



FCC RADIO TEST REPORT

FCC ID : 2ARF9CSG1K3K
Equipment : Cloud Service Gateway
Brand Name : Versa Networks
Model Name : CSG1300,CSG1500,CSG3300,CSG3500
Applicant : Versa Networks
6001 America Center Dr, 4th floor, Suite 400, San Jose, CA 95002, USA
Manufacturer : Accton Technology Corporation
1, Creation Road3, Hsinchu Science Park Hsinchu 20077, Taiwan
Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 10, 2020, and testing was started from Aug. 12, 2020 and completed on Sep. 01, 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: Cliff Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_6 Ver1.2



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:

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

Reviewed by: Sam Chen

Report Producer: Viola Huang



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	1

Note:

- ♦ Bluetooth LE uses a GFSK modulation.
- ♦ BWch is the nominal channel bandwidth.
- ♦ This device contains transmitter module (WLAN FCC ID:2ARF9CSG-W1, WWAN FCC ID: N7NEM75).

**1.1.2 Antenna Information****For WLAN / BT antenna**

Ant.	Port	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	1	WIESON	GY121HT0330-016	Dipole Antenna	RP SMA Plug	Note 1
2	2	WIESON	GY121HT0330-016	Dipole Antenna	RP SMA Plug	
3	1	MAGLAYERS	PCA-3210-2G4C6-A1-TN	PIFA Antenna	MHF	

For WWAN antenna

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
4	1	WIESON	GY115HT0330-038	Dipole Antenna	SMA Plug	Note1
5	2	WIESON	GY115HT0330-038	Dipole Antenna	SMA Plug	

Note 1:

Ant.	Port	Antenna Gain (dBi)			Cable Loss (dB)			True Gain (dBi)		
		2.4G	5G	Bluetooth	2.4G	5G	Bluetooth	2.4G	5G	Bluetooth
1	1	3.10	4.55	-	0.84	1.72	-	2.26	2.83	-
2	2	3.10	4.55	-	1.06	1.89	-	2.04	2.66	-
3	1	-	-	-5.59	-	-	-	-	-	-

WWAN Antenna Gain (dBi)					
Ant.	Port	698MHz~960MHz		1710MHz~2170MHz	
4	1	3.20		3.02	
5	2	3.20		3.02	

Note2: The above information was declared by manufacturer.

For BT function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For WWAN function (1TX/2RX):

Only Port 1 can be use as transmitting antenna

Port 1 and Port 2 could receive simultaneously.

For WiFi function (1TX/1RX):**2.4GHz Function****For IEEE 802.11b/g/n/VHT mode (2TX, 2RX):**

Port 1 and Port 2 could transmit/receive simultaneously.

5GHz Function**For IEEE 802.11a/n/ac mode (2TX, 2RX):**

Port 1 and Port 2 could transmit/receive simultaneously.

**1.1.3 Mode Test Duty Cycle**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.633	1.99	405u	3k

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From Slide-in power supply		
Function	☒ Point-to-multipoint	☐ Point-to-point	
Test Software Version	Tera Term		
Support Mode	☒	LE 1M PHY: 1 Mb/s	
	☐	LE Coded PHY (S=2): 500 Kb/s	
	☐	LE Coded PHY (S=8): 125 Kb/s	
	☐	LE 2M PHY: 2 Mb/s	

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

EUT	Model Name	CPU	RAM
1	CSG1300	Intel Denvention 16 cores C3958 Soc	DDR4 64GB
2	CSG1500	Intel Skylake D14 cores D2177NT Soc	DDR4 128GB
3	CSG3300	Intel Denvention 16 cores C3958 Soc	DDR4 64GB
4	CSG3500	Intel Skylake D14 cores D2177NT Soc	DDR4 128GB

From the above models, model: CSG1300 was selected as representative model for the test and its data was recorded in this report.

1.1.6 The telecommunication ports of the EUT is shown as below

EUT	Telecommunication Port	Description
1~4	RJ-45 10GbE ports*2	1Gbps/10Gbps
	SFP+ 10GbE ports*2	1Gbps/10Gbps
	SFP+ 10GbE ports*4	1Gbps/10Gbps
	RJ-45 1GbE PoE (30W) ports*8	10/100/1000Mbps
	RJ-45 1G Ethernet	10/100/1000Mbps
	RJ-45 Serial console port *1	-
	2.0 USB port*2	-

**1.1.7 Table of WLAN & WWAN Module Function**

Brand Name	Model Name	FCC ID	Function
VERSA NETWORKS	CSG-W1	2ARF9CSG-W1	WiFi: 2.4GHz / 5GHz Band 1~Band 4
Sierra	EM7565	N7NEM75	LTE: B2/B4/B5/B12/B13 & WCDMA: B2/B5



