FCC Test Report

FCC ID	:	**2AHIS-VH02R01**
Equipment	:	**Vayyar Home**
Brand Name	:	**Vayyar**
Model Name	:	**Vayyar Home**
Applicant	:	**Vayyar Imaging Ltd. 26 Shabazi St., Yehud 5610103, Israel**
Manufacturer	:	**XAVi Technologies Corporation 22F., No.69, Sec. 2, Guangfu Rd., Sanchong Dist., New Taipei City 241, Taiwan (R.O.C.)**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Jul. 21, 2020, and testing was started from Jul. 24, 2020 and completed on Aug. 11, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR052115-01AL	01	Initial issue of report	Sep. 04, 2020
FR052115-01AL	02	Update Model name of VTREE USB-CONSULE BOARD. This report is the latest version replacing for the report issued on Sep. 04, 2020.	Oct. 06, 2020

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)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	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: Sam Tsai

Report Producer: Amber Chiu

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX

Note:
- Bluetooth LE uses a GFSK (1Mbps) modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	Chilisin Electronics Corp.	BTCA0032160 9002G4F	Chip antenna	N/A

Ant.	Port	Gain (dBi)	
		2.4G	BT
1	1	3.32	3.32

Note 1: The EUT has one antenna.

For 2.4GHz function:

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

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

For BT function:

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

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From AC Adapter			
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-LE(1Mbps)	0.783	1.06	2.094m	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

Testing Location					
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)			
		TEL : 886-3-327-3456		FAX : 886-3-327-0973	
Test site Designation No. TW1190 with FCC.					
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)			
		TEL : 886-3-656-9065		FAX : 886-3-656-9085	
Test site Designation No. TW0006 with FCC.					
☒	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)			
		TEL : 886-3-318-0787		FAX : 886-3-318-0287	
Test site Designation No. TW1097 with FCC.					

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wan	23.2~25.5°C / 60~64%	04/Aug/2020
RF Conducted	TH06-HY	Raven Chien	22.4~23.8°C / 54~60%	27/Jul/2020~ 10/Aug/2020
Radiated	03CH09-HY	Daniel Hsu	20.1~26.9°C / 53~61%	24/Jul/2020~ 11/Aug/2020

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
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 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 Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software	espRFTool1.1.0

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	8
2440MHz	8
2480MHz	8

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	Adapter mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement 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	Adapter mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
Worst Planes of EUT			V

2.4 Accessories

Accessories				
AC Adapter	Brand Name	RUIDIR	Model Name	RD0502000-USBA-87MG
	Power Rating	I/P: 100 - 240 Vac, 300 mA, O/P: Vdc, 2000 mA		

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

2.5 Support Equipment

Support Equipment – AC Conduction					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	USB Cable	Fujiei	US0090	-	-
2	VTREE USB-CONSULE BOARD	Xavi	V0.1-200515	-	-

Note: Support equipment No.1 & 2 was provided by customer.

Support Equipment – Conducted					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	USB Cable	Fujiei	US0090	-	-
4	VTREE USB-CONSULE BOARD	Xavi	V0.1-200515	-	-

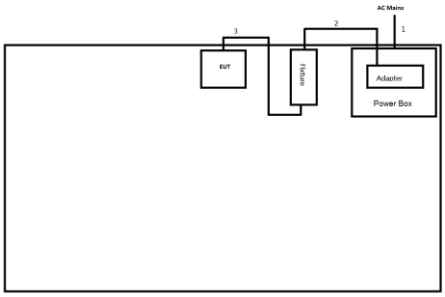
Note: Support equipment No.3 & 4 was provided by customer.

Support Equipment – Radiated					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	USB Cable	Fujiei	US0090	-	-
2	VTREE USB-CONSULE BOARD	Xavi	V0.1-200515	-	-

Note: Support equipment No.1 & 2 was provided by customer.

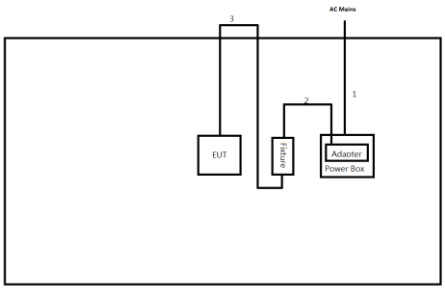
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	USB cable	No	0.6	-
3	USB cable	No	1.5	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	USB cable	No	1.5	-
3	USB cable	No	0.6	-

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

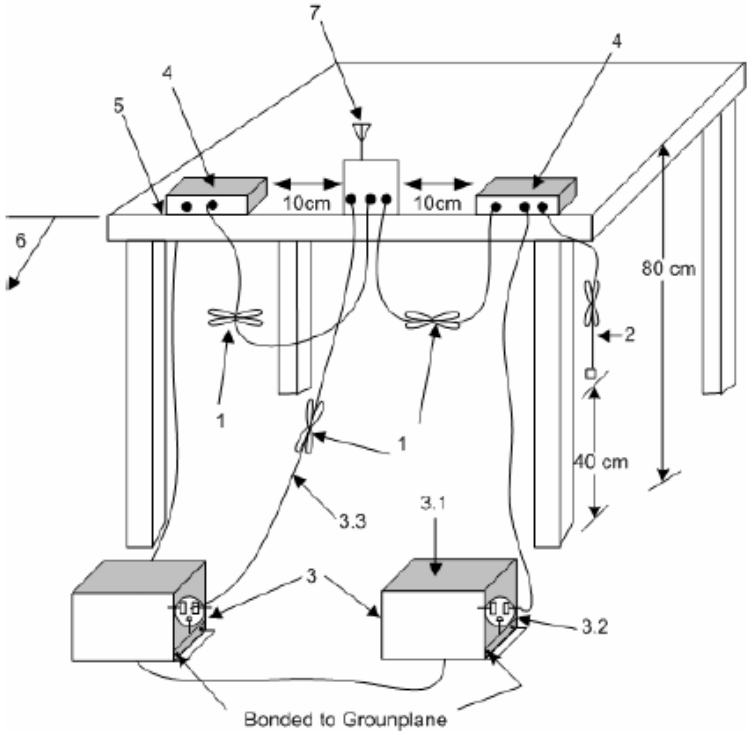
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

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

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

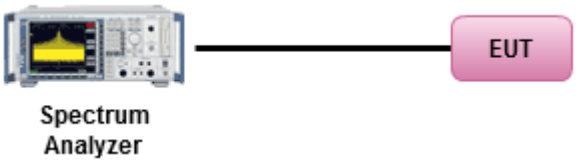
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
	☐ Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
	☐ Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit		
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm	
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
	▪ Smart antenna system (SAS):	
		- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm
e.i.r.p. Power Limit:		
▪ 2400-2483.5 MHz Band		
	▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)	
	▪ Point-to-point systems (P2P): $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX}])$ dBm	
	▪ Smart antenna system (SAS)	
		- Single beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm
		- Overlap beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm
		- Aggregate power on all beams: $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.		

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
	☐ Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
	☐ Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
▪ Maximum Average Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
	☒ Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)

3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD)≤8 dBm/3kHz

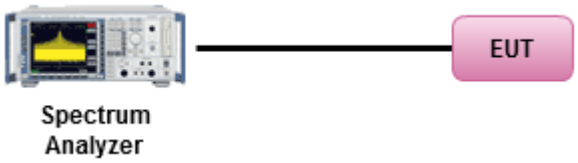
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method		
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).		
	☒ Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Max. PSD.	
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		▪ Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

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

3.5.2 Measuring Instruments

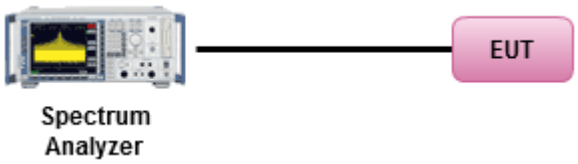
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method
▪ Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 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 below30 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.

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method	
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or 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 KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
▪ For the transmitter band-edge emissions shall be measured using following options below:	
	▪ Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
▪ Use the following spectrum analyzer settings:	
	▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement. For average measurement, refer as 1.1.4.
▪ 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.

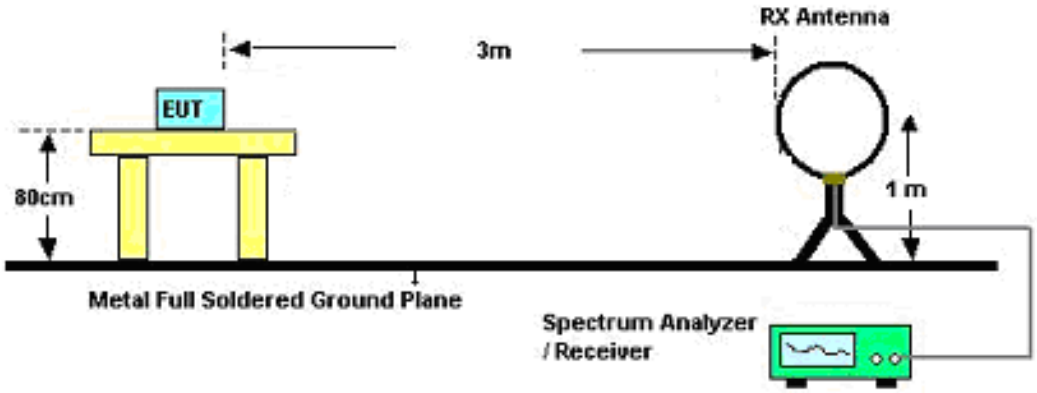
3.6.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

