480	0-78 [79]

Band	Mode	BWch	Nant
2.4-2.4835GHz	BT-BR(1Mbps)	1	1TX
2.4-2.4835GHz	BT-EDR(2Mbps)	1	1TX
2.4-2.4835GHz	BT-EDR(3Mbps)	1	1TX

Note:

- ♦ Bluetooth BR uses a GFSK (1Mbps).
- ♦ Bluetooth EDR uses a combination of $\pi/4$ -DQPSK (2Mbps) and 8DPSK (3Mbps).
- ♦ Bluetooth BR/EDR uses as a system using FHSS modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	TE Connectivity	2195501-2	PCB	I-PEX	2.4G+5G+BT+Thread
2	TE Connectivity	2195505-2	PCB	I-PEX	2.4G+5G+BT+Thread
3	Inpaq	WA-P-LB-02-587	PCB	I-PEX	2.4G+5G+BT+Thread
4	Inpaq	WA-P-LB-03-129	PCB	I-PEX	2.4G+5G+BT+Thread
5	Inpaq	WA-P-LB-03-130	PCB	I-PEX	2.4G+5G+BT+Thread
6	Inpaq	WA-F-LB-03-110	PCB	I-PEX	2.4G+5G+BT+Thread
7	Inpaq	WA-F-LB-02-187	PCB	I-PEX	2.4G+5G+BT+Thread
8	Inpaq	WA-F-LA-01-015	PCB	I-PEX	2.4G+BT+Thread

Ant.	Gain (dBi)	
	2.4G	5G
1	0.47	1.88
2	0.77	0.96
3	4.43	7.52
4	6.51	3.2
5	4.91	5.84
6	-0.27	2.74
7	0.07	2.39
8	5.66	-

Note 1: The EUT has eight sets of antennas.

Note 2: EUT can match with above antennas for using. The highest gain in each set of antenna was used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (1TX/1RX)

Ant. 1 ~ Ant. 7 could transmit/receive.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

For Thread function:

For IEEE 802.15.4 Thread mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

1.1.3 EUT Information

Operational Condition			
EUT Power Type		From DC Power supply	
EUT Function		☒ Point-to-multipoint	☐ Point-to-point
Type of EUT			
☒	Stand-alone		
☐	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:		...
☐	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:		...
☐	Other:		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T (s)	VBW (Hz)_1/T
BT-BR(1Mbps)	0.771	1.13	2.889m	1k
BT-EDR(2Mbps)	0.77	1.14	2.887m	1k
BT-EDR(3Mbps)	0.77	1.14	2.888m	1k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 558074 D01 v05r02
- ♦ KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
	TEL: 886-3-327-3456		FAX: 886-3-327-0973	
Test site Designation No. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Wayne Chiu	21.6~22.2°C / 55~58%	22/Aug/2024
Radiated (Above 1G)	03CH02-HY	Vasari Huang	21.5~24.3°C / 56~61%	13/Aug/2024~15/Aug/2024
☒ Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)			
	TEL: 886-3-327-0868			
Test site Designation No. TW0036 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH06-HY	Yuna Lin	23.5~23.7°C / 58~64%	20/Aug/2024
Radiated (Below 1G)	03CH24-HY	Andy Wang	23.1~24.6°C / 52~56%	16/Aug/2024

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
AC Power-line Conducted Emissions	4.53 dB	Confidence levels of 95%
Bandwidth	3 MHz	Confidence levels of 95%
Maximum Conducted Output Power	2 dB	Confidence levels of 95%
Emissions in Non-restricted Frequency Bands	0.14 dB	Confidence levels of 95%
Emissions in Restricted Frequency Bands	4.8 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Test Software Version	Dos V6.1
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Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	13.5
2440MHz	13.5
2480MHz	13.5
BT-EDR(2Mbps)	-
2402MHz	13.5
2440MHz	13.5
2480MHz	13.5
BT-EDR(3Mbps)	-
2402MHz	13.5
2440MHz	13.5
2480MHz	13.5

2.2 The Worst Case Measurement Configuration

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

The Worst Case Mode for Following Conformance Tests	
Tests Item	20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains ☒ Non-adaptive frequency hopping systems (Non-AFH) ☒ adaptive frequency hopping systems (AFH)
Non-AFH Mode configuration was found to be the worst case and measured during the test.	

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	Fixture mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

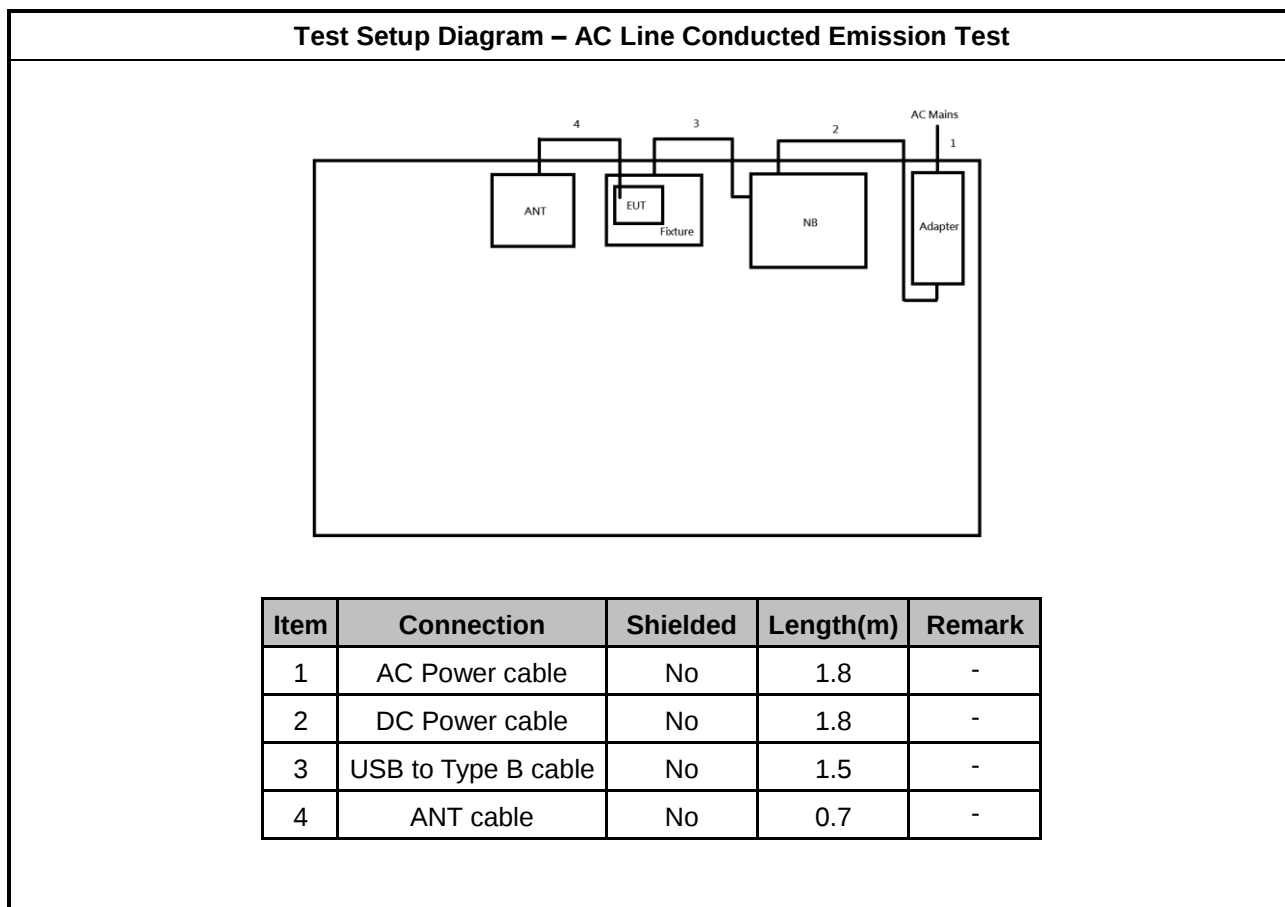
2.3 Support Equipment

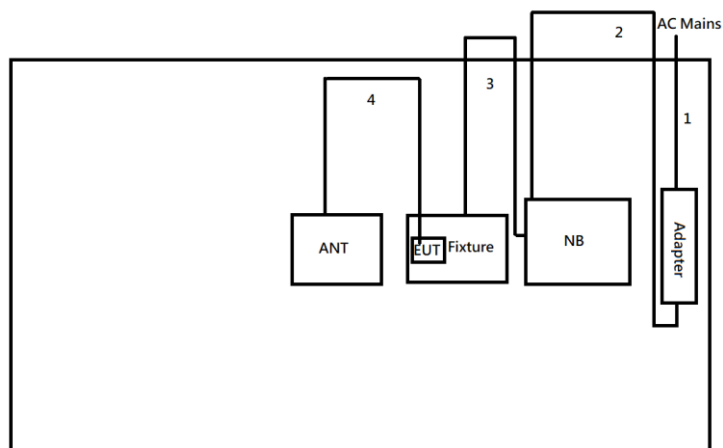
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer
2	Adapter	Apple	A1385	-	-
3	USB to Type-B cable	Sporton	Sporton	-	-
4	NB	DELL	PP13S	-	-
5	Adapter (for NB)	DELL	LA90PM111	-	-
6	AC Power Cable	Power Sync	TPCMRN0018	-	-
7	USB Cable	Sony	1-009-486-12	-	-

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer
2	USB to Type-B cable	Sporton	Sporton	-	-
3	Adapter	Apple	A1385	-	-
4	NB	DELL	PP13S	-	-
5	Adapter (for NB)	DELL	LA90PM111	-	-
6	AC Power Cable	Power Sync	TPCMRN0018	-	-
7	USB Cable	Sony	1-009-486-12	-	-

2.4 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.8	-
3	USB to Type B cable	No	1.5	-
4	ANT cable	No	0.7	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

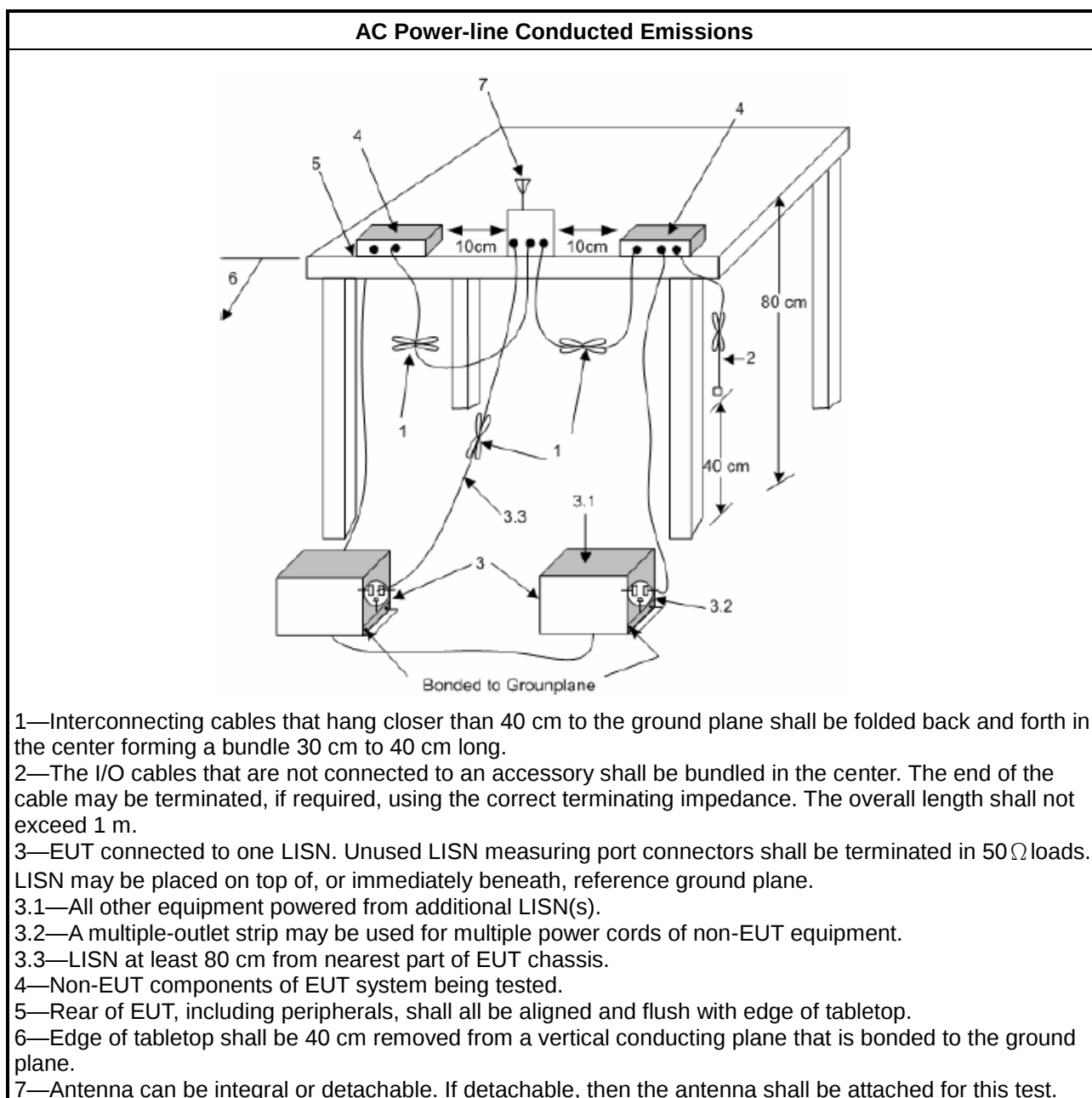
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

3.1.5 Test Setup



3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

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

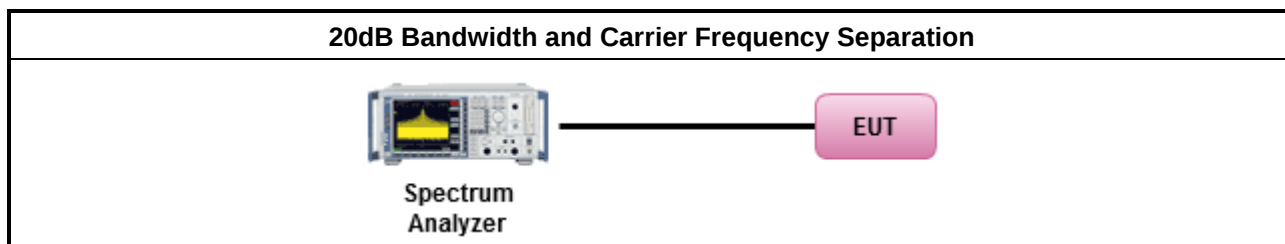
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 6.9.2 for 20 dB bandwidth measurement.
Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement.