1.2 Applicable 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.

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC 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
☒	JHUBEI	ADD	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.	
		TEL	886-3-656-9065	FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Owen Hsu	24.1~24.8°C / 54~56%	Aug. 18, 2020~Aug. 27, 2020
Radiated below 1GHz	03CH05-CB	Eason Chen	24.4~25.3°C / 54~56%	Sep. 01, 2020
Radiated above 1GHz	03CH02-CB	Eason Chen	25.1~26.5°C / 53~57%	Aug. 18, 2020~Sep. 01, 2020
AC Conduction	CO01-CB	GH Hou	21~23°C / 61~63%	Aug. 12, 2020

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.6 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.39%	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

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

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
Operating Mode	CTX
1	EUT 1- Left power connect with power cord 1, right power connect with power cord 2

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	EUT 1
Operating Mode > 1GHz	CTX
1	EUT 1



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + WLAN 5GHz + Bluetooth + LTE
2	WLAN 2.4GHz + WLAN 5GHz + Bluetooth + WCDMA
Refer to Sporton Test Report No.: FA072432 for Co-location RF Exposure Evaluation.	

Note: The EUT can only use at Z axis position.

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



2.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Power supply*2	DELTA	DPS-920AB B	INPUT: 100-240V~, 50-60Hz, 12-6.5A OUTPUT: +54.5V, 16.88A
Others			
Power cord 1*1, non-shielded, 1.8m (Brand: XIE KANG / Model: XK-06)			
Power cord 2*1, non-shielded, 1.8m (Brand: SELF-MAN / Model: SM-006)			
Console cable*1, non-shielded, 1.5m			
Fan*4 (Brand: Nidec / Model: CP3VS1510001A)			
Wall Bracket*1			

2.5 Support Equipment

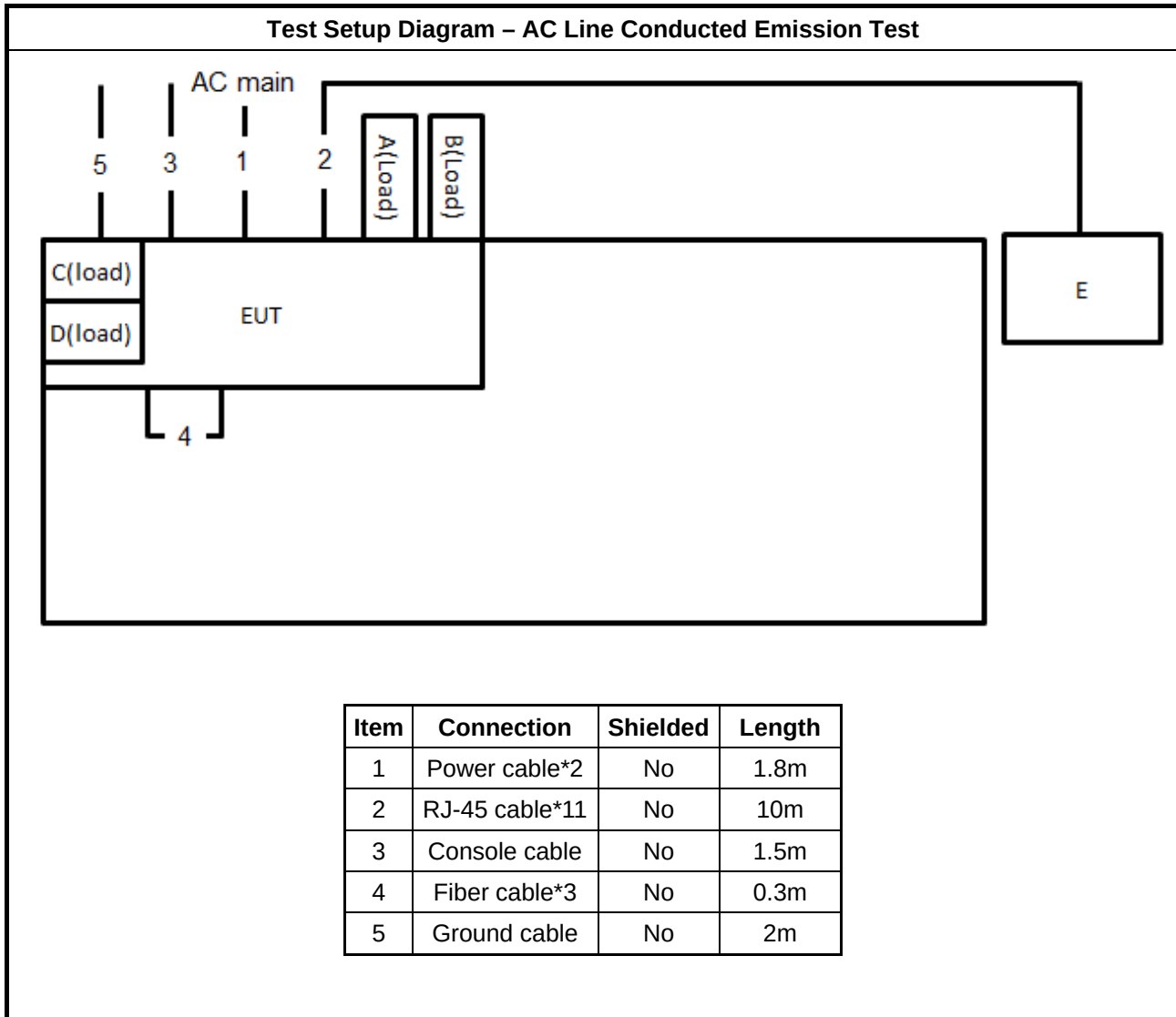
For AC Conduction:

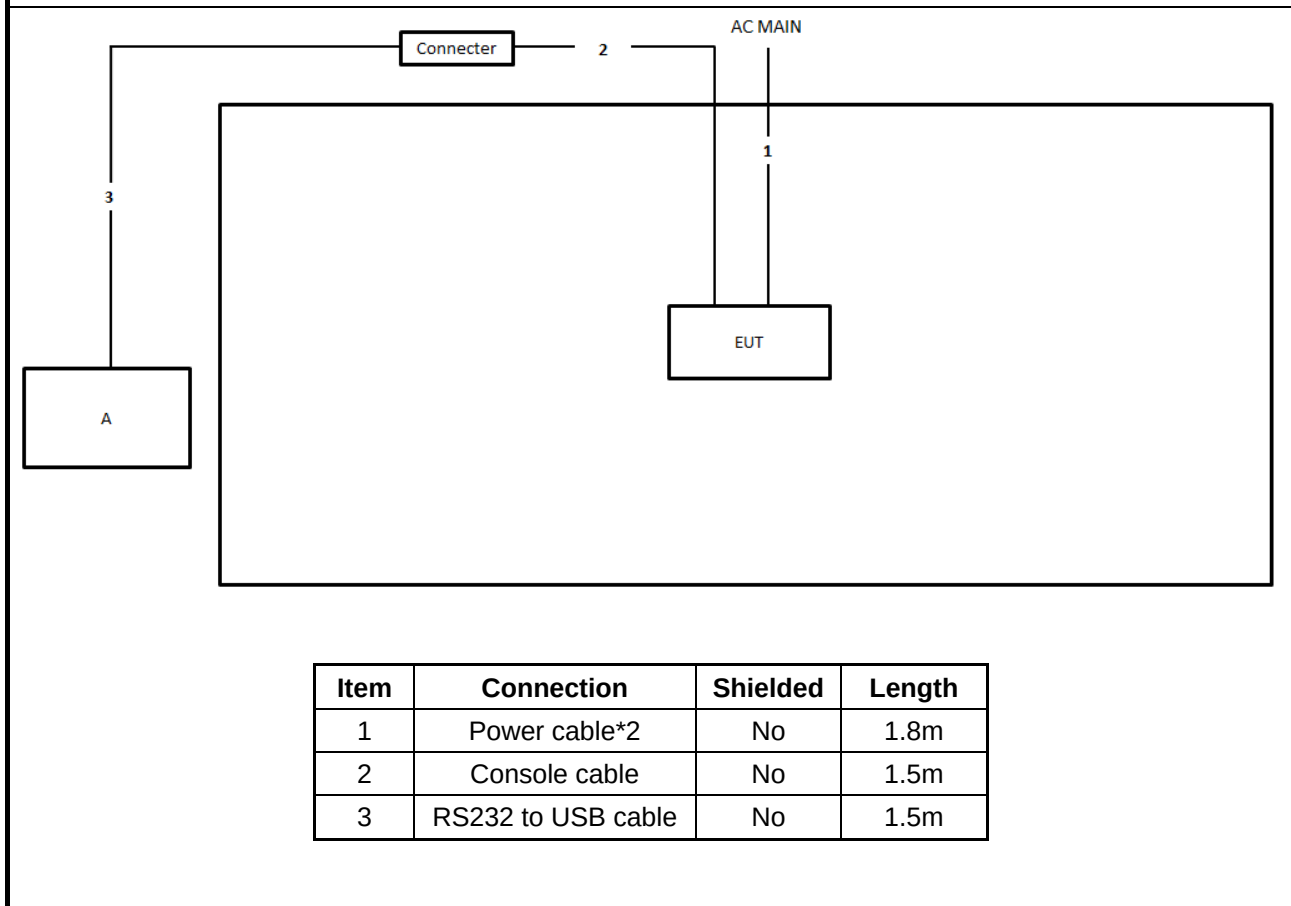
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Flash disk3.0	TOSHIBA	UHYBS-008GH	N/A
B	Flash disk3.0	TOSHIBA	UHYBS-008GH	N/A
C	SIM card	N/A	N/A	N/A
D	SIM card	N/A	N/A	N/A
E	PoE Load	Accton	PoEPlus Tester-B	N/A