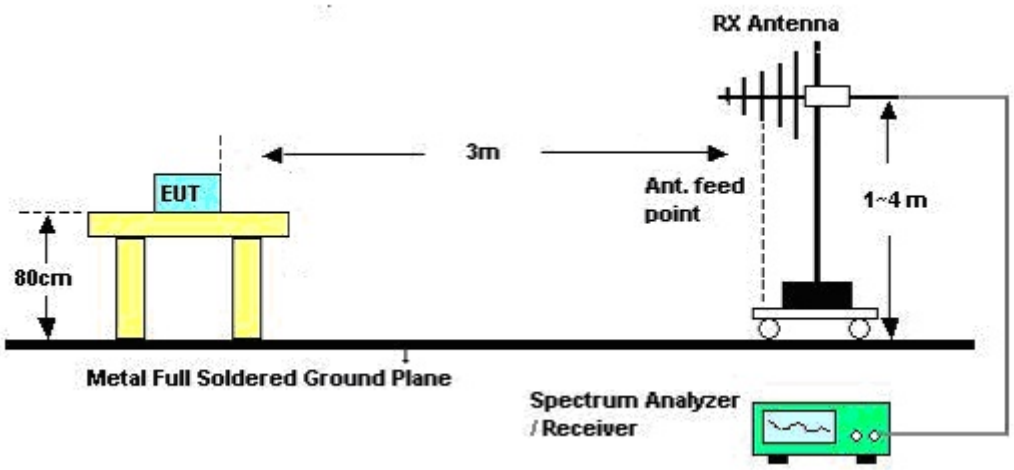
3.6.5 Test Setup

Emissions in Restricted Frequency Bands

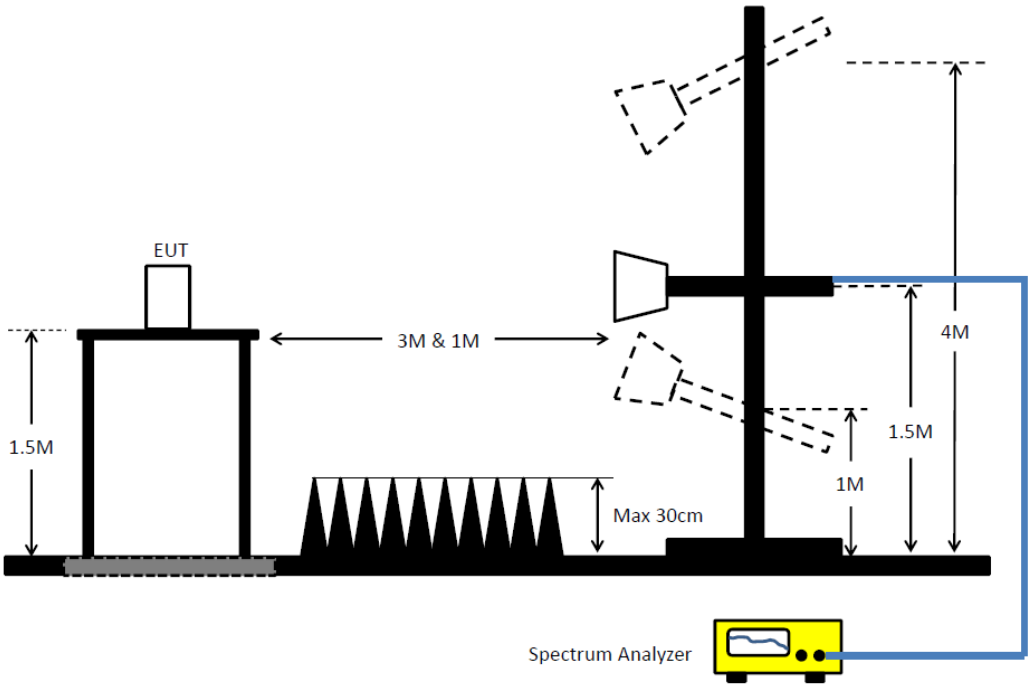
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.6.6 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.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	29/May/2020	28/May/2021
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	05/Nov/2019	04/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	23/Sep/2019	22/Sep/2020
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	24/Sep/2019	23/Sep/2020

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101029	10KHz ~ 40GHz	01/Oct/2019	30/Sep/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	11/Nov/2020
Pulse Sensor	Anritsu	MA2411B	1027452	300MHz~40GHz	18/Mar/2020	17/Mar/2021
Power Meter	Anritsu	ML2495A	1124009	300MHz~40GHz	18/Mar/2020	17/Mar/2021

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz~1GHz 3m	27/Mar/2020	26/Mar/2021
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	19/Mar/2020	18/Mar/2021
Signal Analyzer	R&S	FSV 40	101029	10Hz~40GHz	01/Oct/2019	30/Sep/2020
Amplifier	EMC	EMC9135	980232	9kHz~1GHz	14/Apr/2020	13/Apr/2021
Microwave Preamplifier	Agilent	8449B	3008A02326	1GHz~26.5GHz	24/Jul/2020	23/Jul/2021
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MTJ6102-05	35418 & 3	30MHz~1GHz	30/Sep/2019	29/Sep/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	28/May/2020	27/May/2021
RF Cable-low	Jye Bao	RG142	CB031+324530/4	30MHz~1GHz	12/Feb/2020	11/Feb/2021
RF Cable-R03m	HUBER+SUHNER	SUCOFLEX104	324530/4+17173/4	1GHz~40GHz	12/Feb/2020	11/Feb/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	13/Mar/2020	12/Mar/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz~40GHz	10/Mar/2020	09/Mar/2021
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2020	15/Mar/2021
EMI Test Receiver	R&S	ESR3	102051	9kHz~3.6GHz	29/May/2020	28/May/2021

Summary

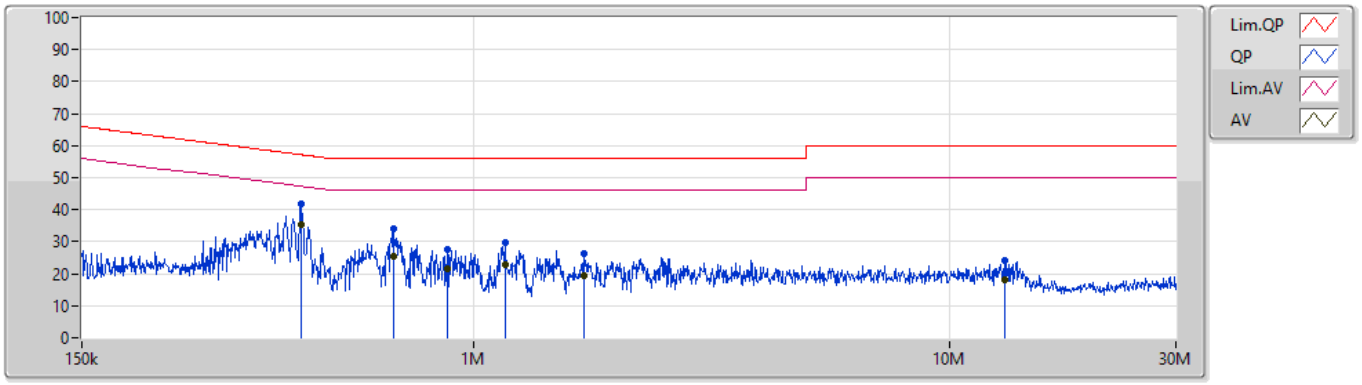
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	432.041k	40.03	47.20	-7.17	Neutral

Mode Configure

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	433.769k	41.81	57.19	-15.38	Line	-
Mode 1	Pass	AV	433.769k	35.40	47.19	-11.79	Line	“Worst”
Mode 1	Pass	QP	681.033k	33.94	56.00	-22.06	Line	-
Mode 1	Pass	AV	681.033k	25.24	46.00	-20.76	Line	-
Mode 1	Pass	QP	879.278k	27.62	56.00	-28.38	Line	-
Mode 1	Pass	AV	879.278k	21.74	46.00	-24.26	Line	-
Mode 1	Pass	QP	1.163M	29.64	56.00	-26.36	Line	-
Mode 1	Pass	AV	1.163M	23.05	46.00	-22.95	Line	-
Mode 1	Pass	QP	1.706M	26.26	56.00	-29.74	Line	-
Mode 1	Pass	AV	1.706M	19.45	46.00	-26.55	Line	-
Mode 1	Pass	QP	13.065M	24.20	60.00	-35.80	Line	-
Mode 1	Pass	AV	13.065M	17.99	50.00	-32.01	Line	-
Mode 1	Pass	QP	432.041k	46.64	57.20	-10.56	Neutral	-
Mode 1	Pass	AV	432.041k	40.03	47.20	-7.17	Neutral	“Worst”
Mode 1	Pass	QP	681.033k	38.13	56.00	-17.87	Neutral	-
Mode 1	Pass	AV	681.033k	29.10	46.00	-16.90	Neutral	-
Mode 1	Pass	QP	915.089k	32.10	56.00	-23.90	Neutral	-
Mode 1	Pass	AV	915.089k	25.65	46.00	-20.35	Neutral	-
Mode 1	Pass	QP	1.149M	35.61	56.00	-20.39	Neutral	-
Mode 1	Pass	AV	1.149M	27.99	46.00	-18.01	Neutral	-
Mode 1	Pass	QP	2.194M	31.15	56.00	-24.85	Neutral	-
Mode 1	Pass	AV	2.194M	23.48	46.00	-22.52	Neutral	-
Mode 1	Pass	QP	13.871M	33.81	60.00	-26.19	Neutral	-
Mode 1	Pass	AV	13.871M	22.49	50.00	-27.51	Neutral	-