3.2.4 Test Setup



3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
▪ 2400-2483.5 MHz Band:	
	▪ $N \geq 75$; Power 30dBm; EIRP 36dBm
	▪ $75 > N \geq 15$; Power 21dBm; EIRP 27dBm
N: Number of Hopping Frequencies	

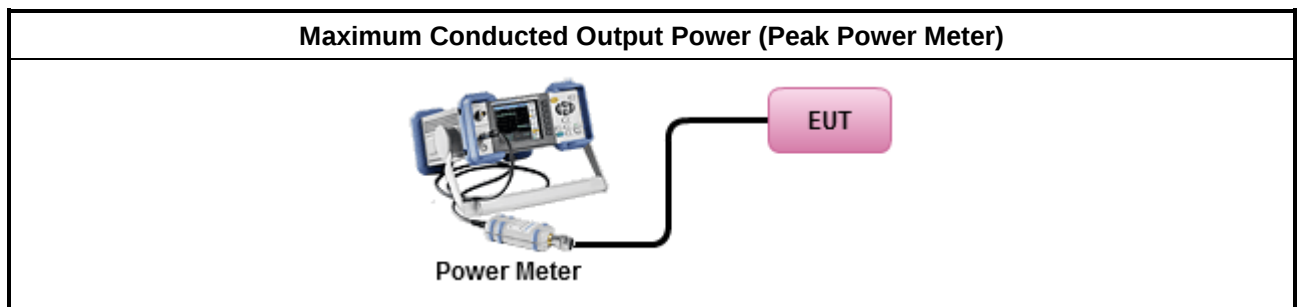
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Number of Hopping Frequencies and Hopping Bandedge

3.4.1 Number of Hopping Frequencies Limit

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

3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

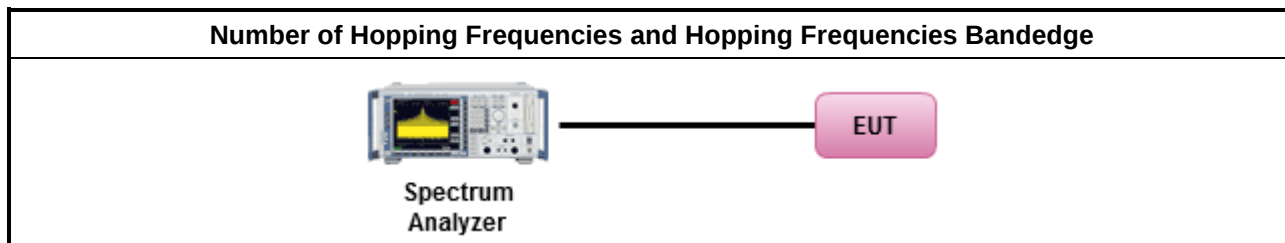
3.4.3 Measuring Instruments

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

3.4.4 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement.
Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.

3.4.5 Test Setup



3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

3.5 Time of Occupancy (Dwell Time)

3.5.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems	
2400-2483.5 MHz Band:	
	$N \geq 75$; 0.4s in $N \times 0.4$ period
	$75 > N \geq 15$; 0.4s in $N \times 0.4$ period
N: Number of Hopping Frequencies	

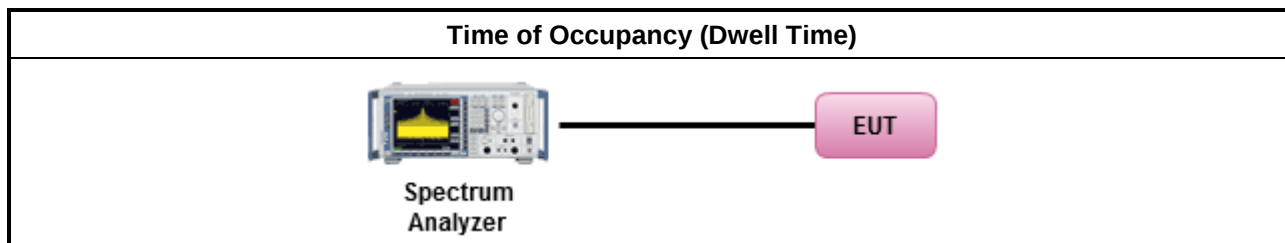
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method	
Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.	
Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.	
	The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $5/1600$ seconds, or 3.125ms. DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel.

3.5.4 Test Setup



3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

3.6 Emissions in Non-restricted Frequency Bands

3.6.1 Emissions in Non-restricted Frequency Bands Limit

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

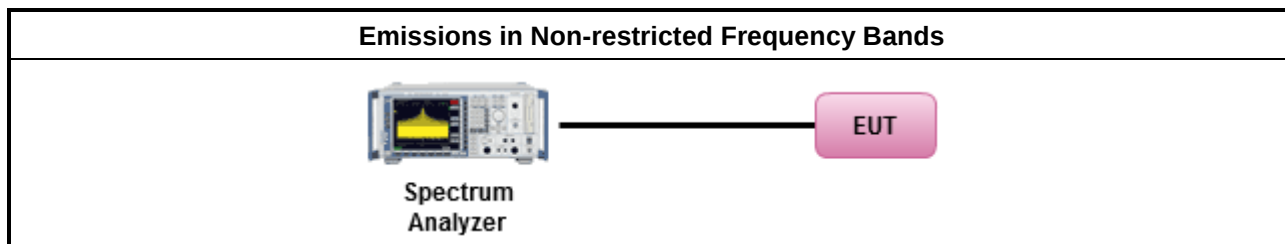
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.

3.6.4 Test Setup



3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix F

3.7 Emissions in Restricted Frequency Bands

3.7.1 Emissions in Restricted Frequency Bands Limit

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

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

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

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

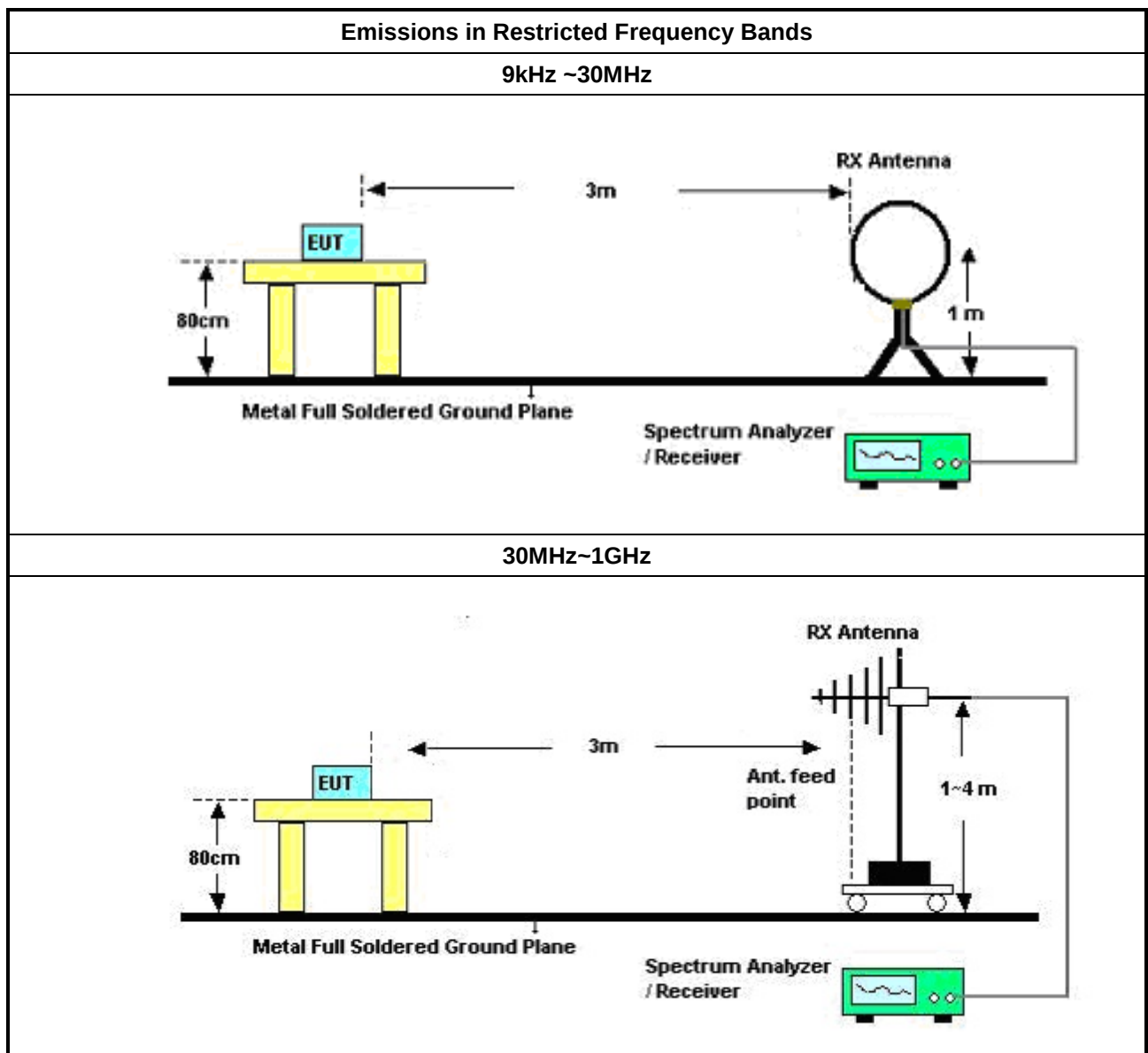
Test Method	
▪	The average emission levels shall be measured in [hopping duty factor].
	Refer as ANSI C63.10; clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
▪	For the transmitter unwanted emissions shall be measured using following options below:
	Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.
	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.
	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.
▪	KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
	Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

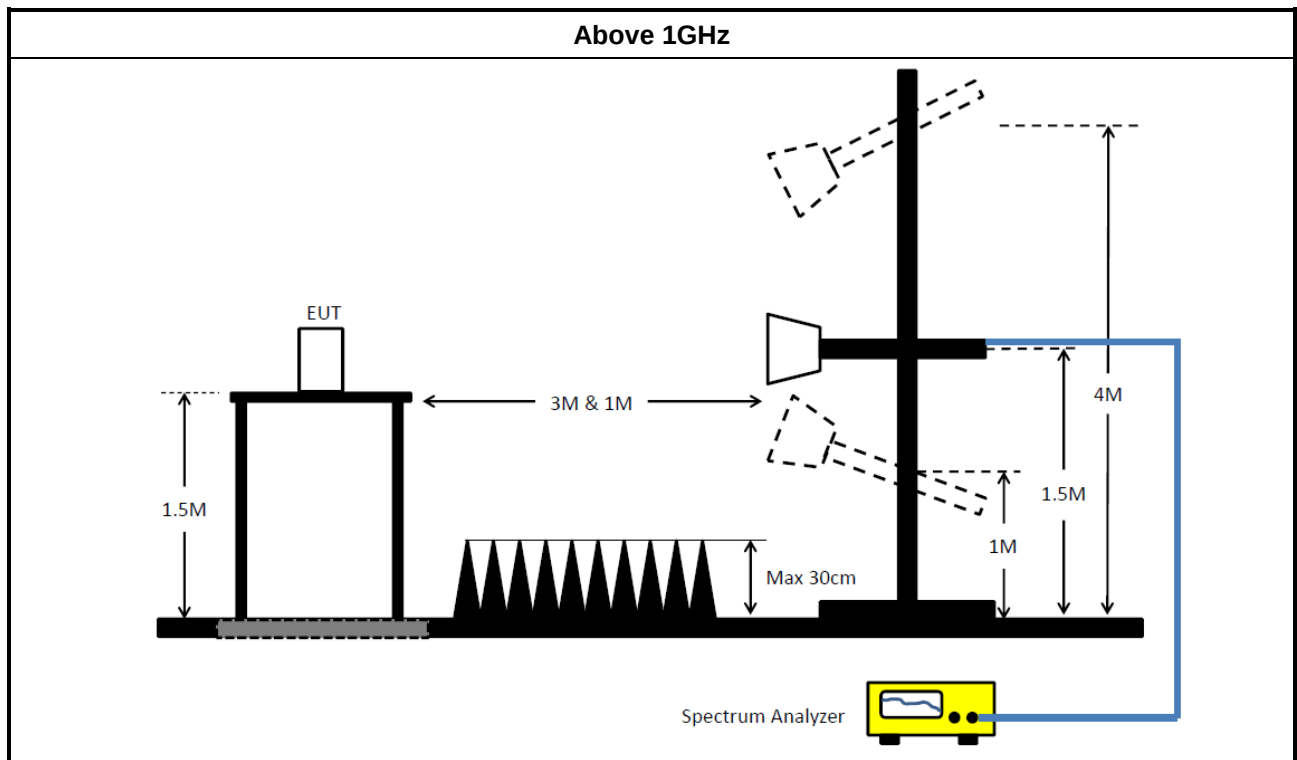
3.7.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor)

3.7.5 Test Setup





3.7.6 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.7.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102051	9kHz ~ 3.6GHz	17/May/2024	16/May/2025
Two-Line V-Network	ROHDE & SCHWARZ	ENV 216	101274	9kHz ~ 30MHz	18/Jun/2024	17/Jun/2025
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	27/Feb/2024	26/Feb/2025
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	18/Oct/2023	17/Oct/2024
Software	Sporton	SENSE-EMI	V5.11.3	-	NCR	NCR

NCR: No Calibration Required

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101029	10Hz~40GHz	30/Oct/2023	29/Oct/2024
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	20/Oct/2023	19/Oct/2024
Power Meter	Anritsu	ML2495A	1124009	300MHz~40GHz	01/Apr/2024	31/Mar/2025
Pulse Sensor	Anritsu	MA2411B	1027452	300MHz~40GHz	02/Apr/2024	01/Apr/2025
SENSE-15247_FS	Sporton	V5.11.18	N/A	N/A	N/A	N/A

Instrument for Radiated Test (03CH24-HY)

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH24-HY	30MHz~1GHz 3m	16/Aug/2024	15/Aug/2025
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101345	10Hz~44GHz	06/Aug/2024	05/Aug/2025
Bilog Antenna & 6dB Attenuator	TESEQ / Woken	CBL 6112D / 00800N1D01N-06	35376 / 02	30MHz~1GHz	14/Apr/2024	13/Apr/2025
Pre-Amplifier	Aglient	8447D	2944A06292	30MHz~1GHz	18/Apr/2024	17/Apr/2025
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB002	9kHz~1GHz	19/Jun/2024	18/Jun/2025
EMI Test Receiver	ROHDE & SCHWARZ	ESR	102318	9kHz~3.6GHz	27/Dec/2023	26/Dec/2024
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	19/Mar/2024	18/Mar/2025
SENSE-15247-FS	Sporton	V5.11.18	NA	NA	NA	NA