For Radiated and RF Conducted:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test




3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

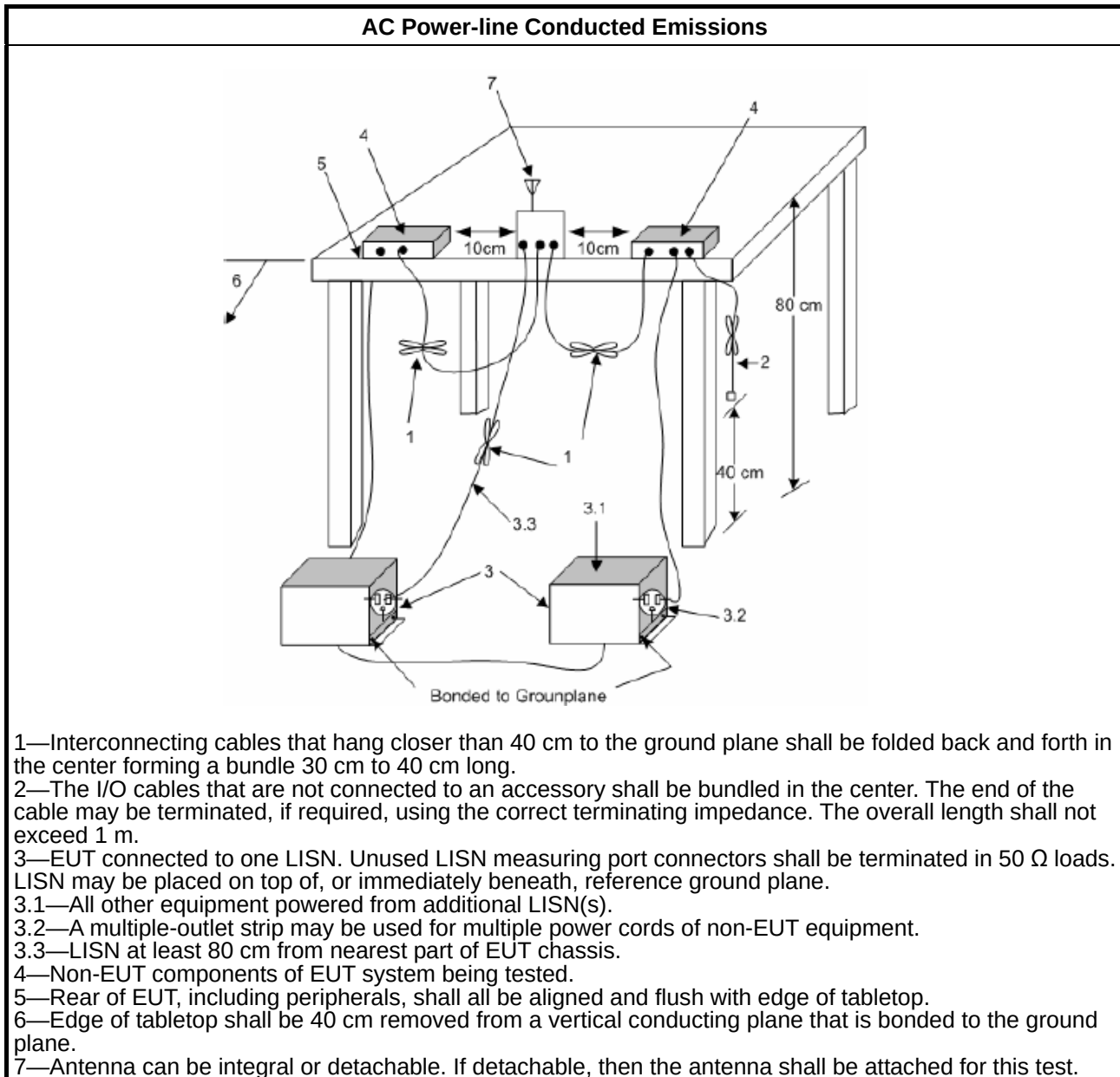
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



1.1.1. Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.5 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 $\geq$ 500 kHz.