Conducted Emissions at Powerline_Mode 1

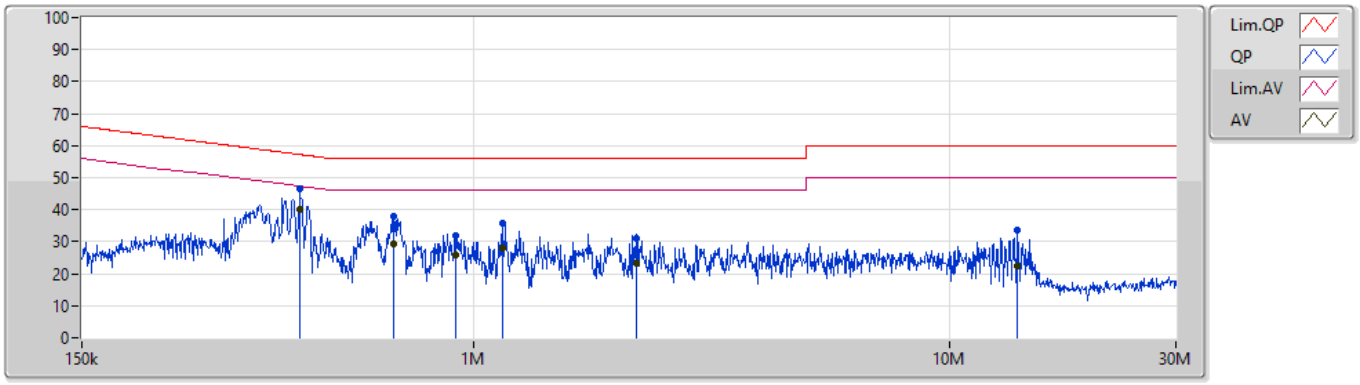
04/08/2020



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	433.769k	41.81	57.19	-15.38	19.64	Line	-	22.17	9.64	0.13	9.87
AV	433.769k	35.40	47.19	-11.79	19.64	Line	"Worst"	15.76	9.64	0.13	9.87
QP	681.033k	33.94	56.00	-22.06	19.63	Line	-	14.31	9.64	0.12	9.87
AV	681.033k	25.24	46.00	-20.76	19.63	Line	-	5.61	9.64	0.12	9.87
QP	879.278k	27.62	56.00	-28.38	19.62	Line	-	8.00	9.64	0.11	9.87
AV	879.278k	21.74	46.00	-24.26	19.62	Line	-	2.12	9.64	0.11	9.87
QP	1.163M	29.64	56.00	-26.36	19.64	Line	-	10.00	9.64	0.12	9.88
AV	1.163M	23.05	46.00	-22.95	19.64	Line	-	3.41	9.64	0.12	9.88
QP	1.706M	26.26	56.00	-29.74	19.65	Line	-	6.61	9.65	0.13	9.87
AV	1.706M	19.45	46.00	-26.55	19.65	Line	-	-0.20	9.65	0.13	9.87
QP	13.065M	24.20	60.00	-35.80	19.85	Line	-	4.35	9.67	0.30	9.88
AV	13.065M	17.99	50.00	-32.01	19.85	Line	-	-1.86	9.67	0.30	9.88

Conducted Emissions at Powerline_Mode 1

04/08/2020



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	432.041k	46.64	57.20	-10.56	19.63	Neutral	-	27.01	9.63	0.13	9.87
AV	432.041k	40.03	47.20	-7.17	19.63	Neutral	"Worst"	20.40	9.63	0.13	9.87
QP	681.033k	38.13	56.00	-17.87	19.62	Neutral	-	18.51	9.63	0.12	9.87
AV	681.033k	29.10	46.00	-16.90	19.62	Neutral	-	9.48	9.63	0.12	9.87
QP	915.089k	32.10	56.00	-23.90	19.62	Neutral	-	12.48	9.63	0.11	9.88
AV	915.089k	25.65	46.00	-20.35	19.62	Neutral	-	6.03	9.63	0.11	9.88
QP	1.149M	35.61	56.00	-20.39	19.63	Neutral	-	15.98	9.63	0.12	9.88
AV	1.149M	27.99	46.00	-18.01	19.63	Neutral	-	8.36	9.63	0.12	9.88
QP	2.194M	31.15	56.00	-24.85	19.67	Neutral	-	11.48	9.65	0.15	9.87
AV	2.194M	23.48	46.00	-22.52	19.67	Neutral	-	3.81	9.65	0.15	9.87
QP	13.871M	33.81	60.00	-26.19	19.89	Neutral	-	13.92	9.71	0.30	9.88
AV	13.871M	22.49	50.00	-27.51	19.89	Neutral	-	2.60	9.71	0.30	9.88

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)	648.75k	1.017M	1M02F1D	643.75k	1.014M

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

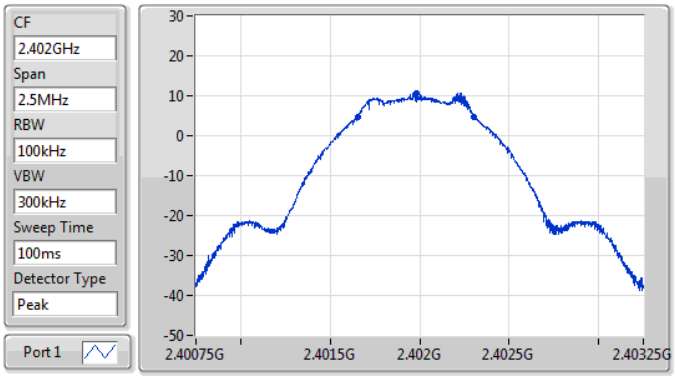
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	648.75k	1.014M
2440MHz	Pass	500k	646.25k	1.017M
2480MHz	Pass	500k	643.75k	1.015M

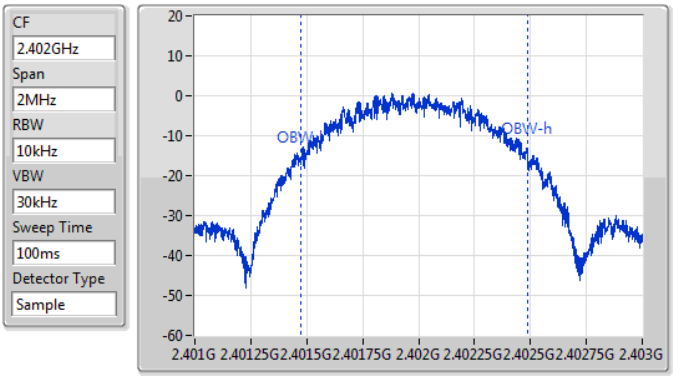
Port X-N dB = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

BT-LE(1Mbps) EBW-DTS

2402MHz

27/07/2020



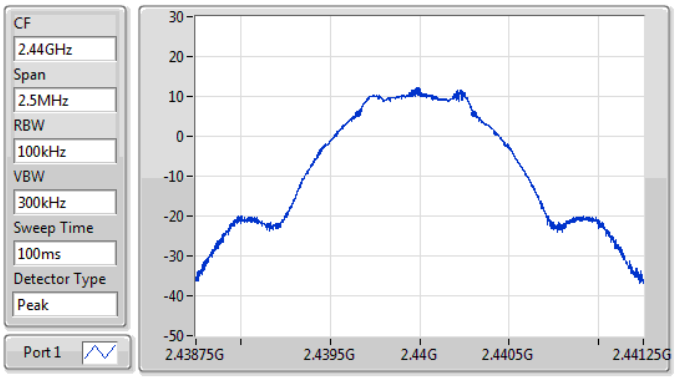


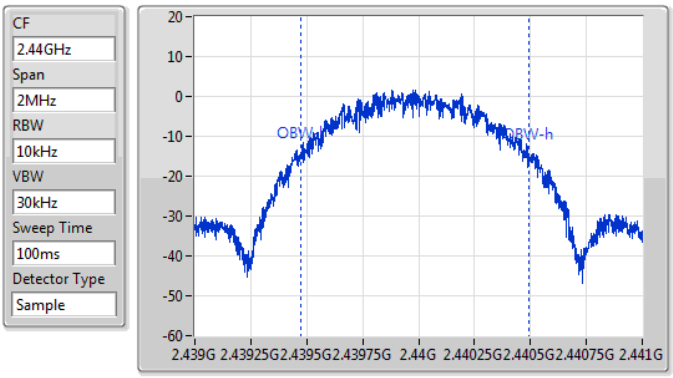
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
648.75k	2.401655G	2.402304G	1.014M	2.401475G	2.402489G	500k	1

BT-LE(1Mbps) EBW-DTS

2440MHz

27/07/2020



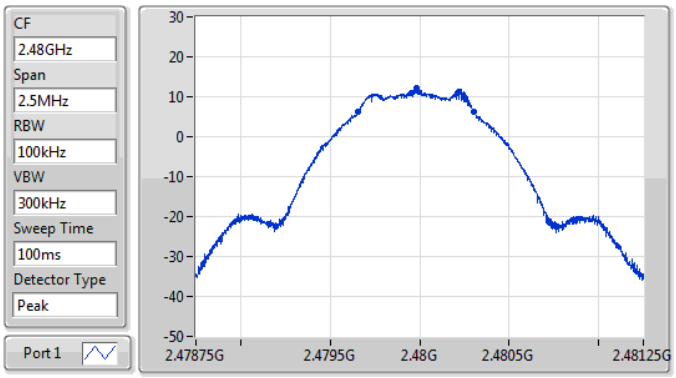


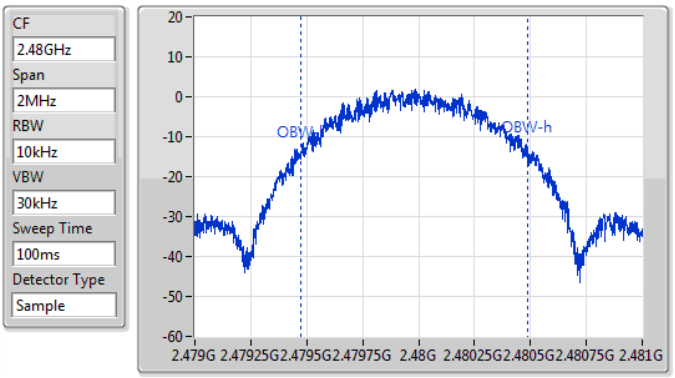
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
646.25k	2.439658G	2.440304G	1.017M	2.439475G	2.440492G	500k	1

BT-LE(1Mbps) **EBW-DTS**

2480MHz

27/07/2020





6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
643.75k	2.479656G	2.4803G	1.015M	2.479474G	2.480489G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	11.90	0.01549

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.32	10.65	30.00
2440MHz	Pass	3.32	11.60	30.00
2480MHz	Pass	3.32	11.90	30.00

DG = Directional Gain; **Port X** = Port X output power

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-4.14

RBW=3 kHz.