**Instrument for Radiated Test (03CH02-HY)**

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz~18GHz 3m	14/Jul/2024	13/Jul/2025
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02268	1GHz~18GHz	23/Sep/2023	22/Sep/2024
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170154	18GHz~40GHz	04/Jun/2024	03/Jun/2025
RF Cable-R03m	HUBER+SUHNE R	SUCOFLEX 104	03CH02-cable-01	1GHz~40GHz	15/Feb/2024	14/Feb/2025
Microwave Preamplifier	SGH	PRAMP 118-HS	202300913-2	1GHz~26.5GHz	18/Jan/2024	17/Jan/2025
Microwave Preamplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~40GHz	19/Apr/2024	18/Apr/2025
SENSE-15247-FS	Sporton	V5.11.18	NA	NA	19/Apr/2024	18/Apr/2025



Conducted Emissions at Powerline

Appendix A

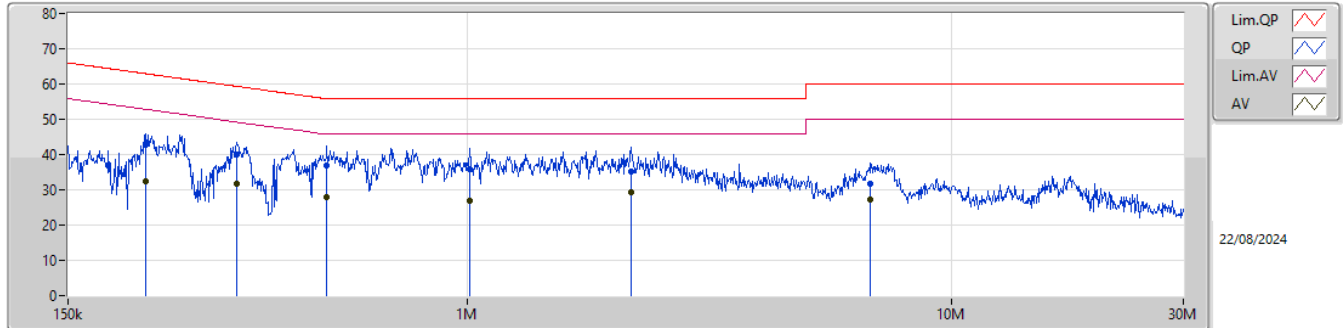
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	447.846k	32.29	46.92	-14.63	Neutral

Result

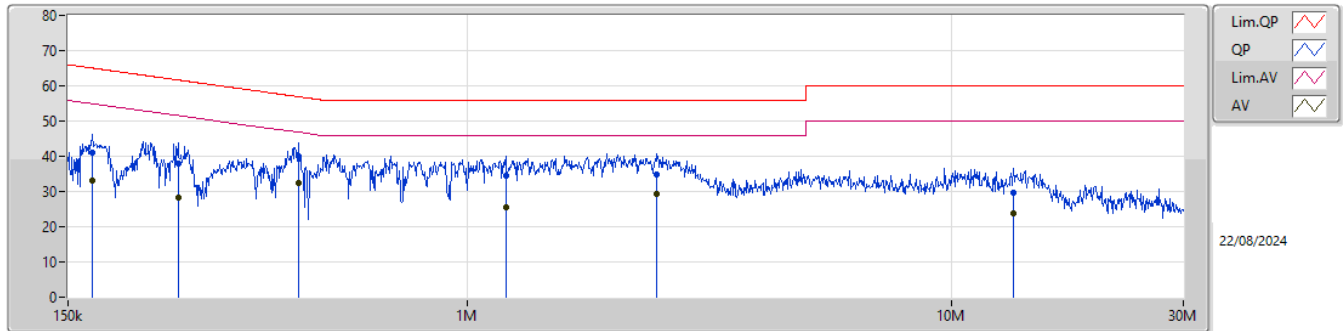
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	217.434k	42.89	62.92	-20.03	Line	-
Mode 1	Pass	AV	217.434k	32.44	52.92	-20.48	Line	-
Mode 1	Pass	QP	334.632k	40.09	59.33	-19.24	Line	-
Mode 1	Pass	AV	334.632k	31.73	49.33	-17.60	Line	-
Mode 1	Pass	QP	512.95k	36.81	56.00	-19.19	Line	-
Mode 1	Pass	AV	512.95k	27.82	46.00	-18.18	Line	-
Mode 1	Pass	QP	1.011M	35.91	56.00	-20.09	Line	-
Mode 1	Pass	AV	1.011M	27.05	46.00	-18.95	Line	-
Mode 1	Pass	QP	2.176M	35.24	56.00	-20.76	Line	-
Mode 1	Pass	AV	2.176M	29.24	46.00	-16.76	Line	-
Mode 1	Pass	QP	6.789M	31.89	60.00	-28.11	Line	-
Mode 1	Pass	AV	6.789M	27.10	50.00	-22.90	Line	-
Mode 1	Pass	QP	168.41k	40.98	65.04	-24.06	Neutral	-
Mode 1	Pass	AV	168.41k	33.16	55.04	-21.88	Neutral	-
Mode 1	Pass	QP	253.051k	37.84	61.66	-23.82	Neutral	-
Mode 1	Pass	AV	253.051k	28.30	51.66	-23.36	Neutral	-
Mode 1	Pass	QP	447.846k	40.11	56.92	-16.81	Neutral	-
Mode 1	Pass	AV	447.846k	32.29	46.92	-14.63	Neutral	-
Mode 1	Pass	QP	1.2M	34.32	56.00	-21.68	Neutral	-
Mode 1	Pass	AV	1.2M	25.53	46.00	-20.47	Neutral	-
Mode 1	Pass	QP	2.463M	34.81	56.00	-21.19	Neutral	-
Mode 1	Pass	AV	2.463M	29.26	46.00	-16.74	Neutral	-
Mode 1	Pass	QP	13.382M	29.69	60.00	-30.31	Neutral	-
Mode 1	Pass	AV	13.382M	23.85	50.00	-26.15	Neutral	-

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	217.434k	42.89	62.92	-20.03	19.43	Line	-	23.46	9.65	0.09	9.69						
AV	217.434k	32.44	52.92	-20.48	19.43	Line	-	13.01	9.65	0.09	9.69						
QP	334.632k	40.09	59.33	-19.24	19.50	Line	-	20.59	9.65	0.11	9.74						
AV	334.632k	31.73	49.33	-17.60	19.50	Line	-	12.23	9.65	0.11	9.74						
QP	512.95k	36.81	56.00	-19.19	19.53	Line	-	17.28	9.65	0.11	9.77						
AV	512.95k	27.82	46.00	-18.18	19.53	Line	-	8.29	9.65	0.11	9.77						
QP	1.011M	35.91	56.00	-20.09	19.55	Line	-	16.36	9.66	0.09	9.80						
AV	1.011M	27.05	46.00	-18.95	19.55	Line	-	7.50	9.66	0.09	9.80						
QP	2.176M	35.24	56.00	-20.76	19.58	Line	-	15.66	9.67	0.11	9.80						
AV	2.176M	29.24	46.00	-16.76	19.58	Line	-	9.66	9.67	0.11	9.80						
QP	6.789M	31.89	60.00	-28.11	19.55	Line	-	12.34	9.70	0.06	9.79						
AV	6.789M	27.10	50.00	-22.90	19.55	Line	-	7.55	9.70	0.06	9.79						

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	168.41k	40.98	65.04	-24.06	19.41	Neutral	-	21.57	9.60	0.08	9.73						
AV	168.41k	33.16	55.04	-21.88	19.41	Neutral	-	13.75	9.60	0.08	9.73						
QP	253.051k	37.84	61.66	-23.82	19.41	Neutral	-	18.43	9.60	0.10	9.71						
AV	253.051k	28.30	51.66	-23.36	19.41	Neutral	-	8.89	9.60	0.10	9.71						
QP	447.846k	40.11	56.92	-16.81	19.48	Neutral	-	20.63	9.60	0.12	9.76						
AV	447.846k	32.29	46.92	-14.63	19.48	Neutral	-	12.81	9.60	0.12	9.76						
QP	1.2M	34.32	56.00	-21.68	19.51	Neutral	-	14.81	9.61	0.10	9.80						
AV	1.2M	25.53	46.00	-20.47	19.51	Neutral	-	6.02	9.61	0.10	9.80						
QP	2.463M	34.81	56.00	-21.19	19.51	Neutral	-	15.30	9.61	0.10	9.80						
AV	2.463M	29.26	46.00	-16.74	19.51	Neutral	-	9.75	9.61	0.10	9.80						
QP	13.382M	29.69	60.00	-30.31	19.56	Neutral	-	10.13	9.66	0.08	9.82						
AV	13.382M	23.85	50.00	-26.15	19.56	Neutral	-	4.29	9.66	0.08	9.82						



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	1.015M	894.553k	895KF1D	932.25k	879.56k
BT-EDR(2Mbps)	1.323M	1.196M	1M20G1D	1.304M	1.179M
BT-EDR(3Mbps)	1.331M	1.207M	1M21G1D	1.306M	1.184M

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

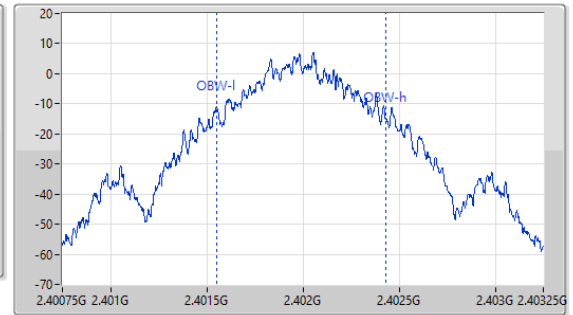
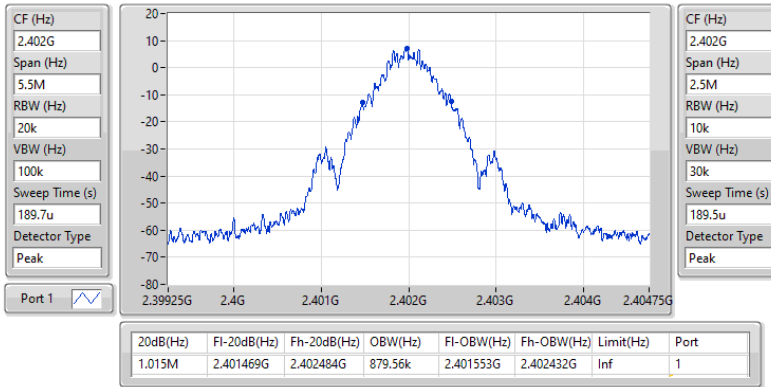
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.015M	879.56k
2440MHz	Pass	Inf	940.5k	889.555k
2480MHz	Pass	Inf	932.25k	894.553k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.304M	1.179M
2440MHz	Pass	Inf	1.315M	1.196M
2480MHz	Pass	Inf	1.323M	1.191M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.331M	1.184M
2440MHz	Pass	Inf	1.306M	1.206M
2480MHz	Pass	Inf	1.306M	1.207M

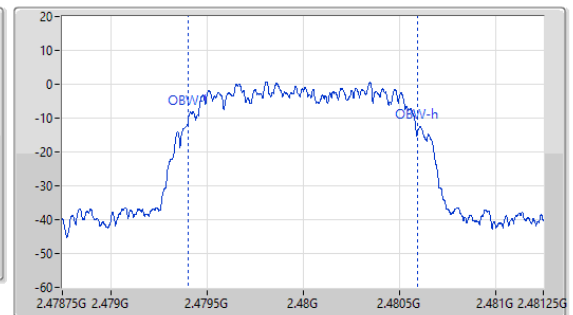
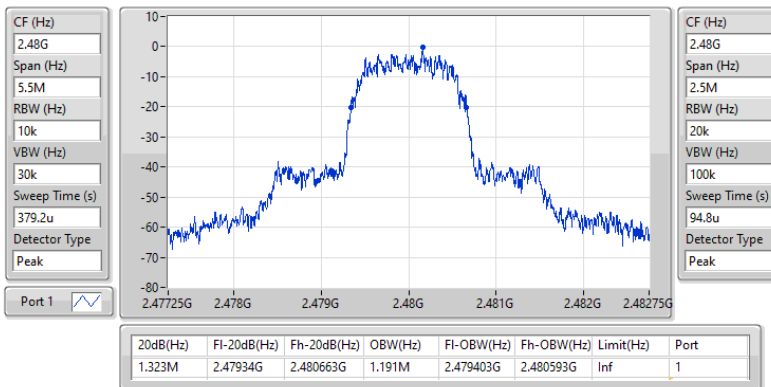
Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-BR(1Mbps)
EBW-FS
2402MHz

20/08/2024


2.4-2.4835GHz_BT-EDR(2Mbps)
EBW-FS
2480MHz

20/08/2024

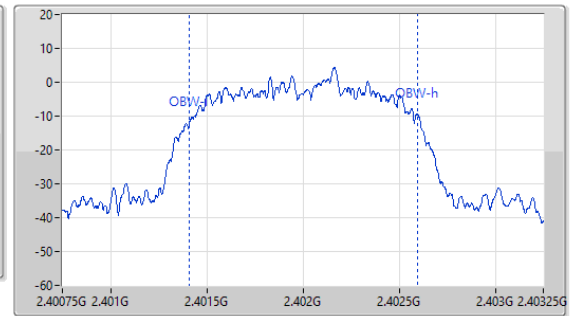
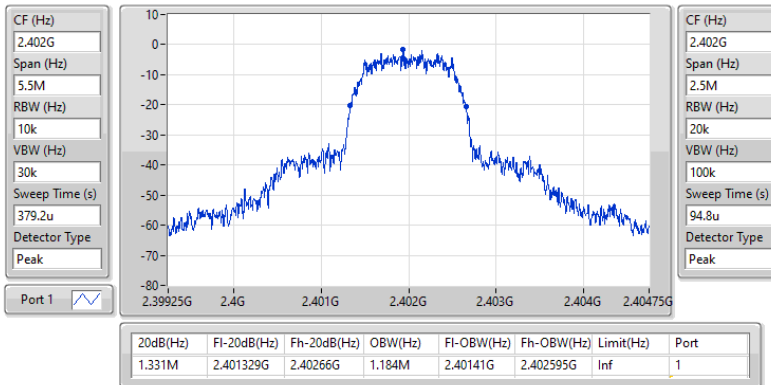


2.4-2.4835GHz_BT-EDR(3Mbps)

EBW-FS

2402MHz

20/08/2024





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	13.66	0.02323
BT-EDR(2Mbps)	12.28	0.01690
BT-EDR(3Mbps)	12.49	0.01774



Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	6.51	13.55	20.49
2440MHz	Pass	6.51	13.66	20.49
2480MHz	Pass	6.51	13.58	20.49
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	6.51	12.28	20.49
2440MHz	Pass	6.51	12.25	20.49
2480MHz	Pass	6.51	12.21	20.49
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	6.51	12.49	20.49
2440MHz	Pass	6.51	12.48	20.49
2480MHz	Pass	6.51	12.44	20.49

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.



Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	13.27	0.02123
BT-EDR(2Mbps)	9.91	0.00979
BT-EDR(3Mbps)	9.90	0.00977

Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	6.51	13.24	20.49
2440MHz	Pass	6.51	13.27	20.49
2480MHz	Pass	6.51	13.26	20.49
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	6.51	9.91	20.49
2440MHz	Pass	6.51	9.86	20.49
2480MHz	Pass	6.51	9.78	20.49
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	6.51	9.90	20.49
2440MHz	Pass	6.51	9.84	20.49
2480MHz	Pass	6.51	9.81	20.49

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.



Summary

Mode	Max-Hop No
2.4-2.4835GHz	-
BT-BR(1Mbps)	79
BT-EDR(2Mbps)	79
BT-EDR(3Mbps)	79

Result

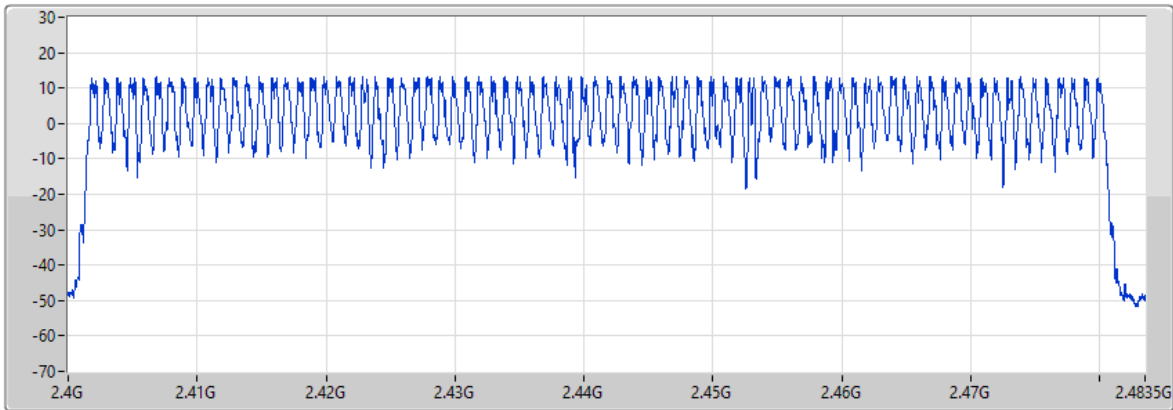
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2440MHz	Pass	79	15

2.4-2.4835GHz_BT-BR(1Mbps)

Hopping-FS

2440MHz

20/08/2024



Port 1 

Hopping No
79

Span (Hz)
83.5M

RBW (Hz)
100k

VBW (Hz)
300kHz

Sweep (s)
265.3us

Detector
Peak

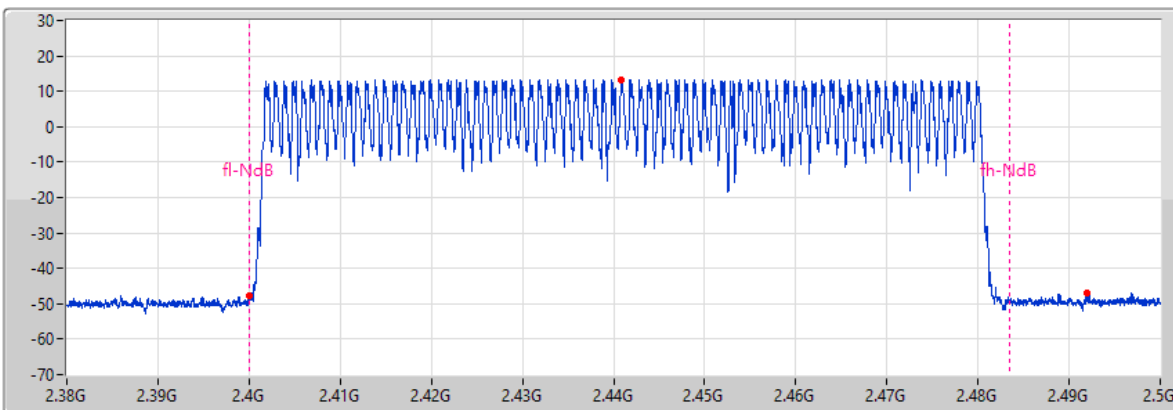
Hopping No	Limit
79	15

2.4-2.4835GHz_BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

20/08/2024



Port 1 

Span (Hz)
120M

RBW (Hz)
100k

VBW (Hz)
300k

Sweep (s)
265.3u

Detector
Peak

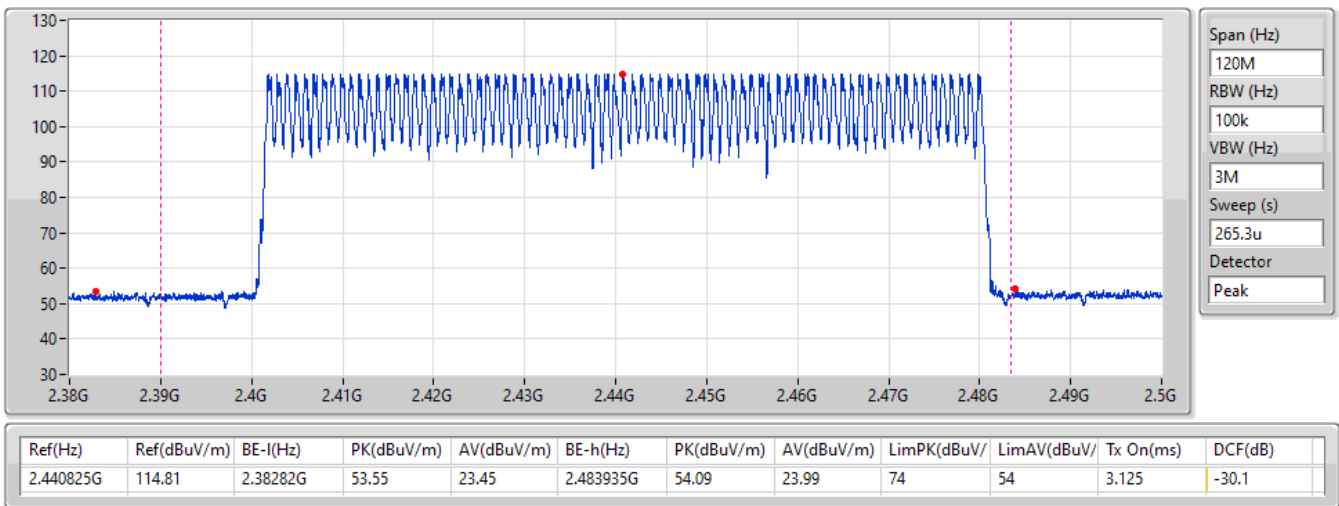
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-6.87	2.440825G	13.13	2.399965G	-47.9	2.492005G	-46.76

2.4-2.4835GHz_BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

20/08/2024

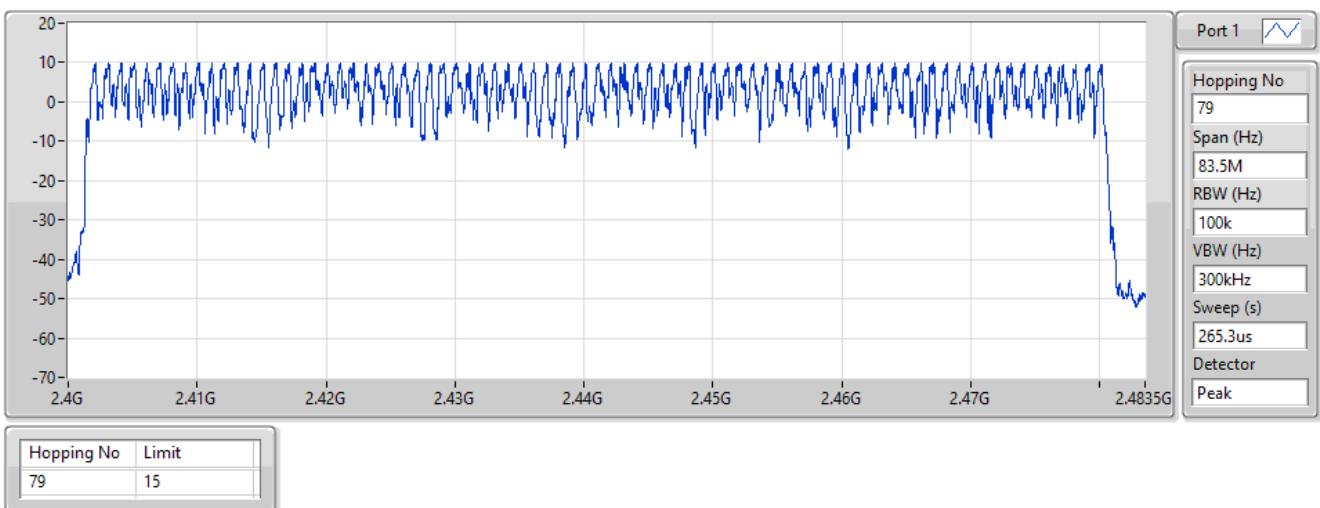


2.4-2.4835GHz_BT-EDR(2Mbps)

2440MHz

Hopping-FS

20/08/2024

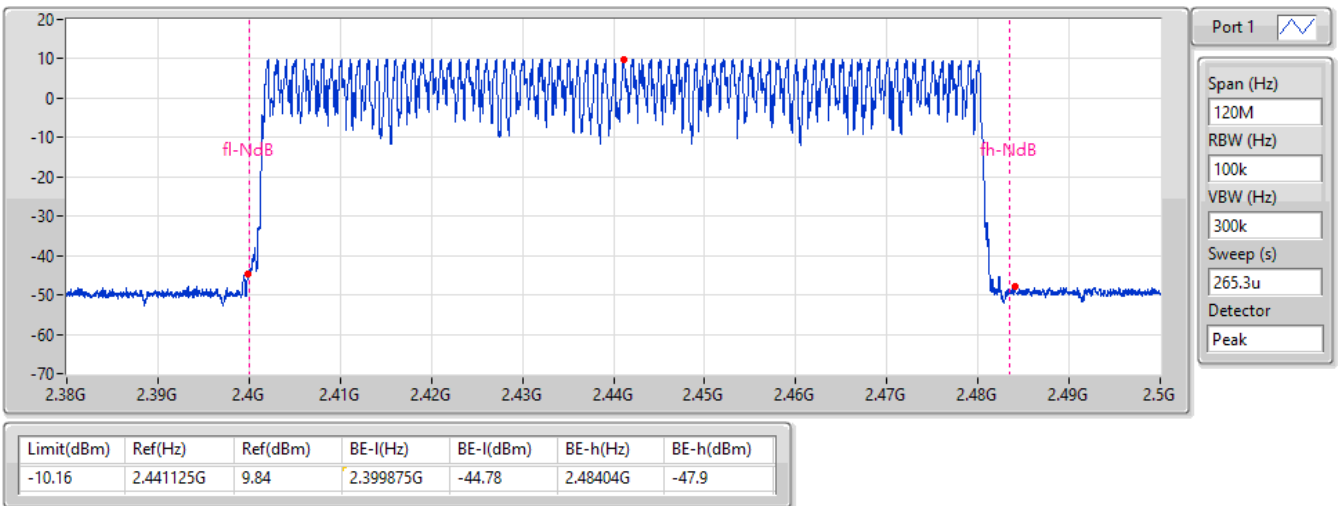


2.4-2.4835GHz_BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

20/08/2024

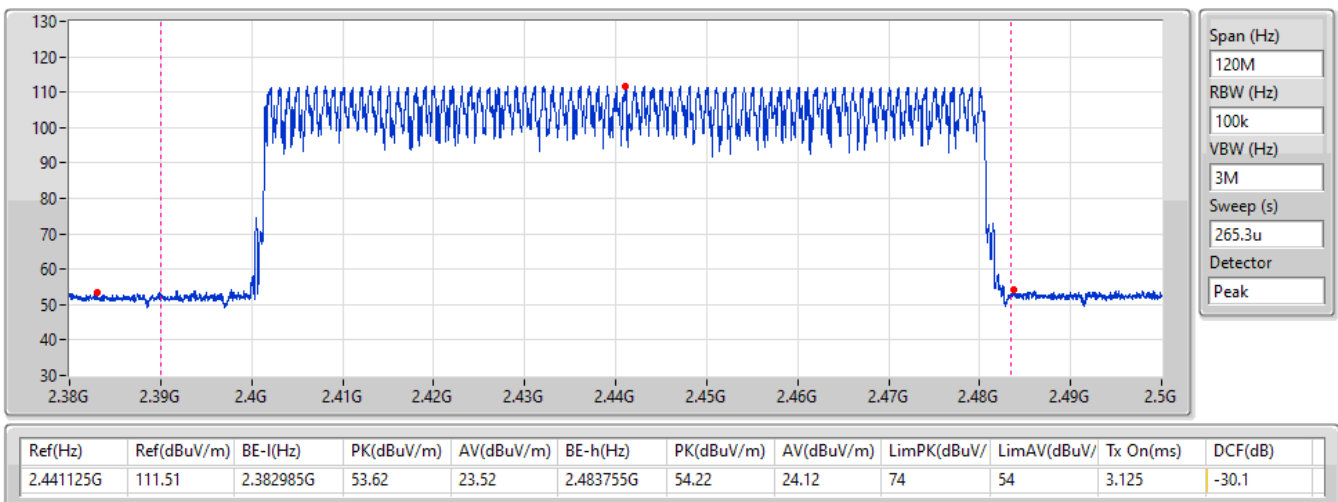


2.4-2.4835GHz_BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

20/08/2024

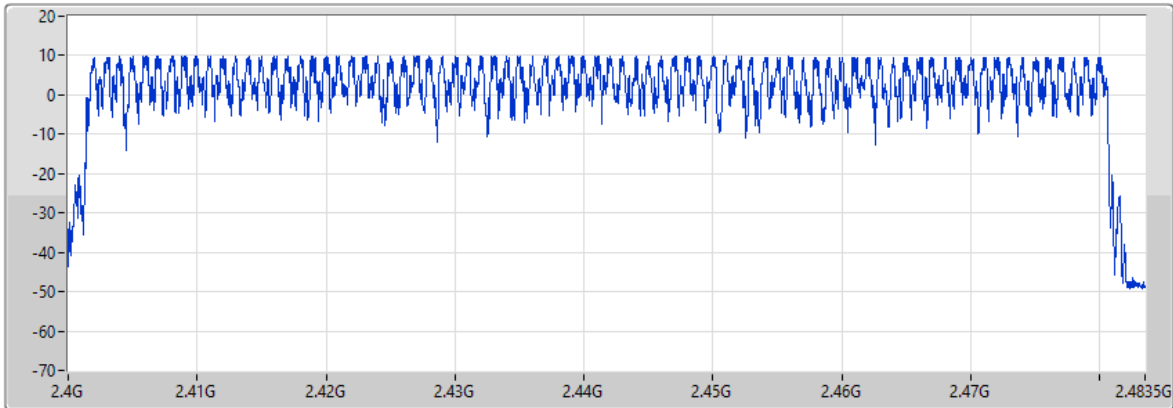


2.4-2.4835GHz_BT-EDR(3Mbps)