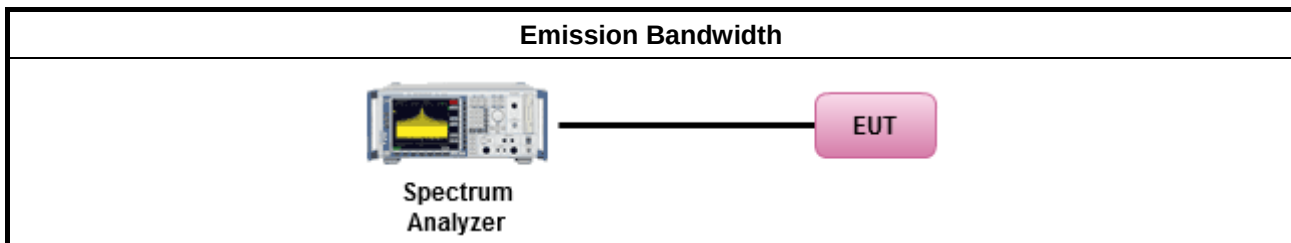
3.2.2 Measuring Instruments

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 FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
☐	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.2.4 Test Setup



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
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

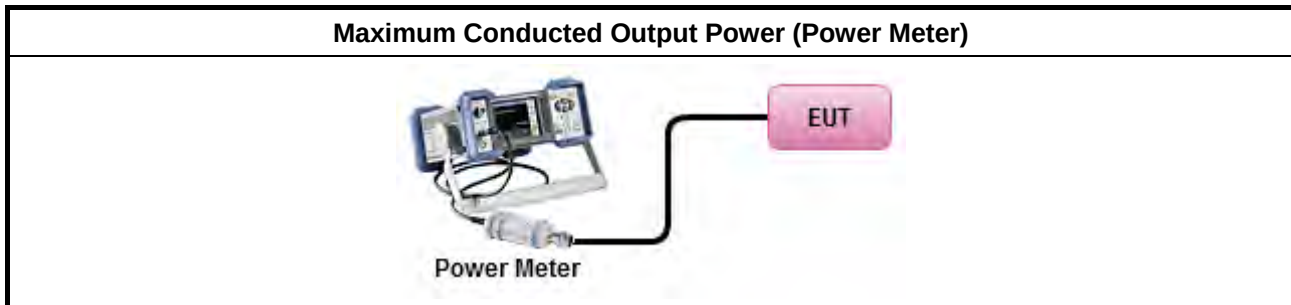
3.3.2 Measuring Instruments

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 FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
☐	Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
Maximum Conducted Output Power	
[duty cycle ≥ 98% or external video / power trigger]	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)	
☐	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
☒	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
For conducted measurement.	
If the EUT supports multiple transmit chains using options given below: Refer as FCC 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: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$	

3.3.4 Test Setup



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

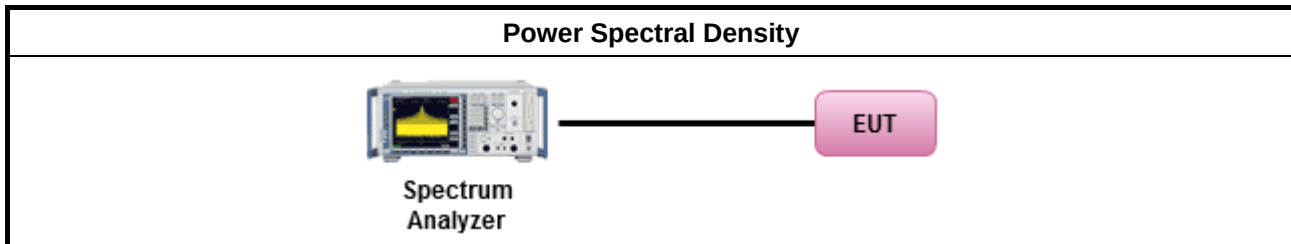
3.4.2 Measuring Instruments

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 FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. [duty cycle $\geq 98\%$ or external video / power trigger]
▪ For conducted measurement.	
▪ If The EUT supports multiple transmit chains using options given below:	
☐	Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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.
☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
☐	Option 3: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$. Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.