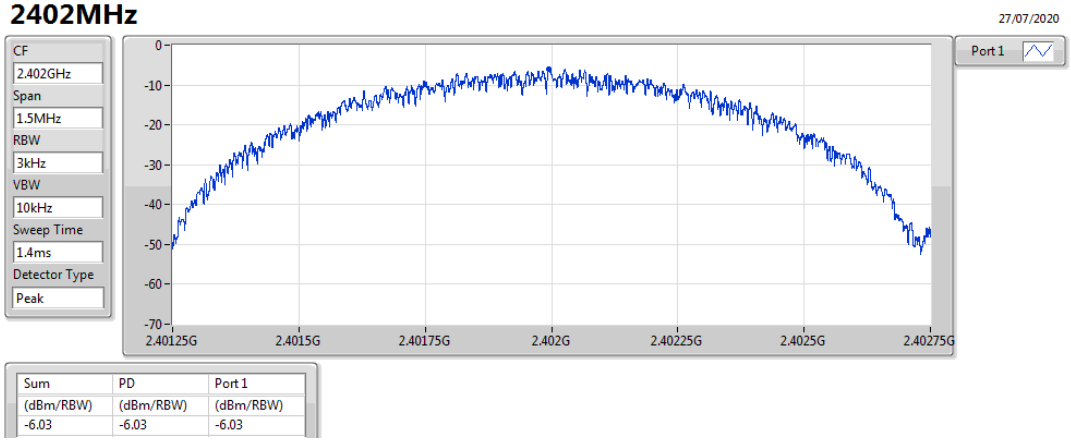
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.32	-6.03	8.00
2440MHz	Pass	3.32	-4.63	8.00
2480MHz	Pass	3.32	-4.14	8.00

DG = Directional Gain; RBW=3 kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

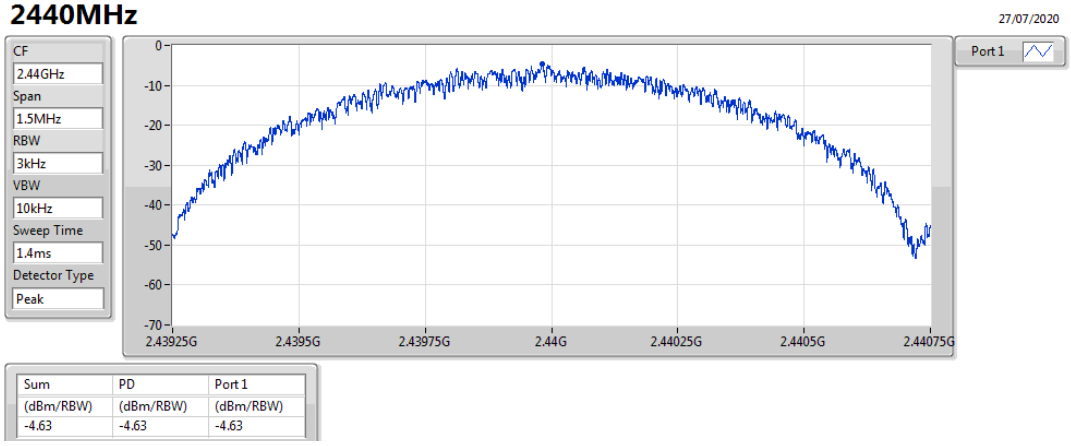
BT-LE(1Mbps) **PSD**

2402MHz



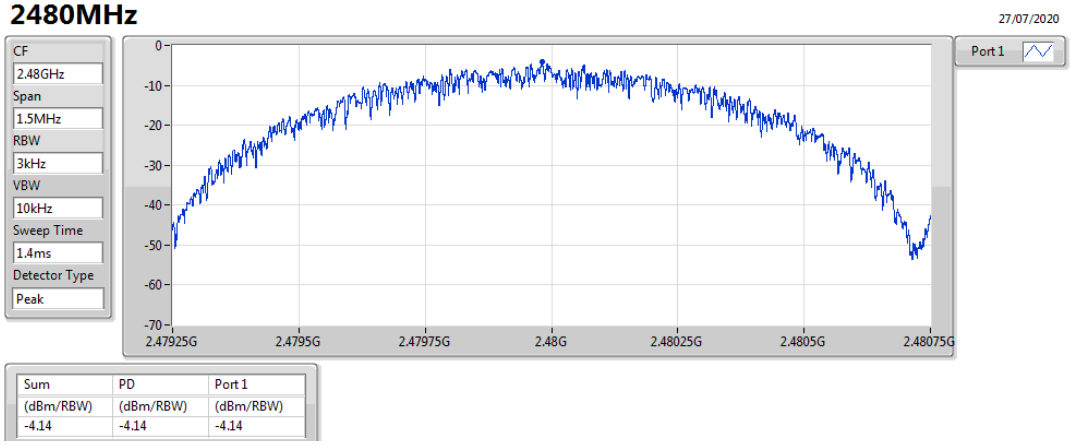
BT-LE(1Mbps) **PSD**

2440MHz



BT-LE(1Mbps) **PSD**

2480MHz



Summary

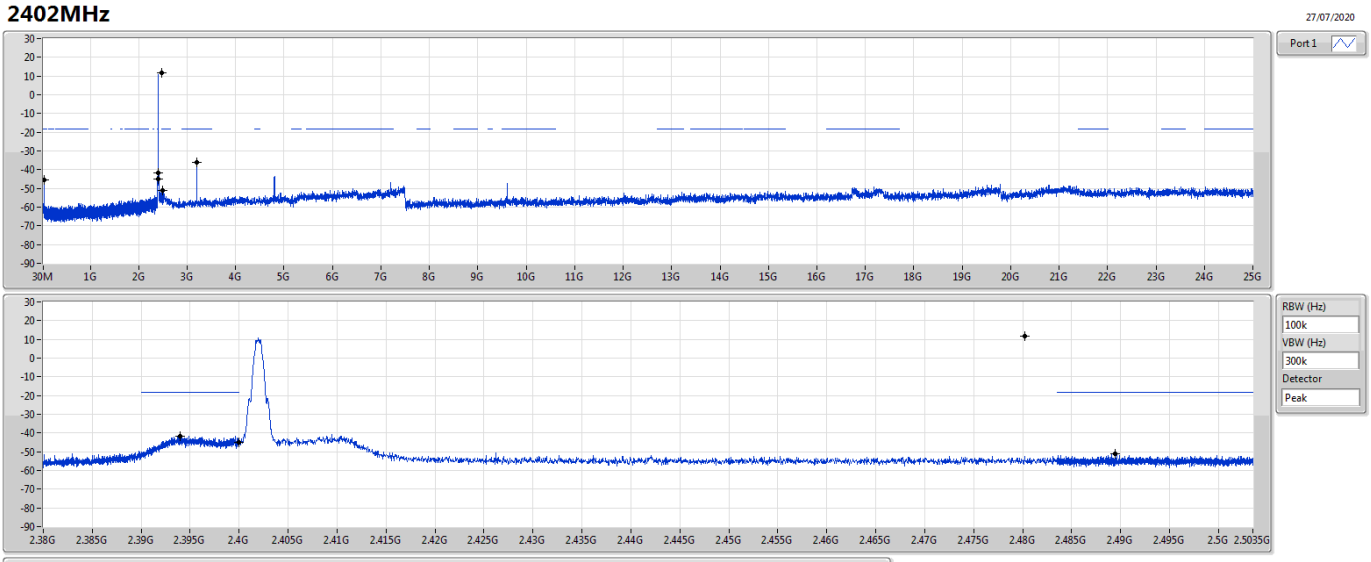
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.4802G	11.53	-18.47	49.98M	-47.30	2.39846G	-52.25	2.4835G	-43.26	2.48712G	-39.93	3.30494G	-36.81	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-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.4802G	11.53	-18.47	49.98M	-45.45	2.39396G	-41.79	2.4G	-44.84	2.48943G	-50.88	3.20089G	-36.03	1
2440MHz	Pass	2.4802G	11.53	-18.47	49.98M	-45.69	2.39991G	-52.52	2.4835G	-54.02	2.48629G	-51.35	3.25151G	-36.67	1
2480MHz	Pass	2.4802G	11.53	-18.47	49.98M	-47.30	2.39846G	-52.25	2.4835G	-43.26	2.48712G	-39.93	3.30494G	-36.81	1

BT-LE(1Mbps) **CSENdB-DTS**

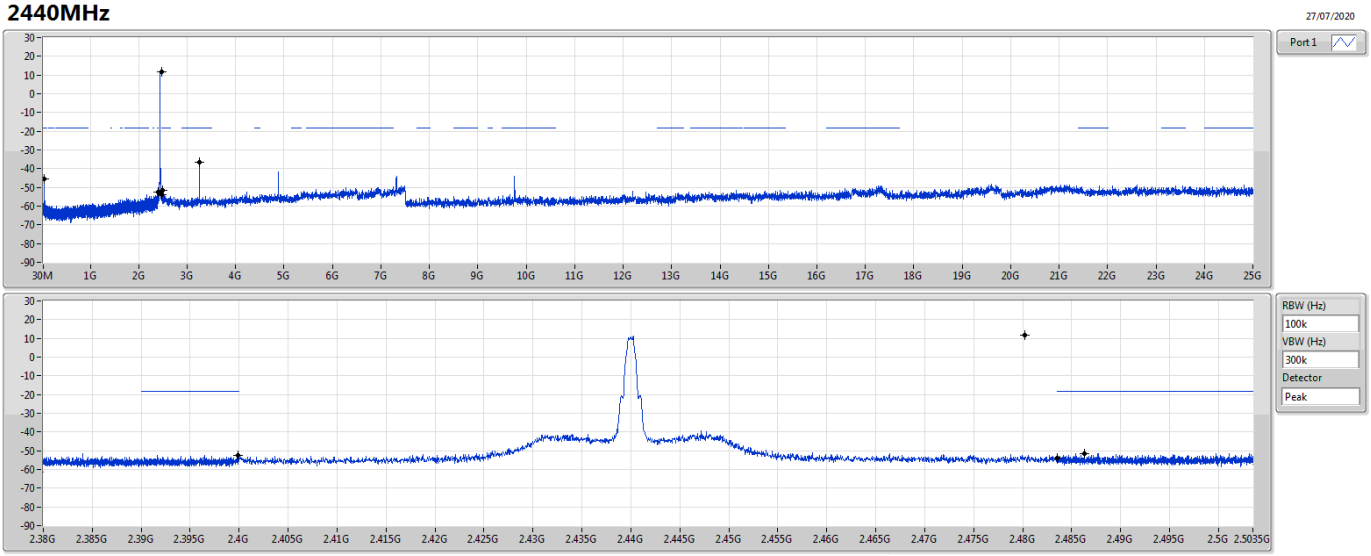
2402MHz



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
2.4802G	11.53	-18.47	49.98M	-45.45	2.39396G	-41.79	2.4G	-44.84	2.48943G	-50.88	3.20089G	-36.03	1