Hopping-FS

2440MHz

20/08/2024



Port 1 

Hopping No
79

Span (Hz)
83.5M

RBW (Hz)
100k

VBW (Hz)
300kHz

Sweep (s)
8.01ms

Detector
Peak

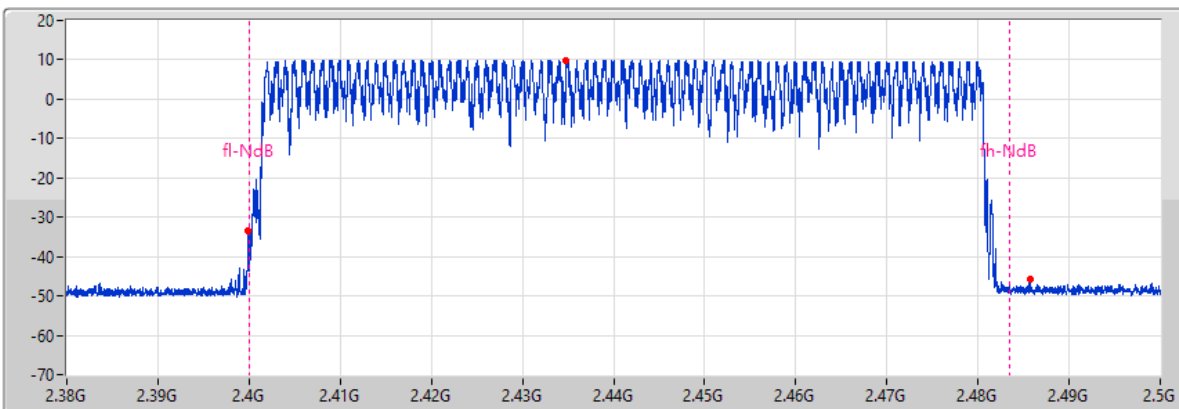
Hopping No	Limit
79	15

2.4-2.4835GHz_BT-EDR(3Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

20/08/2024



Port 1 

Span (Hz)
120M

RBW (Hz)
100k

VBW (Hz)
300k

Sweep (s)
8.01m

Detector
Peak

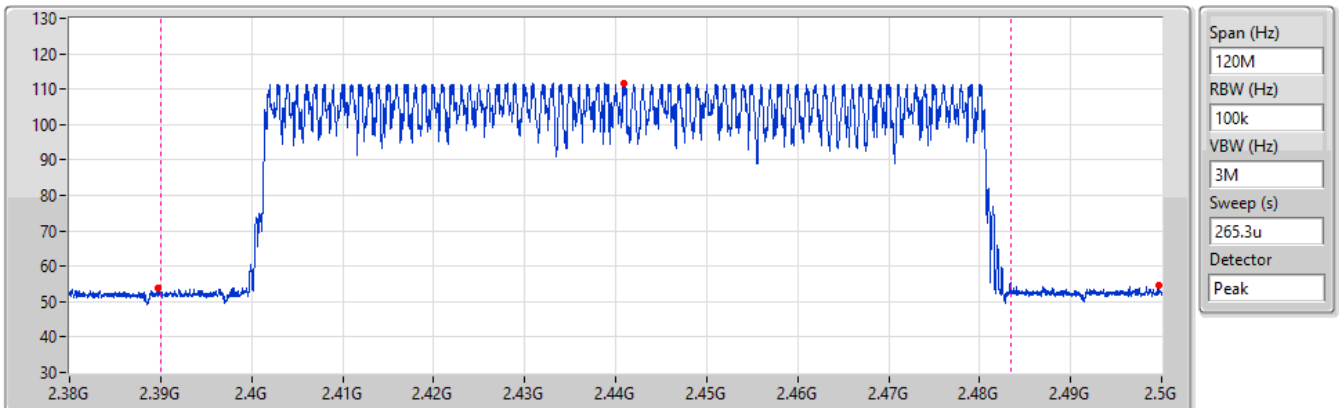
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-10.29	2.43484G	9.71	2.39992G	-33.32	2.48569G	-45.91

2.4-2.4835GHz_BT-EDR(3Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

20/08/2024



Ref(Hz)	Ref(dBuV/m)	BE-l(Hz)	PK(dBuV/m)	AV(dBuV/m)	BE-h(Hz)	PK(dBuV/m)	AV(dBuV/m)	LimPK(dBuV/	LimAV(dBuV/	Tx On(ms)	DCF(dB)
2.44084G	111.51	2.389705G	53.8	23.7	2.499655G	54.52	24.42	74	54	3.125	-30.1



Summary

2.4-2.4835GHz	-
BT-BR(1Mbps)	308.31385m_DH5
BT-EDR(2Mbps)	308.2872m_DH5
BT-EDR(3Mbps)	308.5004m_DH5

Result

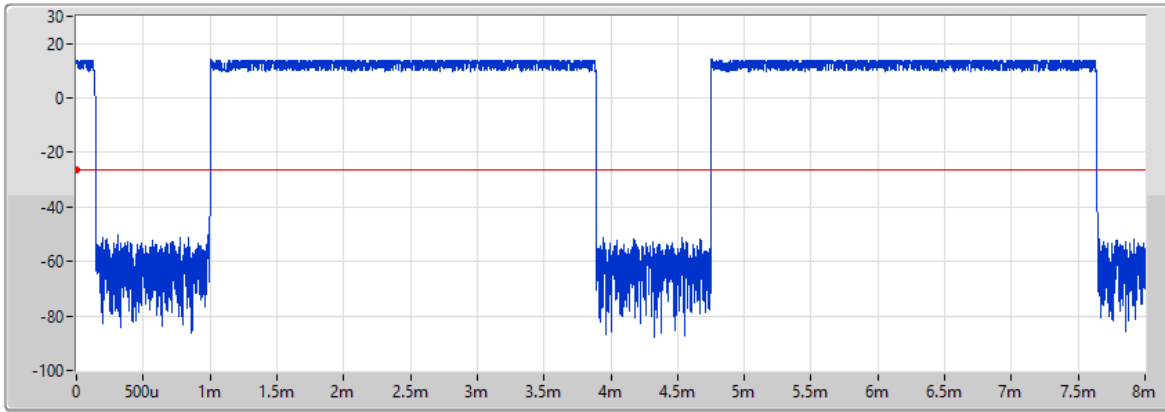
Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.31385m_DH5	400m	2.89225m
2440MHz	Pass	8	154.17025m_DH5-AFH	400m	2.8925m
BT-EDR(2Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.2872m_DH5	400m	2.892m
2440MHz	Pass	8	154.156925m_DH5-AFH	400m	2.89225m
BT-EDR(3Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.5004m_DH5	400m	2.894m
2440MHz	Pass	8	154.2502m_DH5-AFH	400m	2.894m

2.4-2.4835GHz_BT-BR(1Mbps)

Dwell-FS

2440MHz

20/08/2024



Port 1

Ch Freq (Hz)

2.44G

RBW (Hz)

300k

VBW (Hz)

1M

Sweep Time (s)

8m

TX Time (s)

2.89225m

DH5

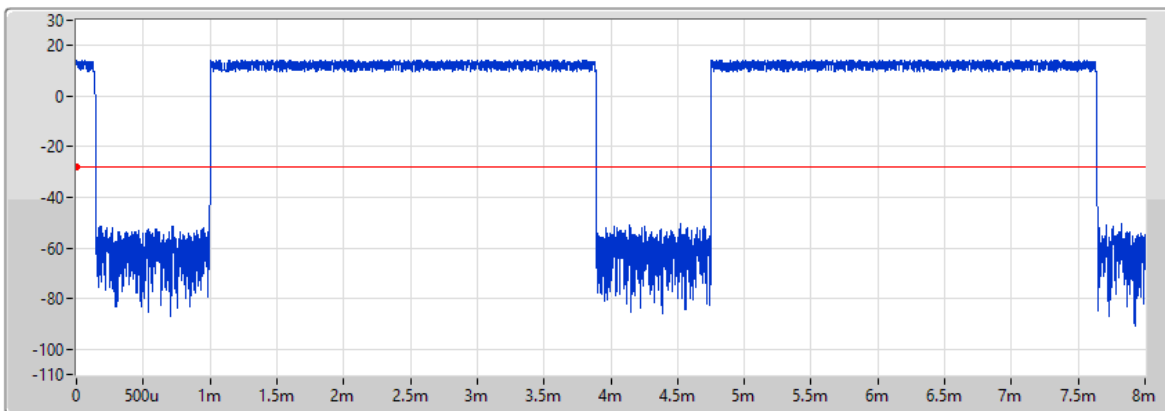
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	308.31385m_DH5	400m	2.89225m

2.4-2.4835GHz_BT-BR(1Mbps)

Dwell-FS

2440MHz

20/08/2024



Port 1

Ch Freq (Hz)

2.44G

RBW (Hz)

300k

VBW (Hz)

1M

Sweep Time (s)

8m

TX Time (s)

2.8925m

DH5-AFH

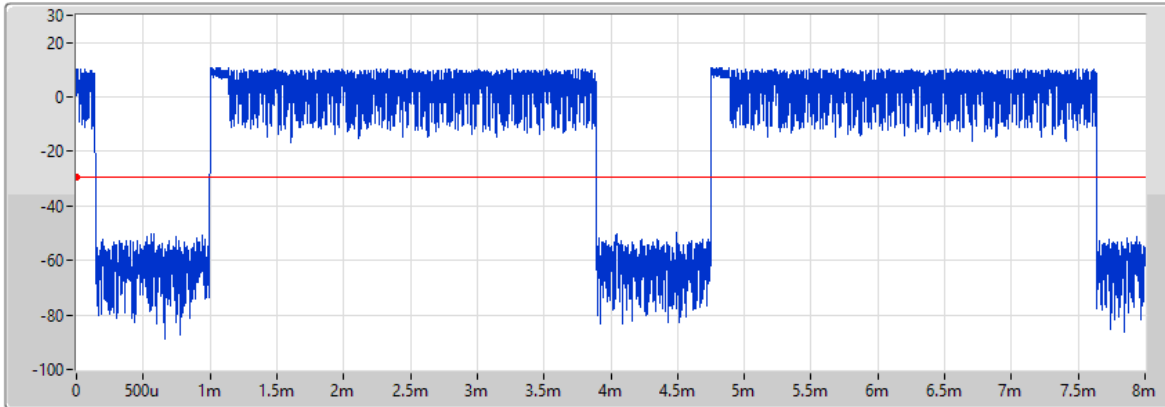
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	154.17025m_DH5-AFH	400m	2.8925m

2.4-2.4835GHz_BT-EDR(2Mbps)

Dwell-FS

2440MHz

20/08/2024



DH5

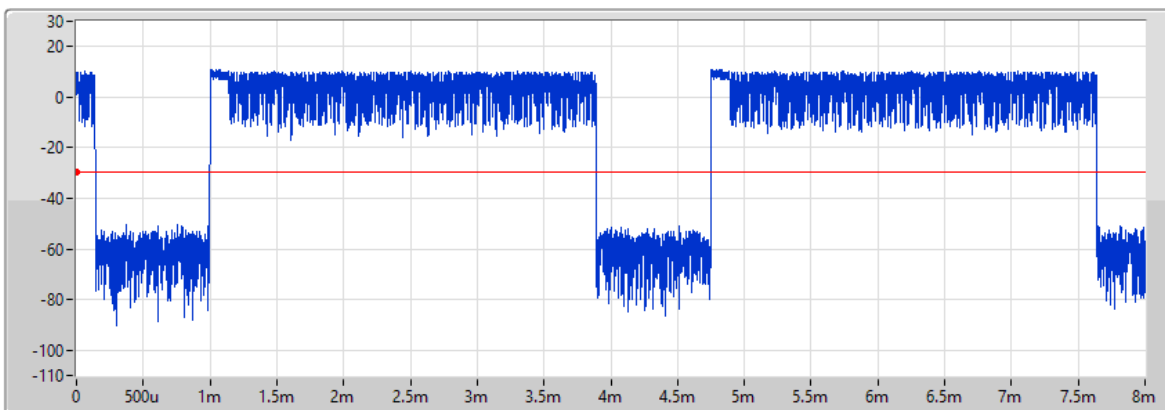
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	308.2872m_DH5	400m	2.892m

2.4-2.4835GHz_BT-EDR(2Mbps)

Dwell-FS

2440MHz

20/08/2024



DH5-AFH

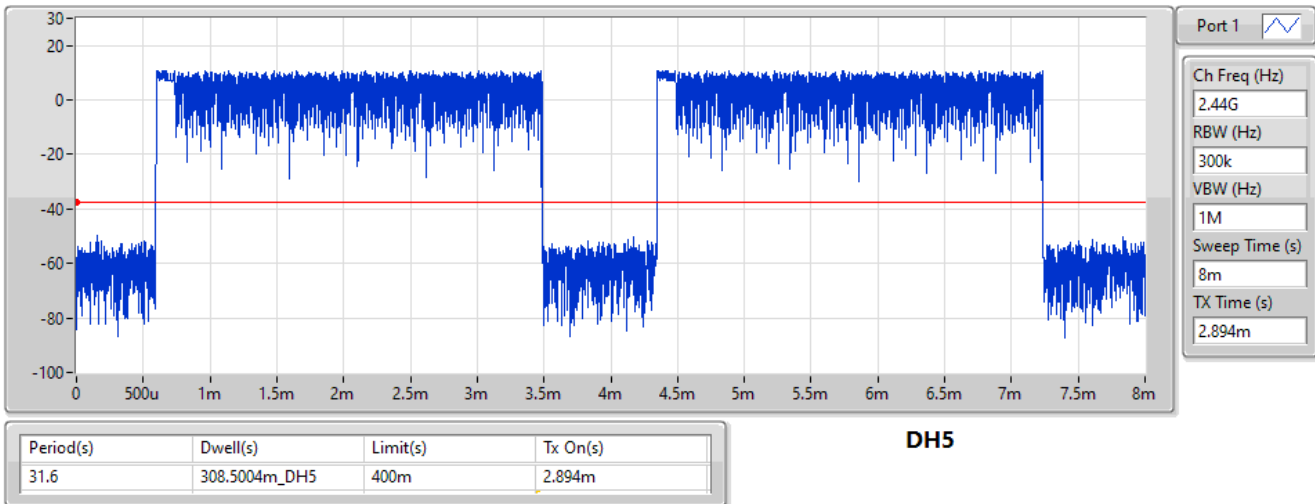
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	154.156925m_DH5-AFH	400m	2.89225m