3.4.4 Test Setup



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

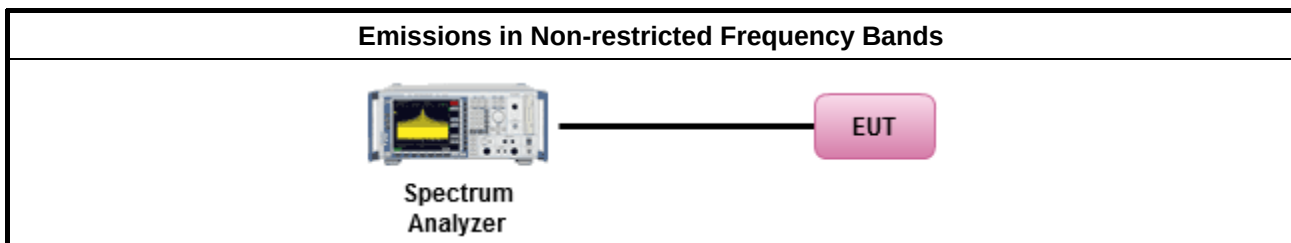
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



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 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.

3.6.2 Measuring Instruments

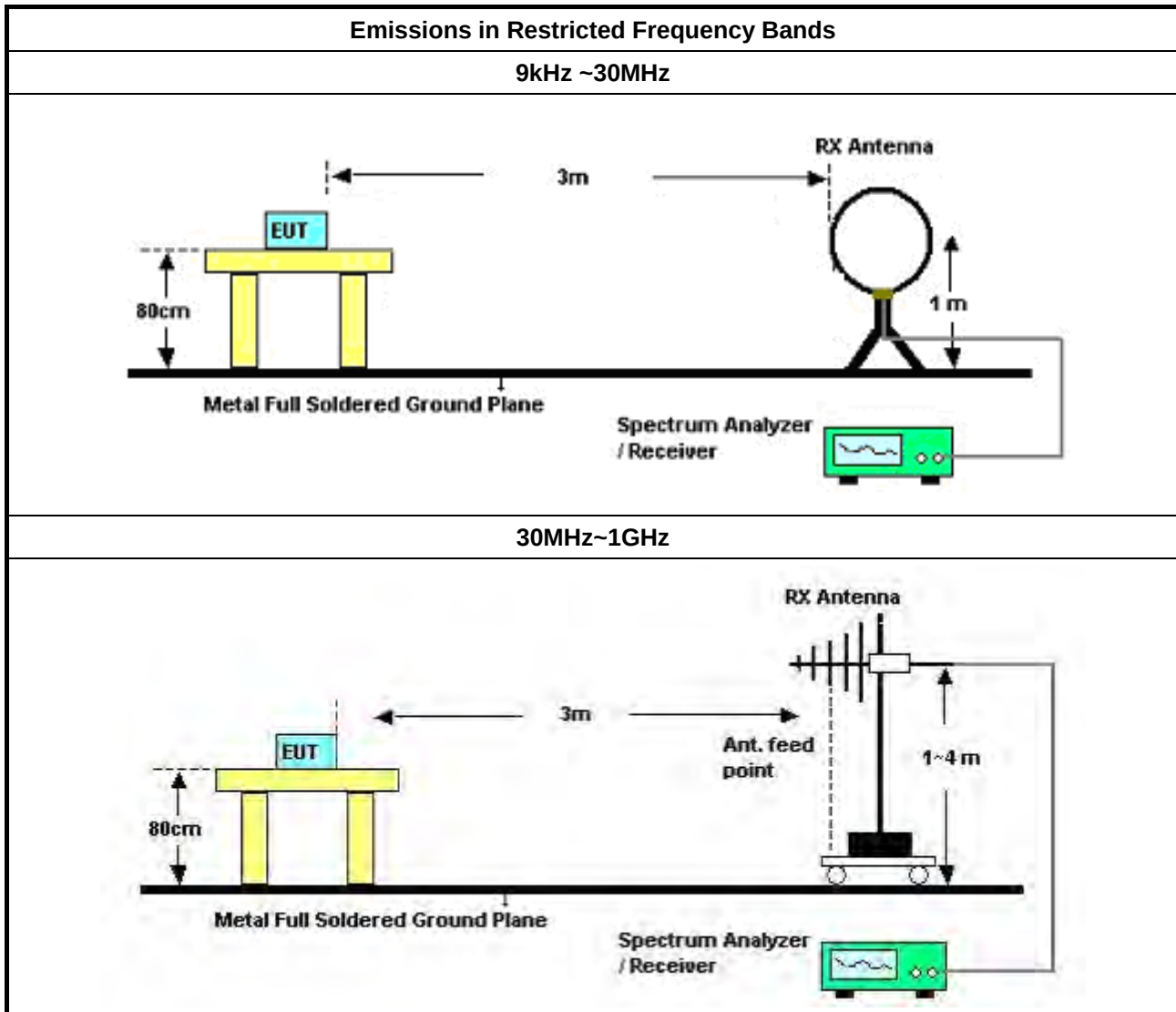
Refer a test equipment and calibration data table in this test report.