BT-LE(1Mbps) **CSENdB-DTS**

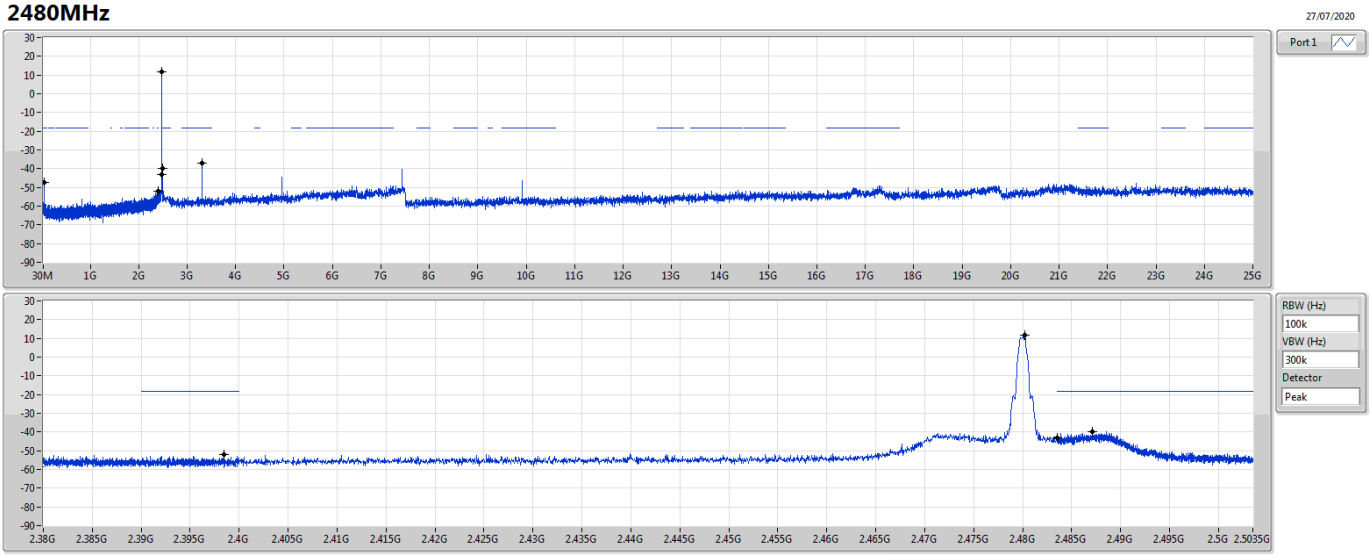
2440MHz



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
2.4802G	11.53	-18.47	49.98M	-45.69	2.39991G	-52.52	2.4835G	-54.02	2.48629G	-51.35	3.25151G	-36.67	1

BT-LE(1Mbps) **CSENdB-DTS**

2480MHz



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
2.4802G	11.53	-18.47	49.98M	-47.30	2.39846G	-52.25	2.4835G	-43.26	2.48712G	-39.93	3.30494G	-36.81	1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	51.34M	36.47	40.00	-3.53	3	Vertical	0	1.00	-

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	51.34M	36.47	40.00	-3.53	3	Vertical	0	1.00	-
2440MHz	Pass	PK	249.22M	33.05	46.00	-12.95	3	Vertical	0	1.00	-
2440MHz	Pass	PK	262.8M	40.40	46.00	-5.60	3	Vertical	0	1.00	-
2440MHz	Pass	PK	299.66M	31.54	46.00	-14.46	3	Vertical	0	1.00	-
2440MHz	Pass	PK	388.9M	33.89	46.00	-12.11	3	Vertical	0	1.00	-
2440MHz	Pass	PK	641.1M	28.35	46.00	-17.65	3	Vertical	0	1.00	-
2440MHz	Pass	PK	64.92M	33.02	40.00	-6.98	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	94.02M	32.75	43.50	-10.75	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	301.6M	33.01	46.00	-12.99	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	315.18M	34.37	46.00	-11.63	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	408.3M	33.07	46.00	-12.93	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	579.02M	32.51	46.00	-13.49	3	Horizontal	360	1.00	-

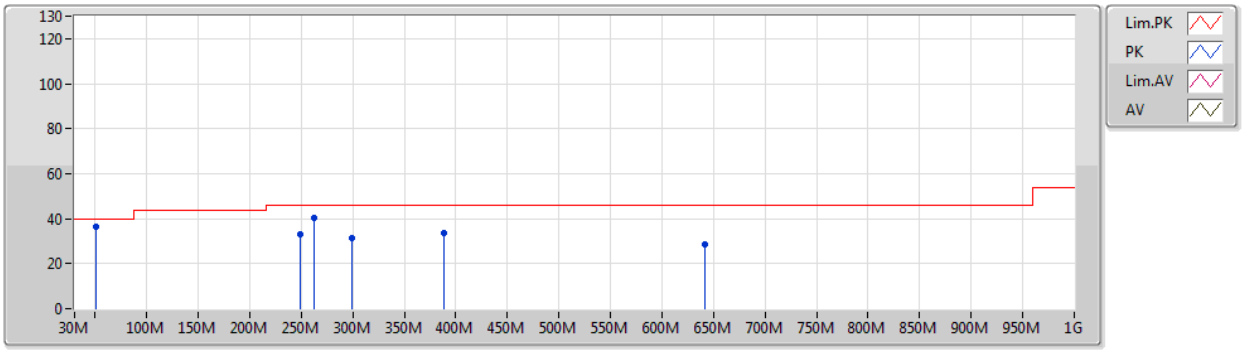
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2440MHz_Adapter

11/08/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	51.34M	36.47	40.00	-3.53	-23.72	3	Vertical	0	1.00	-	60.19	12.73	0.53	36.98
PK	249.22M	33.05	46.00	-12.95	-17.62	3	Vertical	0	1.00	-	50.67	17.51	1.30	36.43
PK	262.8M	40.40	46.00	-5.60	-15.79	3	Vertical	0	1.00	-	56.19	19.29	1.33	36.41
PK	299.66M	31.54	46.00	-14.46	-16.72	3	Vertical	0	1.00	-	48.26	18.23	1.40	36.35
PK	388.9M	33.89	46.00	-12.11	-14.35	3	Vertical	0	1.00	-	48.24	20.43	1.66	36.44
PK	641.1M	28.35	46.00	-17.65	-9.34	3	Vertical	0	1.00	-	37.69	25.48	2.20	37.02

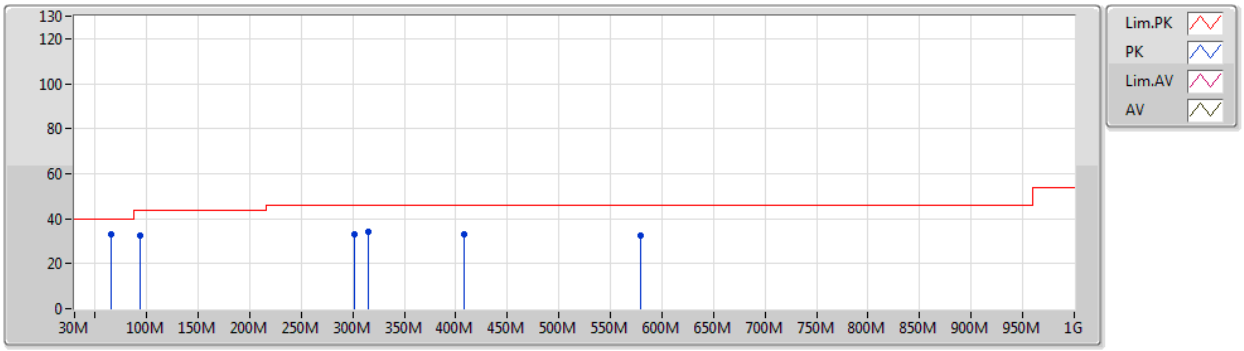
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2440MHz_Adapter

11/08/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	64.92M	33.02	40.00	-6.98	-25.41	3	Horizontal	360	1.00	-	58.43	10.92	0.60	36.93
PK	94.02M	32.75	43.50	-10.75	-21.40	3	Horizontal	360	1.00	-	54.15	14.47	0.70	36.57
PK	301.6M	33.01	46.00	-12.99	-16.70	3	Horizontal	360	1.00	-	49.71	18.25	1.40	36.35
PK	315.18M	34.37	46.00	-11.63	-16.55	3	Horizontal	360	1.00	-	50.92	18.42	1.43	36.40
PK	408.3M	33.07	46.00	-12.93	-13.45	3	Horizontal	360	1.00	-	46.52	21.28	1.72	36.45
PK	579.02M	32.51	46.00	-13.49	-10.35	3	Horizontal	360	1.00	-	42.86	24.66	2.12	37.13

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.488G	51.16	54.00	-2.84	3	Horizontal	332	1.01	-