2.4-2.4835GHz_BT-EDR(3Mbps)

Dwell-FS

2440MHz

20/08/2024

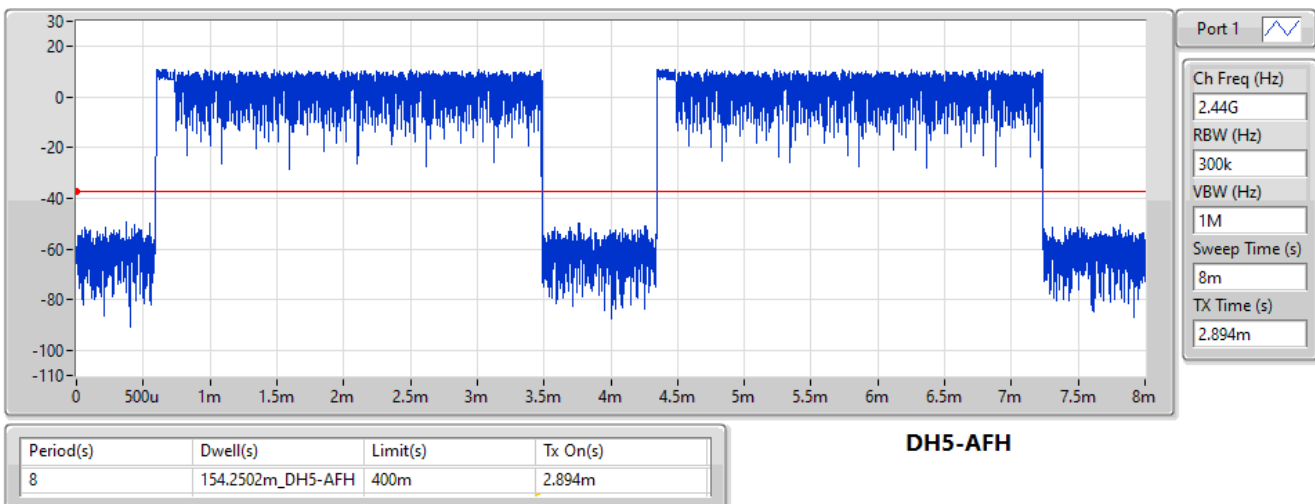


2.4-2.4835GHz_BT-EDR(3Mbps)

Dwell-FS

2440MHz

20/08/2024





Summary

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.43975G	12.69	-7.31	864.25M	-55.21	2.39944G	-47.35	2.4G	-45.53	2.50046G	-53.74	15.33494G	-41.74	1
BT-EDR(2Mbps)	Pass	2.40301G	9.25	-10.75	1.95935G	-55.61	2.39992G	-48.93	2.4G	-48.78	2.50266G	-54.15	16.56944G	-42.06	1
BT-EDR(3Mbps)	Pass	2.402G	9.44	-10.56	651.58M	-54.98	2.39992G	-40.81	2.4G	-38.23	2.50126G	-53.76	16.23199G	-41.03	1

Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43975G	12.69	-7.31	864.25M	-55.21	2.39944G	-47.35	2.4G	-45.53	2.50046G	-53.74	15.33494G	-41.74	1
2440MHz	Pass	2.43975G	12.69	-7.31	899.5M	-55.65	2.39984G	-49.85	2.4G	-55.56	2.50054G	-53.49	16.63411G	-41.94	1
2480MHz	Pass	2.43975G	12.69	-7.31	2.0275G	-56.10	2.39976G	-52.05	2.4G	-54.25	2.5001G	-52.89	16.24043G	-41.52	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40301G	9.25	-10.75	1.95935G	-55.61	2.39992G	-48.93	2.4G	-48.78	2.50266G	-54.15	16.56944G	-42.06	1
2440MHz	Pass	2.40301G	9.25	-10.75	765.55M	-55.39	2.39172G	-52.98	2.4G	-54.08	2.50062G	-53.37	16.87876G	-41.98	1
2480MHz	Pass	2.40301G	9.25	-10.75	2.12033G	-55.47	2.39248G	-53.77	2.4G	-56.40	2.50014G	-53.73	24.62037G	-41.80	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	9.44	-10.56	651.58M	-54.98	2.39992G	-40.81	2.4G	-38.23	2.50126G	-53.76	16.23199G	-41.03	1
2440MHz	Pass	2.402G	9.44	-10.56	2.0792G	-55.73	2.39948G	-52.48	2.4G	-55.93	2.5021G	-54.15	17.62677G	-42.31	1
2480MHz	Pass	2.402G	9.44	-10.56	2.16263G	-55.21	2.39672G	-53.45	2.4G	-55.88	2.50182G	-53.70	16.24324G	-42.02	1

2.4-2.4835GHz_BT-BR(1Mbps)

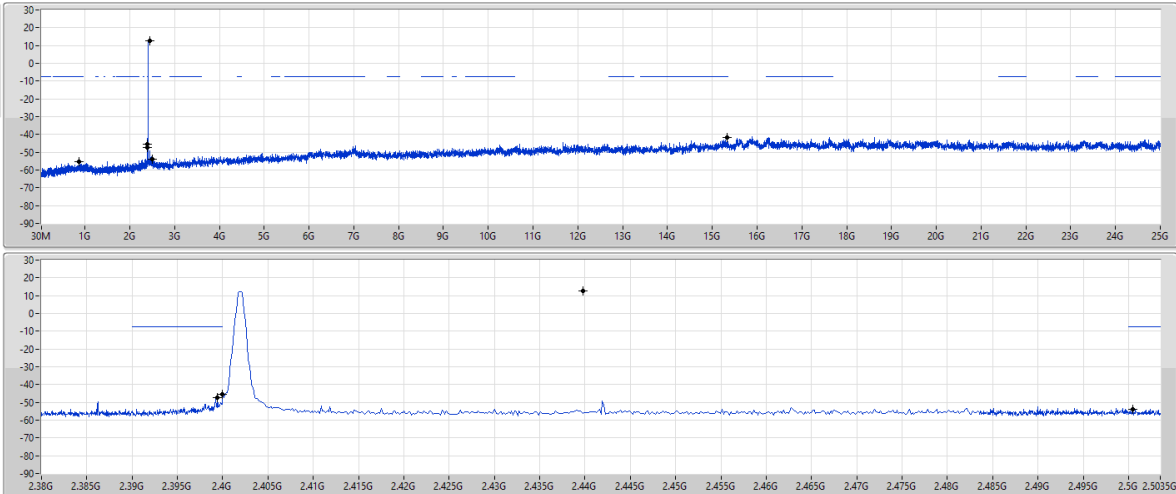
CSENdB-FS

2402MHz

20/08/2024

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43975G	12.69	-7.31	864.25M	-55.21	2.39944G	-47.35	2.4G	-45.53	2.50046G	-53.74	15.33494G	-41.74	1

2.4-2.4835GHz_BT-EDR(2Mbps)

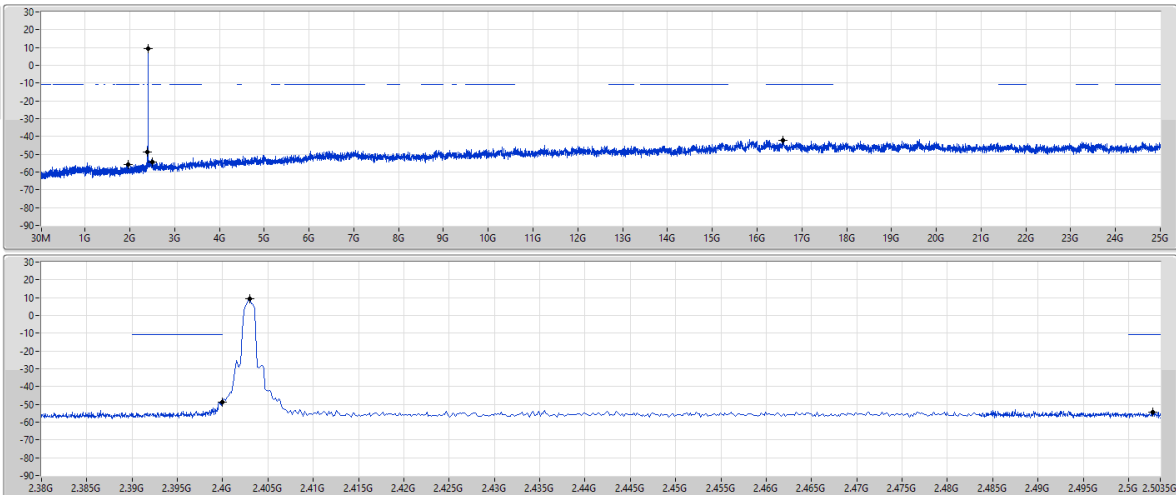
CSENdB-FS

2402MHz

20/08/2024

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40301G	9.25	-10.75	1.95935G	-55.61	2.39992G	-48.93	2.4G	-48.78	2.50266G	-54.15	16.56944G	-42.06	1

2.4-2.4835GHz_BT-EDR(3Mbps)

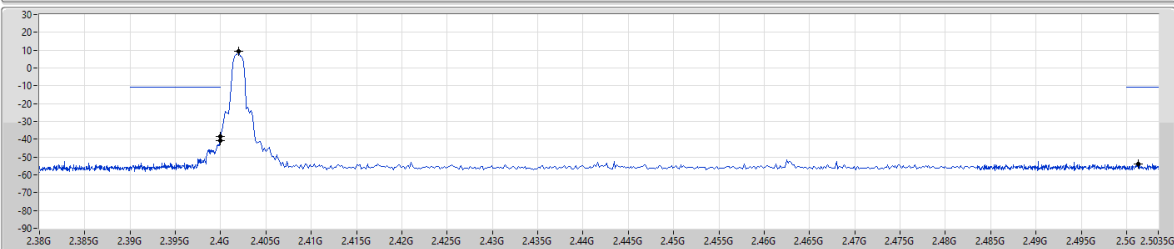
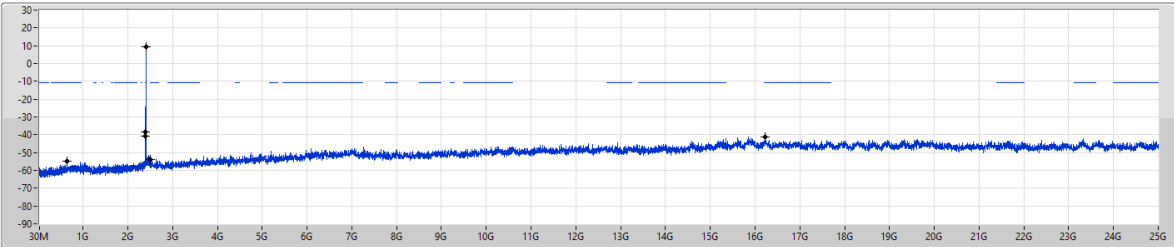
CSEndB-FS

2402MHz

20/08/2024

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.402G	9.44	-10.56	651.58M	-54.98	2.39992G	-40.81	2.4G	-38.23	2.50126G	-53.76	16.23199G	-41.03	1



Summary

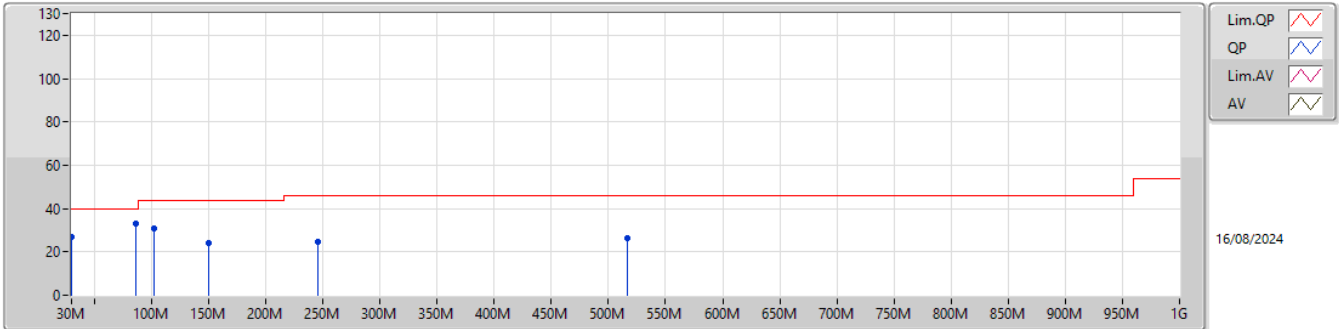
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-EDR(3Mbps)	Pass	PK	86.26M	33.30	40.00	-6.70	3	Vertical	360	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-
2440MHz_Fixture	Pass	PK	30M	26.85	40.00	-13.15	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	86.26M	33.30	40.00	-6.70	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	101.78M	30.92	43.50	-12.58	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	150.28M	24.19	43.50	-19.31	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	245.34M	24.48	46.00	-21.52	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	516.94M	26.11	46.00	-19.89	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	45.52M	27.43	40.00	-12.57	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	101.78M	32.89	43.50	-10.61	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	142.52M	34.05	43.50	-9.45	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	191.02M	25.10	43.50	-18.40	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	313.24M	27.54	46.00	-18.46	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	516.94M	31.79	46.00	-14.21	3	Horizontal	0	1.00

2.4-2.4835GHz_BT-EDR(3Mbps)