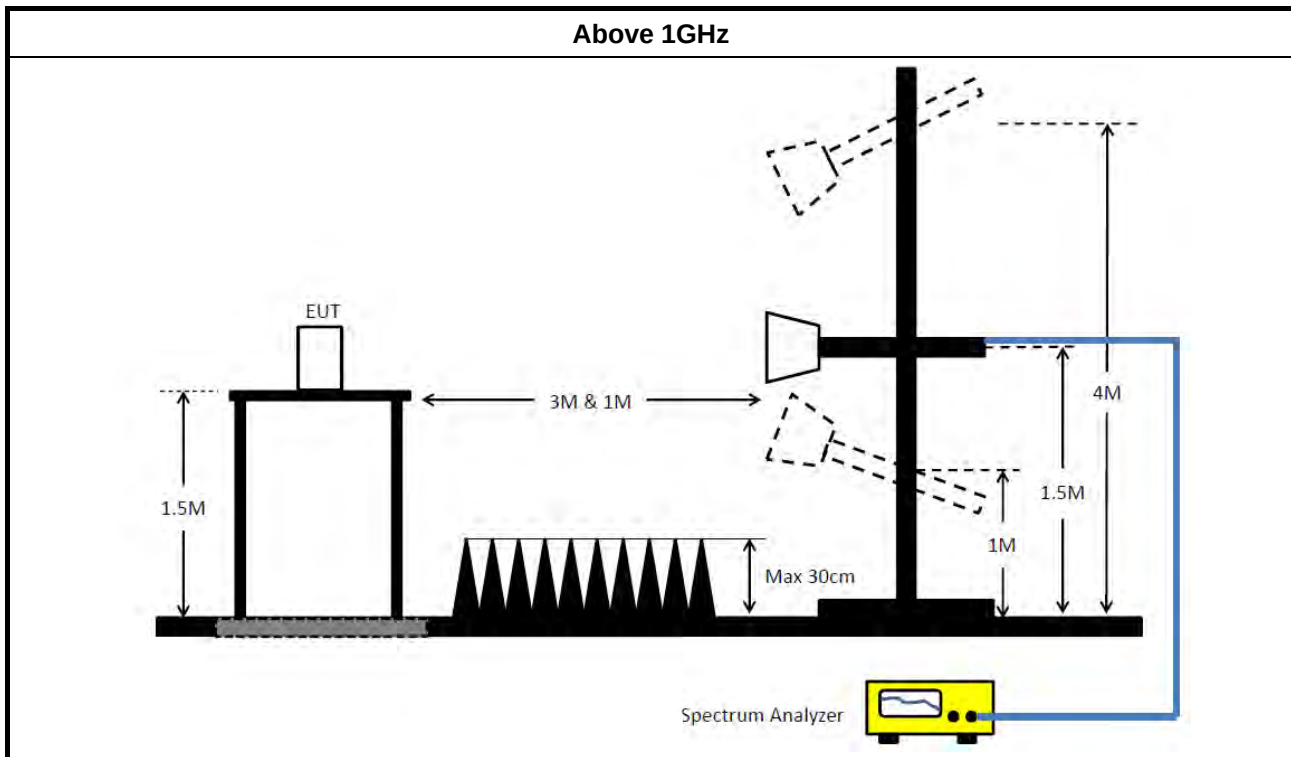


3.6.3 Test Procedures

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 FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
	☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle $\geq 98\%$).
	☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
	☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW $\geq 1/T$).
	☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
	☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
	For the transmitter band-edge emissions shall be measured using following options below:
	Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, 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 FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

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

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 27, 2020	Mar. 26, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH05-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	May 12, 2020	May 11, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 21, 2020	Apr. 20, 2021	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jul. 13, 2020	Jul. 12, 2021	Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH02-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	May 12, 2020	May 11, 2021	Radiation (03CH02-CB)
High Cable	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH02-CB)
High Cable	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 18, 2019	Nov. 17, 2020	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.