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.39G	46.67	54.00	-7.33	3	Vertical	15	2.75	-
2402MHz	Pass	AV	2.402G	97.42	Inf	-Inf	3	Vertical	15	2.75	-
2402MHz	Pass	PK	2.3588G	57.99	74.00	-16.01	3	Vertical	15	2.75	-
2402MHz	Pass	PK	2.4018G	98.55	Inf	-Inf	3	Vertical	15	2.75	-
2402MHz	Pass	AV	2.388G	46.93	54.00	-7.07	3	Horizontal	147	1.50	-
2402MHz	Pass	AV	2.402G	103.03	Inf	-Inf	3	Horizontal	147	1.50	-
2402MHz	Pass	PK	2.39G	58.76	74.00	-15.24	3	Horizontal	147	1.50	-
2402MHz	Pass	PK	2.4018G	104.17	Inf	-Inf	3	Horizontal	147	1.50	-
2402MHz	Pass	AV	4.8151G	34.53	54.00	-19.47	3	Vertical	63	2.77	-
2402MHz	Pass	PK	4.81204G	46.87	74.00	-27.13	3	Vertical	63	2.77	-
2402MHz	Pass	AV	4.81816G	34.34	54.00	-19.66	3	Horizontal	122	1.50	-
2402MHz	Pass	PK	4.80292G	46.41	74.00	-27.59	3	Horizontal	122	1.50	-
2440MHz	Pass	AV	2.3696G	46.29	54.00	-7.71	3	Vertical	154	3.00	-
2440MHz	Pass	AV	2.44G	96.73	Inf	-Inf	3	Vertical	154	3.00	-
2440MHz	Pass	AV	2.4835G	46.55	54.00	-7.45	3	Vertical	154	3.00	-
2440MHz	Pass	PK	2.35G	57.47	74.00	-16.53	3	Vertical	154	3.00	-
2440MHz	Pass	PK	2.4404G	97.91	Inf	-Inf	3	Vertical	154	3.00	-
2440MHz	Pass	PK	2.4912G	57.25	74.00	-16.75	3	Vertical	154	3.00	-
2440MHz	Pass	AV	2.3468G	46.36	54.00	-7.64	3	Horizontal	66	1.41	-
2440MHz	Pass	AV	2.44G	103.71	Inf	-Inf	3	Horizontal	66	1.41	-
2440MHz	Pass	AV	2.4936G	46.88	54.00	-7.12	3	Horizontal	66	1.41	-
2440MHz	Pass	PK	2.3536G	58.03	74.00	-15.97	3	Horizontal	66	1.41	-
2440MHz	Pass	PK	2.4404G	104.84	Inf	-Inf	3	Horizontal	66	1.41	-
2440MHz	Pass	PK	2.4872G	59.26	74.00	-14.74	3	Horizontal	66	1.41	-
2440MHz	Pass	AV	4.87658G	34.09	54.00	-19.91	3	Vertical	262	1.62	-
2440MHz	Pass	AV	7.33404G	40.01	54.00	-13.99	3	Vertical	345	1.78	-
2440MHz	Pass	PK	4.87814G	46.20	74.00	-27.80	3	Vertical	262	1.62	-
2440MHz	Pass	PK	7.317G	52.45	74.00	-21.55	3	Vertical	345	1.78	-
2440MHz	Pass	AV	4.87922G	34.33	54.00	-19.67	3	Horizontal	190	1.50	-
2440MHz	Pass	AV	7.31784G	39.94	54.00	-14.06	3	Horizontal	267	1.50	-
2440MHz	Pass	PK	4.8719G	46.10	74.00	-27.90	3	Horizontal	190	1.50	-
2440MHz	Pass	PK	7.3083G	51.81	74.00	-22.19	3	Horizontal	267	1.50	-
2480MHz	Pass	AV	2.48G	96.22	Inf	-Inf	3	Vertical	140	2.90	-
2480MHz	Pass	AV	2.4884G	47.67	54.00	-6.33	3	Vertical	147	2.90	-
2480MHz	Pass	PK	2.4802G	94.69	Inf	-Inf	3	Vertical	142	2.90	-
2480MHz	Pass	PK	2.4846G	58.96	74.00	-15.04	3	Vertical	167	2.90	-
2480MHz	Pass	AV	2.48G	104.41	Inf	-Inf	3	Horizontal	332	1.01	-
2480MHz	Pass	AV	2.488G	51.16	54.00	-2.84	3	Horizontal	332	1.01	-
2480MHz	Pass	PK	2.48G	105.59	Inf	-Inf	3	Horizontal	332	1.01	-
2480MHz	Pass	PK	2.49G	62.56	74.00	-11.44	3	Horizontal	332	1.01	-
2480MHz	Pass	AV	4.96324G	34.50	54.00	-19.50	3	Vertical	8	1.74	-
2480MHz	Pass	AV	7.44012G	40.04	54.00	-13.96	3	Vertical	302	1.50	-
2480MHz	Pass	PK	4.95046G	46.49	74.00	-27.51	3	Vertical	8	1.74	-
2480MHz	Pass	PK	7.43424G	51.91	74.00	-22.09	3	Vertical	302	1.50	-
2480MHz	Pass	AV	4.96606G	34.31	54.00	-19.69	3	Horizontal	229	1.65	-
2480MHz	Pass	AV	7.43778G	39.95	54.00	-14.05	3	Horizontal	99	1.50	-
2480MHz	Pass	PK	4.96306G	46.07	74.00	-27.93	3	Horizontal	229	1.65	-

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz	Pass	PK	7.4526G	51.87	74.00	-22.13	3	Horizontal	99	1.50	-

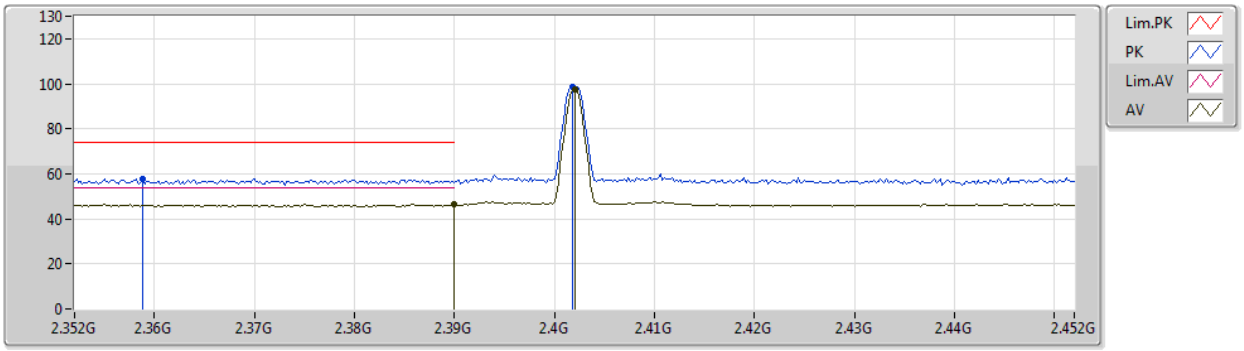
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2402MHz_TX

24/07/2020

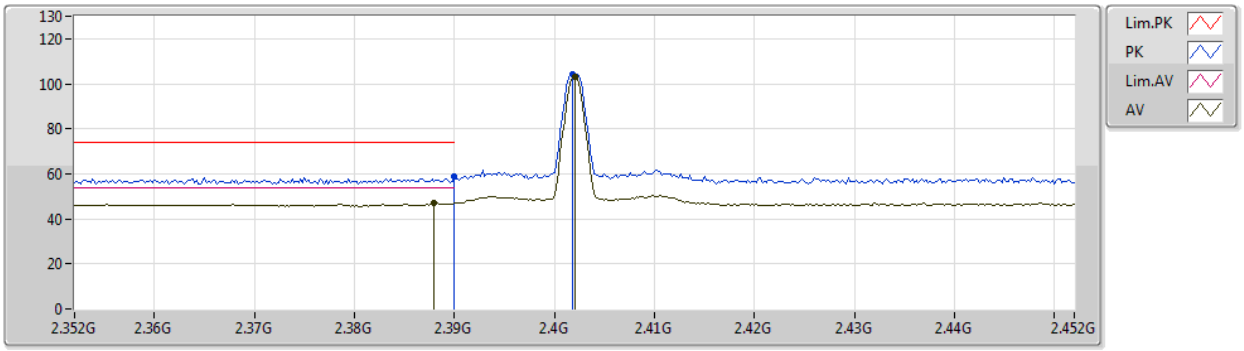


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.39G	46.67	54.00	-7.33	32.72	3	Vertical	15	2.75	-	13.95	27.64	5.08	-
AV	2.402G	97.42	Inf	-Inf	32.70	3	Vertical	15	2.75	-	64.72	27.60	5.10	-
PK	2.3588G	57.99	74.00	-16.01	32.78	3	Vertical	15	2.75	-	25.21	27.76	5.02	-
PK	2.4018G	98.55	Inf	-Inf	32.70	3	Vertical	15	2.75	-	65.85	27.60	5.10	-

BT-LE(1Mbps)

2402MHz_TX

24/07/2020

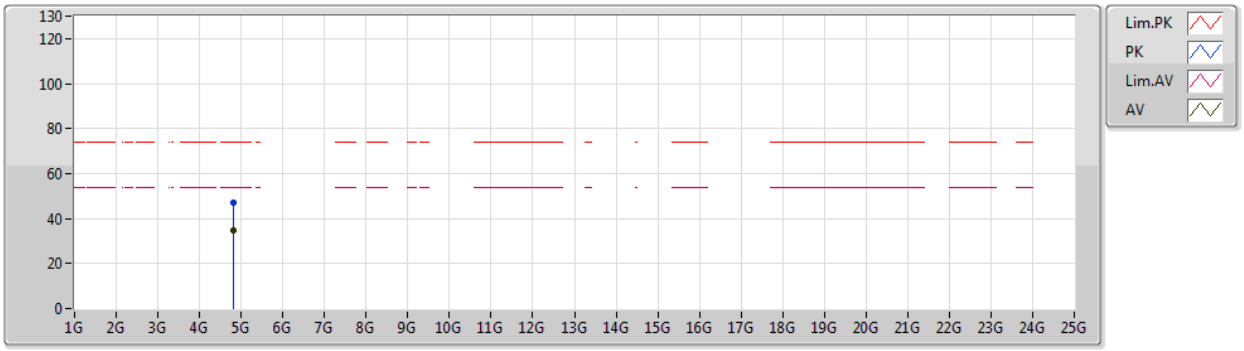


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.388G	46.93	54.00	-7.07	32.73	3	Horizontal	147	1.50	-	14.20	27.65	5.08	-
AV	2.402G	103.03	Inf	-Inf	32.70	3	Horizontal	147	1.50	-	70.33	27.60	5.10	-
PK	2.39G	58.76	74.00	-15.24	32.72	3	Horizontal	147	1.50	-	26.04	27.64	5.08	-
PK	2.4018G	104.17	Inf	-Inf	32.70	3	Horizontal	147	1.50	-	71.47	27.60	5.10	-