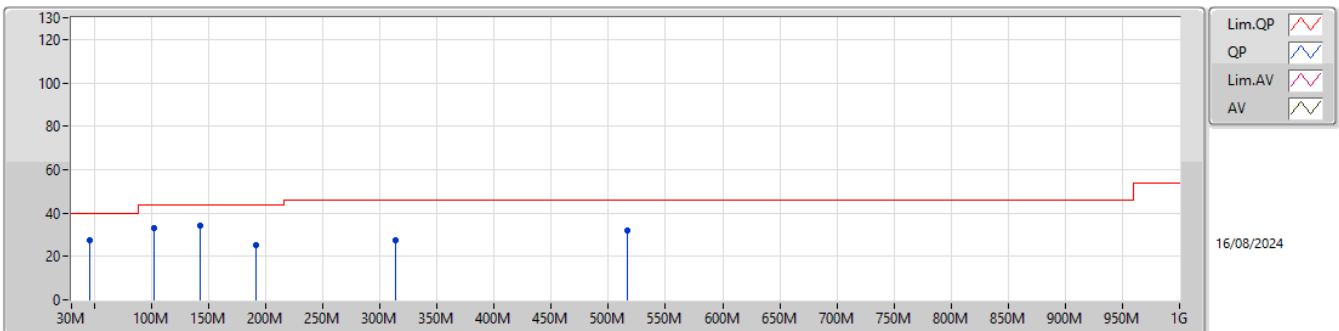
2440MHz_Fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	26.85	40.00	-13.15	-3.45	3	Vertical	360	1.00	30.30	23.36	0.57	27.38
PK	86.26M	33.30	40.00	-6.70	-12.69	3	Vertical	360	1.00	45.99	13.45	1.13	27.27
PK	101.78M	30.92	43.50	-12.58	-10.19	3	Vertical	360	1.00	41.11	15.93	1.12	27.24
PK	150.28M	24.19	43.50	-19.31	-10.07	3	Vertical	360	1.00	34.26	15.57	1.42	27.06
PK	245.34M	24.48	46.00	-21.52	-7.96	3	Vertical	360	1.00	32.44	16.93	1.77	26.66
PK	516.94M	26.11	46.00	-19.89	-3.01	3	Vertical	360	1.00	29.12	22.67	2.49	28.17

2.4-2.4835GHz_BT-EDR(3Mbps)

2440MHz_Fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	45.52M	27.43	40.00	-12.57	-11.31	3	Horizontal	0	1.00	38.74	15.33	0.73	27.37
PK	101.78M	32.89	43.50	-10.61	-10.19	3	Horizontal	0	1.00	43.08	15.93	1.12	27.24
PK	142.52M	34.05	43.50	-9.45	-9.74	3	Horizontal	0	1.00	43.79	15.98	1.37	27.09
PK	191.02M	25.10	43.50	-18.40	-11.21	3	Horizontal	0	1.00	36.31	14.06	1.60	26.87
PK	313.24M	27.54	46.00	-18.46	-6.23	3	Horizontal	0	1.00	33.77	18.59	1.95	26.77
PK	516.94M	31.79	46.00	-14.21	-3.01	3	Horizontal	0	1.00	34.80	22.67	2.49	28.17



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	PK	2.4836G	61.17	74.00	-12.83	3	Vertical	198	1.00
BT-EDR(3Mbps)	Pass	PK	2.4835G	62.41	74.00	-11.59	3	Horizontal	305	2.56

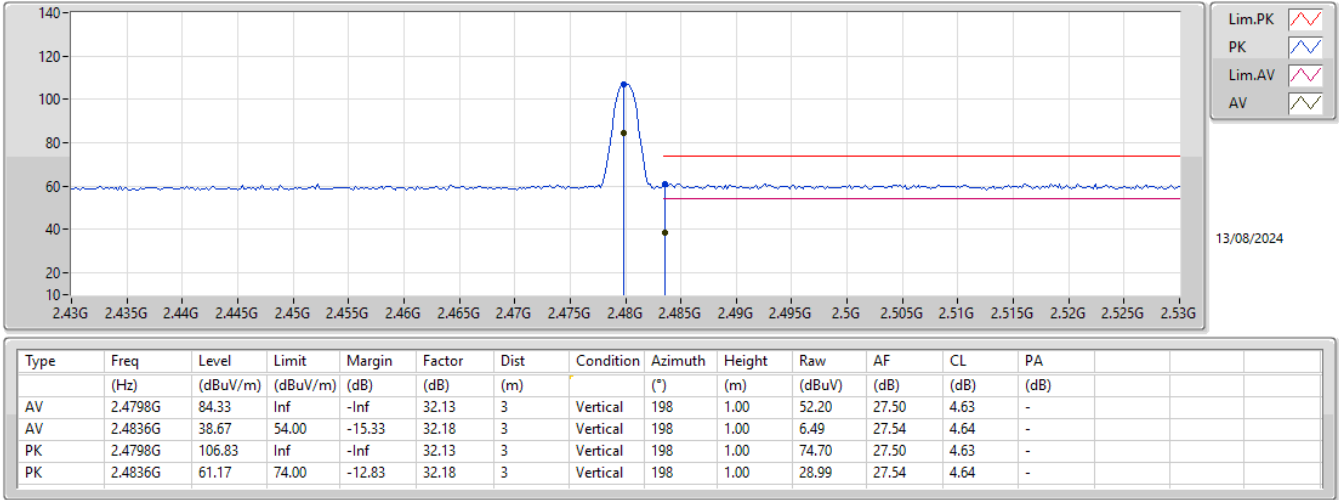
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3536G	37.56	54.00	-16.44	3	Vertical	150	1.36
2402MHz	Pass	AV	2.4022G	79.71	Inf	-Inf	3	Vertical	150	1.36
2402MHz	Pass	PK	2.3536G	60.06	74.00	-13.94	3	Vertical	150	1.36
2402MHz	Pass	PK	2.4022G	102.21	Inf	-Inf	3	Vertical	150	1.36
2402MHz	Pass	AV	2.3592G	37.34	54.00	-16.66	3	Horizontal	317	1.39
2402MHz	Pass	AV	2.4018G	79.41	Inf	-Inf	3	Horizontal	317	1.39
2402MHz	Pass	PK	2.3592G	59.84	74.00	-14.16	3	Horizontal	317	1.39
2402MHz	Pass	PK	2.4018G	101.91	Inf	-Inf	3	Horizontal	317	1.39
2402MHz	Pass	AV	4.80233G	17.40	54.00	-36.60	3	Vertical	198	1.63
2402MHz	Pass	PK	4.80233G	39.90	74.00	-34.10	3	Vertical	198	1.63
2402MHz	Pass	AV	4.80432G	16.55	54.00	-37.45	3	Horizontal	55	1.03
2402MHz	Pass	PK	4.80432G	39.05	74.00	-34.95	3	Horizontal	55	1.03
2440MHz	Pass	AV	2.3588G	37.52	54.00	-16.48	3	Vertical	196	1.10
2440MHz	Pass	AV	2.44G	83.69	Inf	-Inf	3	Vertical	196	1.10
2440MHz	Pass	AV	2.4948G	38.28	54.00	-15.72	3	Vertical	196	1.10
2440MHz	Pass	PK	2.3588G	60.02	74.00	-13.98	3	Vertical	196	1.10
2440MHz	Pass	PK	2.44G	106.19	Inf	-Inf	3	Vertical	196	1.10
2440MHz	Pass	PK	2.4948G	60.78	74.00	-13.22	3	Vertical	196	1.10
2440MHz	Pass	AV	2.376G	37.27	54.00	-16.73	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.44G	85.43	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.4896G	38.03	54.00	-15.97	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.376G	59.77	74.00	-14.23	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.44G	107.93	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.4896G	60.53	74.00	-13.47	3	Horizontal	305	2.92
2440MHz	Pass	AV	4.87944G	16.46	54.00	-37.54	3	Vertical	9	1.13
2440MHz	Pass	AV	7.31941G	27.65	54.00	-26.35	3	Vertical	161	3.00
2440MHz	Pass	PK	4.87944G	38.96	74.00	-35.04	3	Vertical	9	1.13
2440MHz	Pass	PK	7.31941G	50.15	74.00	-23.85	3	Vertical	161	3.00
2440MHz	Pass	AV	4.88031G	16.37	54.00	-37.63	3	Horizontal	17	2.49
2440MHz	Pass	AV	7.32042G	25.44	54.00	-28.56	3	Horizontal	122	1.00
2440MHz	Pass	PK	4.88031G	38.87	74.00	-35.13	3	Horizontal	17	2.49
2440MHz	Pass	PK	7.32042G	47.94	74.00	-26.06	3	Horizontal	122	1.00
2480MHz	Pass	AV	2.4798G	84.33	Inf	-Inf	3	Vertical	198	1.00
2480MHz	Pass	AV	2.4836G	38.67	54.00	-15.33	3	Vertical	198	1.00
2480MHz	Pass	PK	2.4798G	106.83	Inf	-Inf	3	Vertical	198	1.00
2480MHz	Pass	PK	2.4836G	61.17	74.00	-12.83	3	Vertical	198	1.00
2480MHz	Pass	AV	2.4798G	85.40	Inf	-Inf	3	Horizontal	305	2.57
2480MHz	Pass	AV	2.496G	38.65	54.00	-15.35	3	Horizontal	305	2.57
2480MHz	Pass	PK	2.4798G	107.90	Inf	-Inf	3	Horizontal	305	2.57
2480MHz	Pass	PK	2.496G	61.15	74.00	-12.85	3	Horizontal	305	2.57
2480MHz	Pass	AV	4.95997G	18.80	54.00	-35.20	3	Vertical	332	2.36
2480MHz	Pass	AV	7.44037G	26.17	54.00	-27.83	3	Vertical	156	3.00
2480MHz	Pass	PK	4.95997G	41.30	74.00	-32.70	3	Vertical	332	2.36
2480MHz	Pass	PK	7.44037G	48.67	74.00	-25.33	3	Vertical	156	3.00
2480MHz	Pass	AV	4.95988G	17.51	54.00	-36.49	3	Horizontal	230	1.48
2480MHz	Pass	AV	7.43987G	25.07	54.00	-28.93	3	Horizontal	123	1.13
2480MHz	Pass	PK	4.95988G	40.01	74.00	-33.99	3	Horizontal	230	1.48
2480MHz	Pass	PK	7.43987G	47.57	74.00	-26.43	3	Horizontal	123	1.13
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3682G	37.76	54.00	-16.24	3	Vertical	197	1.00
2402MHz	Pass	AV	2.402G	82.27	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	PK	2.3682G	60.26	74.00	-13.74	3	Vertical	197	1.00
2402MHz	Pass	PK	2.402G	104.77	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	AV	2.376G	37.92	54.00	-16.08	3	Horizontal	306	3.00
2402MHz	Pass	AV	2.402G	83.87	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.376G	60.42	74.00	-13.58	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.402G	106.37	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	AV	4.80329G	21.27	54.00	-32.73	3	Vertical	348	2.49
2402MHz	Pass	PK	4.80329G	43.77	74.00	-30.23	3	Vertical	348	2.49
2402MHz	Pass	AV	4.80458G	18.81	54.00	-35.19	3	Horizontal	28	1.01

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2402MHz	Pass	PK	4.80458G	41.31	74.00	-32.69	3	Horizontal	28	1.01
2440MHz	Pass	AV	2.3576G	37.52	54.00	-16.48	3	Vertical	304	2.92
2440MHz	Pass	AV	2.44G	84.28	Inf	-Inf	3	Vertical	304	2.92
2440MHz	Pass	AV	2.4952G	38.71	54.00	-15.29	3	Vertical	304	2.92
2440MHz	Pass	PK	2.3576G	60.02	74.00	-13.98	3	Vertical	304	2.92
2440MHz	Pass	PK	2.44G	106.78	Inf	-Inf	3	Vertical	304	2.92
2440MHz	Pass	PK	2.4952G	61.21	74.00	-12.79	3	Vertical	304	2.92
2440MHz	Pass	AV	2.3508G	37.06	54.00	-16.94	3	Horizontal	304	2.92
2440MHz	Pass	AV	2.44G	84.29	Inf	-Inf	3	Horizontal	304	2.92
2440MHz	Pass	AV	2.4892G	38.09	54.00	-15.91	3	Horizontal	304	2.92
2440MHz	Pass	PK	2.3508G	59.56	74.00	-14.44	3	Horizontal	304	2.92
2440MHz	Pass	PK	2.44G	106.79	Inf	-Inf	3	Horizontal	304	2.92
2440MHz	Pass	PK	2.4892G	60.59	74.00	-13.41	3	Horizontal	304	2.92
2440MHz	Pass	AV	4.88045G	21.28	54.00	-32.72	3	Vertical	352	2.69
2440MHz	Pass	AV	7.31994G	30.55	54.00	-23.45	3	Vertical	160	3.00
2440MHz	Pass	PK	4.88045G	43.78	74.00	-30.22	3	Vertical	352	2.69
2440MHz	Pass	PK	7.31994G	53.05	74.00	-20.95	3	Vertical	160	3.00
2440MHz	Pass	AV	4.88028G	18.91	54.00	-35.09	3	Horizontal	231	1.51
2440MHz	Pass	AV	7.31974G	27.95	54.00	-26.05	3	Horizontal	121	1.00
2440MHz	Pass	PK	4.88028G	41.41	74.00	-32.59	3	Horizontal	231	1.51
2440MHz	Pass	PK	7.31974G	50.45	74.00	-23.55	3	Horizontal	121	1.00
2480MHz	Pass	AV	2.48G	81.60	Inf	-Inf	3	Vertical	199	1.00
2480MHz	Pass	AV	2.4838G	39.43	54.00	-14.57	3	Vertical	199	1.00
2480MHz	Pass	PK	2.48G	104.10	Inf	-Inf	3	Vertical	199	1.00
2480MHz	Pass	PK	2.4838G	61.93	74.00	-12.07	3	Vertical	199	1.00
2480MHz	Pass	AV	2.48G	83.05	Inf	-Inf	3	Horizontal	305	2.56
2480MHz	Pass	AV	2.4835G	39.91	54.00	-14.09	3	Horizontal	305	2.56
2480MHz	Pass	PK	2.48G	105.55	Inf	-Inf	3	Horizontal	305	2.56
2480MHz	Pass	PK	2.4835G	62.41	74.00	-11.59	3	Horizontal	305	2.56
2480MHz	Pass	AV	4.96028G	18.95	54.00	-35.05	3	Vertical	18	2.46
2480MHz	Pass	AV	7.43936G	29.10	54.00	-24.90	3	Vertical	160	3.00
2480MHz	Pass	PK	4.96028G	41.45	74.00	-32.55	3	Vertical	18	2.46
2480MHz	Pass	PK	7.43936G	51.60	74.00	-22.40	3	Vertical	160	3.00
2480MHz	Pass	AV	4.95942G	17.99	54.00	-36.01	3	Horizontal	231	2.01
2480MHz	Pass	AV	7.44013G	27.31	54.00	-26.69	3	Horizontal	123	1.14
2480MHz	Pass	PK	4.95942G	40.49	74.00	-33.51	3	Horizontal	231	2.01
2480MHz	Pass	PK	7.44013G	49.81	74.00	-24.19	3	Horizontal	123	1.14