BT-LE(1Mbps)

2402MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.8151G	34.53	54.00	-19.47	7.95	3	Vertical	63	2.77	-	26.58	31.16	7.32	30.53
PK	4.81204G	46.87	74.00	-27.13	7.93	3	Vertical	63	2.77	-	38.94	31.15	7.31	30.53

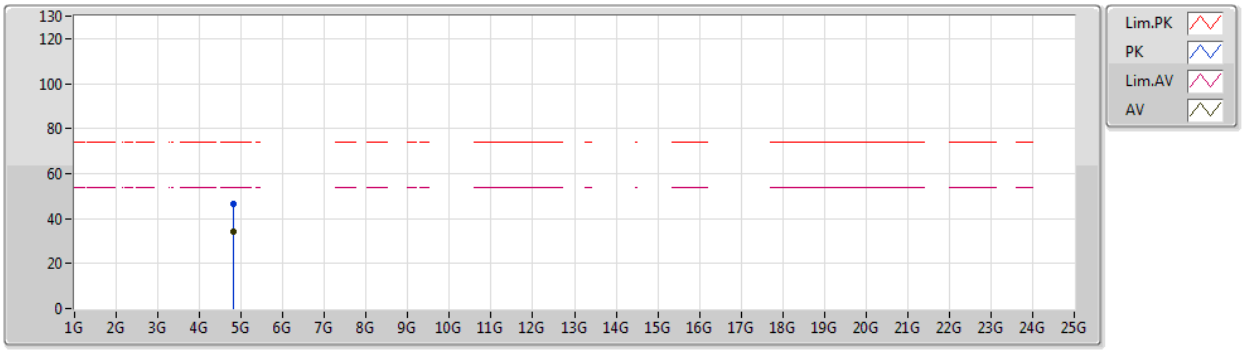
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2402MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.81816G	34.34	54.00	-19.66	7.96	3	Horizontal	122	1.50	-	26.38	31.17	7.32	30.53
PK	4.80292G	46.41	74.00	-27.59	7.88	3	Horizontal	122	1.50	-	38.53	31.11	7.30	30.53

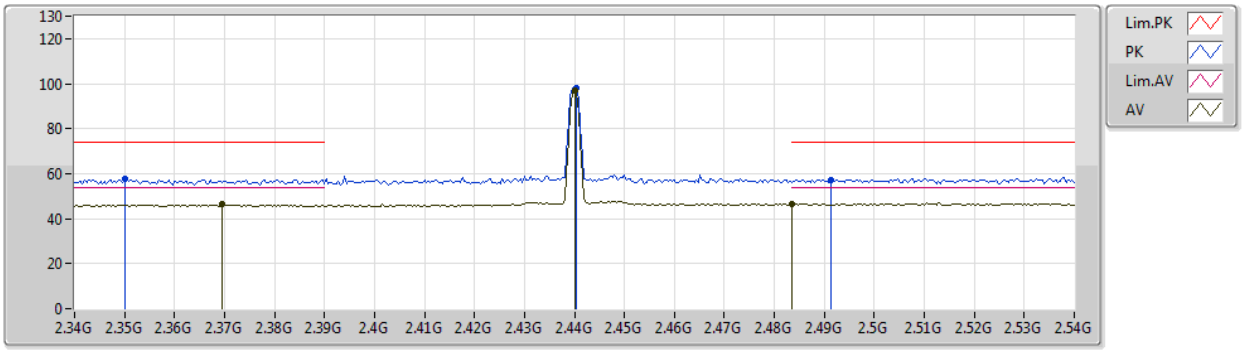
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2440MHz_TX

24/07/2020

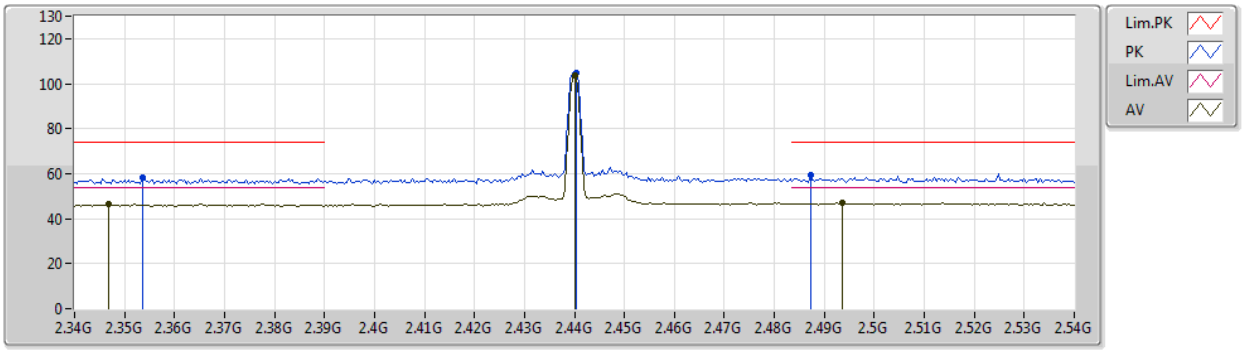


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3696G	46.29	54.00	-7.71	32.76	3	Vertical	154	3.00	-	13.53	27.72	5.04	-
AV	2.44G	96.73	Inf	-Inf	32.76	3	Vertical	154	3.00	-	63.97	27.60	5.16	-
AV	2.4835G	46.55	54.00	-7.45	32.83	3	Vertical	154	3.00	-	13.72	27.60	5.23	-
PK	2.35G	57.47	74.00	-16.53	32.80	3	Vertical	154	3.00	-	24.67	27.80	5.00	-
PK	2.4404G	97.91	Inf	-Inf	32.76	3	Vertical	154	3.00	-	65.15	27.60	5.16	-
PK	2.4912G	57.25	74.00	-16.75	32.84	3	Vertical	154	3.00	-	24.41	27.60	5.24	-

BT-LE(1Mbps)

2440MHz_TX

24/07/2020

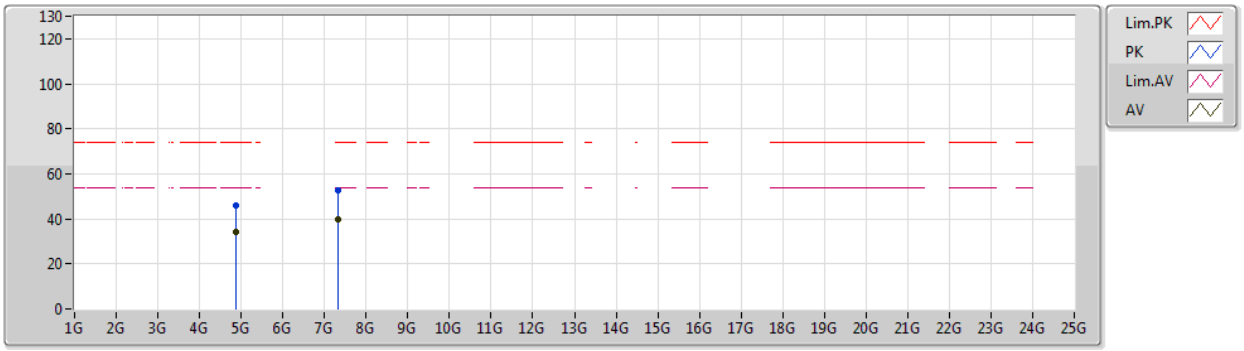


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3468G	46.36	54.00	-7.64	32.80	3	Horizontal	66	1.41	-	13.56	27.81	4.99	-
AV	2.44G	103.71	Inf	-Inf	32.76	3	Horizontal	66	1.41	-	70.95	27.60	5.16	-
AV	2.4936G	46.88	54.00	-7.12	32.84	3	Horizontal	66	1.41	-	14.04	27.60	5.24	-
PK	2.3536G	58.03	74.00	-15.97	32.80	3	Horizontal	66	1.41	-	25.23	27.79	5.01	-
PK	2.4404G	104.84	Inf	-Inf	32.76	3	Horizontal	66	1.41	-	72.08	27.60	5.16	-
PK	2.4872G	59.26	74.00	-14.74	32.83	3	Horizontal	66	1.41	-	26.43	27.60	5.23	-

BT-LE(1Mbps)

2440MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87658G	34.09	54.00	-19.91	8.09	3	Vertical	262	1.62	-	26.00	31.25	7.38	30.54
AV	7.33404G	40.01	54.00	-13.99	13.81	3	Vertical	345	1.78	-	26.20	36.53	8.60	31.32
PK	4.87814G	46.20	74.00	-27.80	8.08	3	Vertical	262	1.62	-	38.12	31.24	7.38	30.54
PK	7.317G	52.45	74.00	-21.55	13.85	3	Vertical	345	1.78	-	38.60	36.57	8.60	31.32

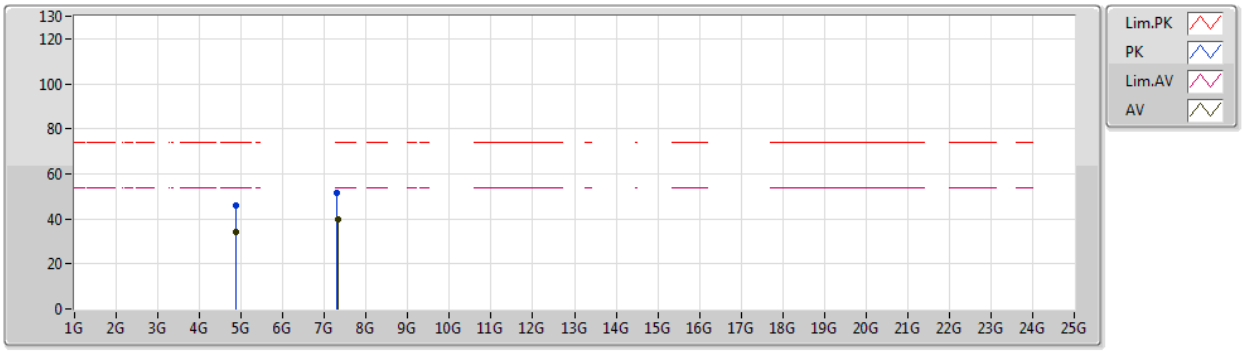
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2440MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87922G	34.33	54.00	-19.67	8.08	3	Horizontal	190	1.50	-	26.25	31.24	7.38	30.54
AV	7.31784G	39.94	54.00	-14.06	13.84	3	Horizontal	267	1.50	-	26.10	36.56	8.60	31.32
PK	4.8719G	46.10	74.00	-27.90	8.10	3	Horizontal	190	1.50	-	38.00	31.26	7.37	30.53
PK	7.3083G	51.81	74.00	-22.19	13.86	3	Horizontal	267	1.50	-	37.95	36.58	8.60	31.32

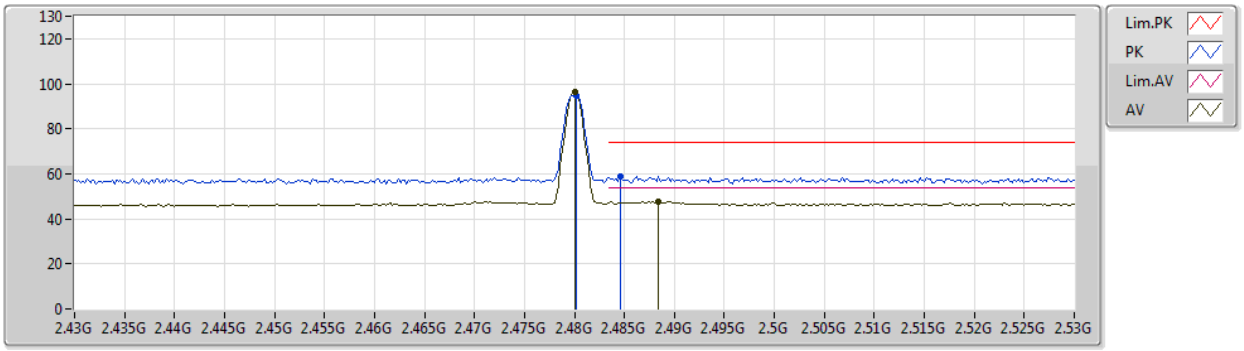
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2480MHz_TX

24/07/2020

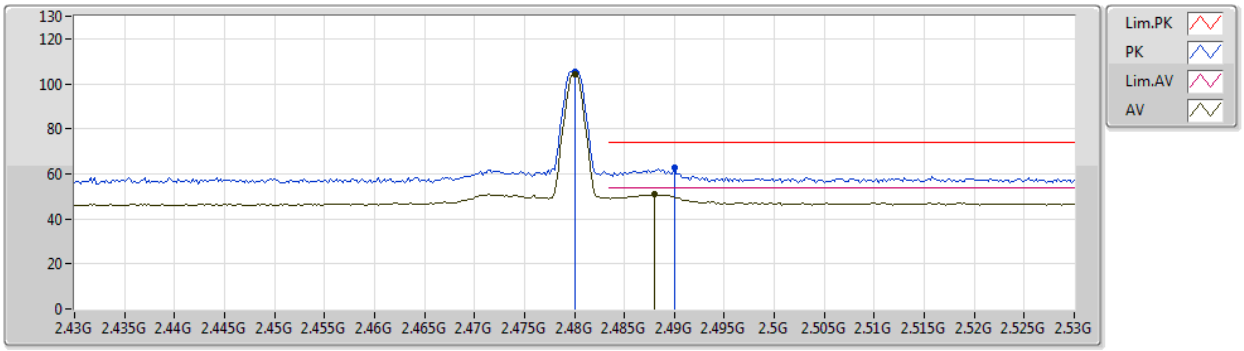


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	96.22	Inf	-Inf	32.82	3	Vertical	140	2.90	-	63.40	27.60	5.22	-
AV	2.4884G	47.67	54.00	-6.33	32.83	3	Vertical	147	2.90	-	14.84	27.60	5.23	-
PK	2.4802G	94.69	Inf	-Inf	32.82	3	Vertical	142	2.90	-	61.87	27.60	5.22	-
PK	2.4846G	58.96	74.00	-15.04	32.83	3	Vertical	167	2.90	-	26.13	27.60	5.23	-

BT-LE(1Mbps)

2480MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	104.41	Inf	-Inf	32.82	3	Horizontal	332	1.01	-	71.59	27.60	5.22	-
AV	2.488G	51.16	54.00	-2.84	32.83	3	Horizontal	332	1.01	-	18.33	27.60	5.23	-
PK	2.48G	105.59	Inf	-Inf	32.82	3	Horizontal	332	1.01	-	72.77	27.60	5.22	-
PK	2.49G	62.56	74.00	-11.44	32.84	3	Horizontal	332	1.01	-	29.72	27.60	5.24	-

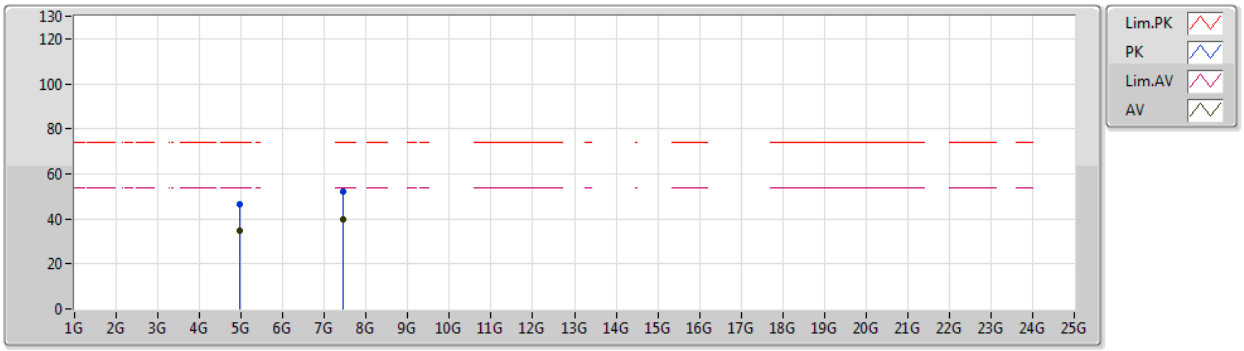
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01

BT-LE(1Mbps)

2480MHz_TX

24/07/2020

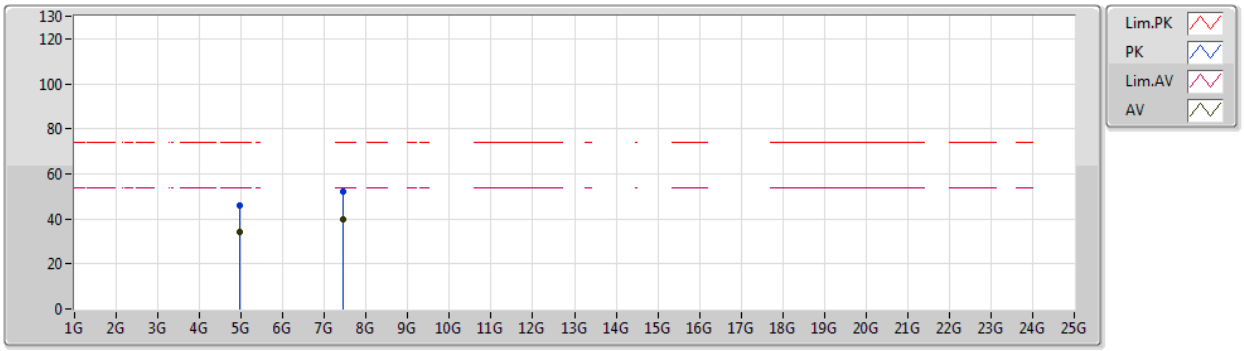


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.96324G	34.50	54.00	-19.50	8.34	3	Vertical	8	1.74	-	26.16	31.43	7.46	30.55
AV	7.44012G	40.04	54.00	-13.96	13.84	3	Vertical	302	1.50	-	26.20	36.56	8.60	31.32
PK	4.95046G	46.49	74.00	-27.51	8.31	3	Vertical	8	1.74	-	38.18	31.40	7.45	30.54
PK	7.43424G	51.91	74.00	-22.09	13.82	3	Vertical	302	1.50	-	38.09	36.54	8.60	31.32

BT-LE(1Mbps)

2480MHz_TX

24/07/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.96606G	34.31	54.00	-19.69	8.35	3	Horizontal	229	1.65	-	25.96	31.43	7.47	30.55
AV	7.43778G	39.95	54.00	-14.05	13.83	3	Horizontal	99	1.50	-	26.12	36.55	8.60	31.32
PK	4.96306G	46.07	74.00	-27.93	8.34	3	Horizontal	229	1.65	-	37.73	31.43	7.46	30.55
PK	7.4526G	51.87	74.00	-22.13	13.88	3	Horizontal	99	1.50	-	37.99	36.60	8.60	31.32

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052115-01