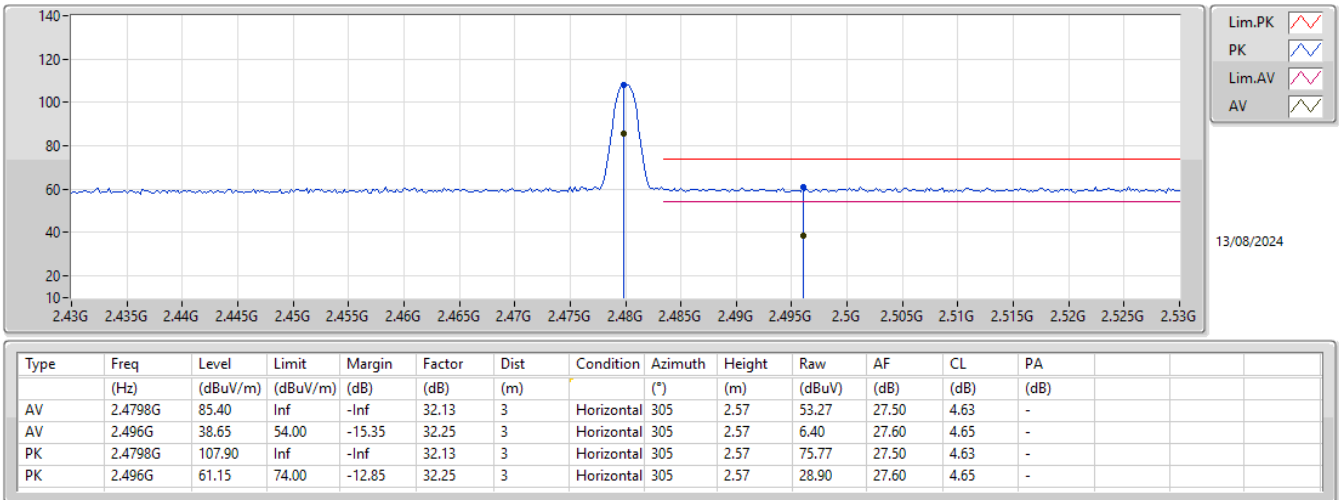
2.4-2.4835GHz_BT-BR(1Mbps)

2480MHz_TX



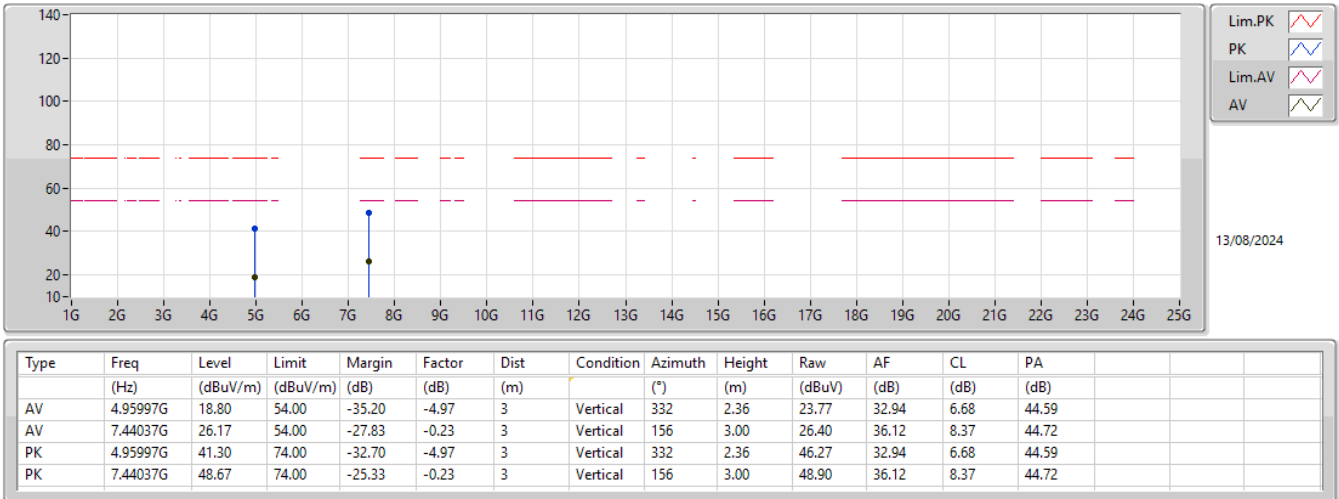
2.4-2.4835GHz_BT-BR(1Mbps)

2480MHz_TX



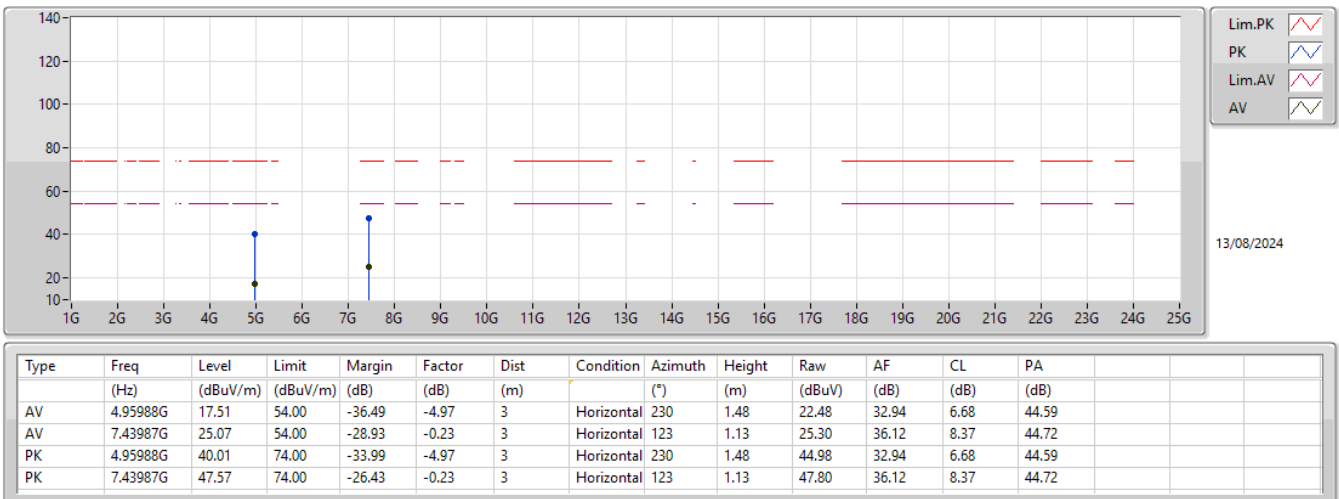
2.4-2.4835GHz_BT-BR(1Mbps)

2480MHz_TX



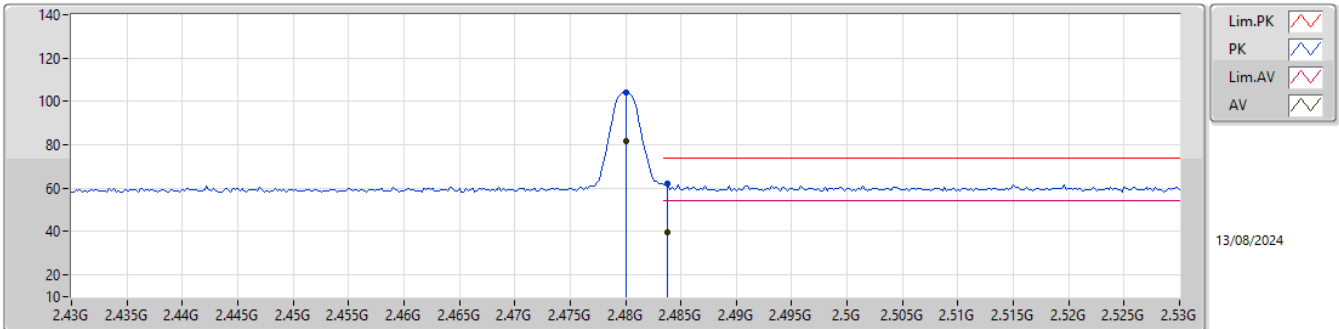
2.4-2.4835GHz_BT-BR(1Mbps)

2480MHz_TX



2.4-2.4835GHz_BT-EDR(3Mbps)

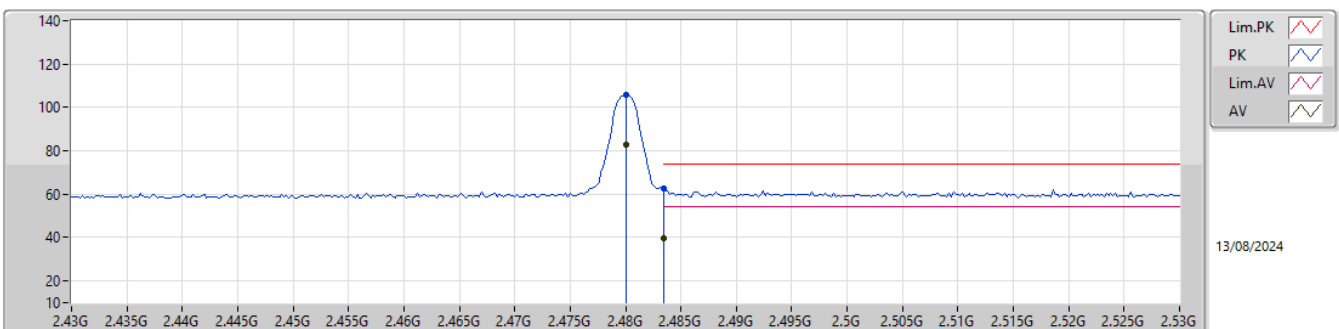
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	81.60	Inf	-Inf	32.13	3	Vertical	199	1.00	49.47	27.50	4.63	-
AV	2.4838G	39.43	54.00	-14.57	32.18	3	Vertical	199	1.00	7.25	27.54	4.64	-
PK	2.48G	104.10	Inf	-Inf	32.13	3	Vertical	199	1.00	71.97	27.50	4.63	-
PK	2.4838G	61.93	74.00	-12.07	32.18	3	Vertical	199	1.00	29.75	27.54	4.64	-

2.4-2.4835GHz_BT-EDR(3Mbps)

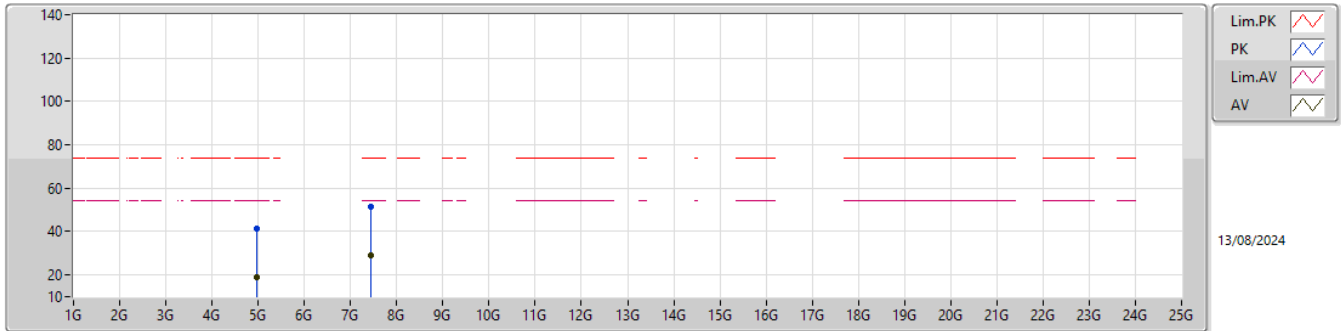
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	83.05	Inf	-Inf	32.13	3	Horizontal	305	2.56	50.92	27.50	4.63	-
AV	2.4835G	39.91	54.00	-14.09	32.18	3	Horizontal	305	2.56	7.73	27.54	4.64	-
PK	2.48G	105.55	Inf	-Inf	32.13	3	Horizontal	305	2.56	73.42	27.50	4.63	-
PK	2.4835G	62.41	74.00	-11.59	32.18	3	Horizontal	305	2.56	30.23	27.54	4.64	-

2.4-2.4835GHz_BT-EDR(3Mbps)

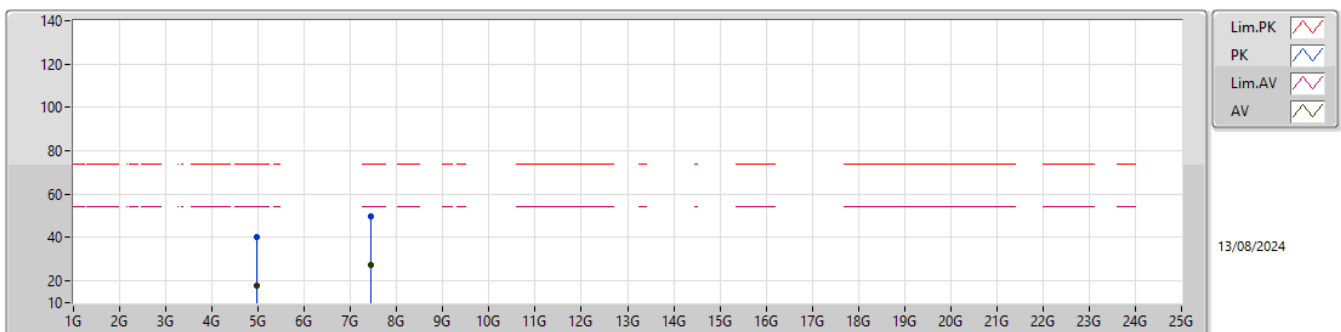
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96028G	18.95	54.00	-35.05	-4.97	3	Vertical	18	2.46	23.92	32.94	6.68	44.59
AV	7.43936G	29.10	54.00	-24.90	-0.23	3	Vertical	160	3.00	29.33	36.12	8.37	44.72
PK	4.96028G	41.45	74.00	-32.55	-4.97	3	Vertical	18	2.46	46.42	32.94	6.68	44.59
PK	7.43936G	51.60	74.00	-22.40	-0.23	3	Vertical	160	3.00	51.83	36.12	8.37	44.72

2.4-2.4835GHz_BT-EDR(3Mbps)

2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95942G	17.99	54.00	-36.01	-4.97	3	Horizontal	231	2.01	22.96	32.94	6.68	44.59
AV	7.44013G	27.31	54.00	-26.69	-0.23	3	Horizontal	123	1.14	27.54	36.12	8.37	44.72
PK	4.95942G	40.49	74.00	-33.51	-4.97	3	Horizontal	231	2.01	45.46	32.94	6.68	44.59
PK	7.44013G	49.81	74.00	-24.19	-0.23	3	Horizontal	123	1.14	50.04	36.12	8.37	44.72