Conducted Emissions at Powerline

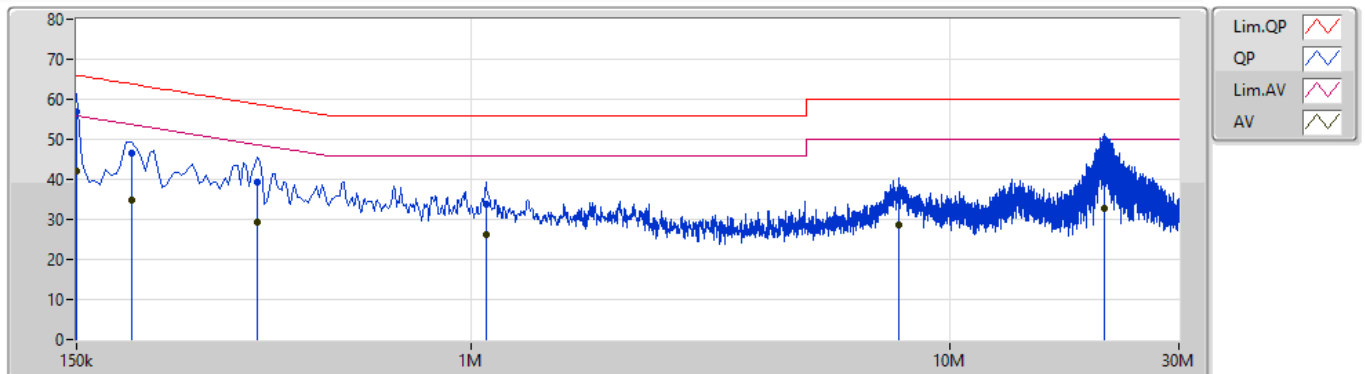
Appendix A

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	150k	56.84	66.00	-9.16	Line

Mode 1

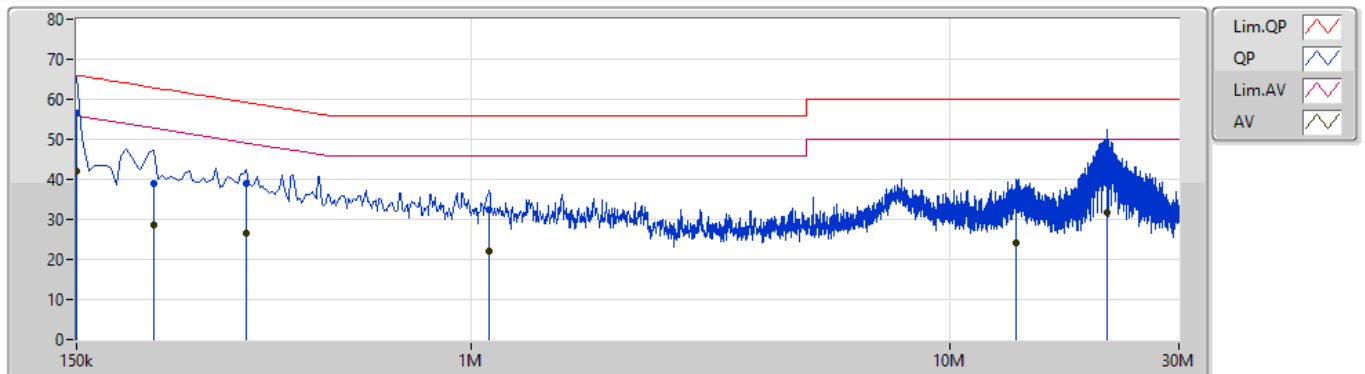
12/08/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	150k	56.84	66.00	-9.16	9.87	Line	"Worst"	46.97	0.05	0.03	9.79			
AV	150k	42.20	56.00	-13.80	9.87	Line	-	32.33	0.05	0.03	9.79			
QP	195k	46.64	63.82	-17.18	9.86	Line	-	36.78	0.04	0.03	9.79			
AV	195k	34.85	53.82	-18.97	9.86	Line	-	24.99	0.04	0.03	9.79			
QP	357k	39.48	58.79	-19.31	9.88	Line	-	29.60	0.04	0.03	9.81			
AV	357k	29.26	48.79	-19.53	9.88	Line	-	19.38	0.04	0.03	9.81			
QP	1.073M	33.86	56.00	-22.14	9.91	Line	-	23.95	0.05	0.04	9.82			
AV	1.073M	26.28	46.00	-19.72	9.91	Line	-	16.37	0.05	0.04	9.82			
QP	7.818M	35.44	60.00	-24.56	10.18	Line	-	25.26	0.15	0.14	9.89			
AV	7.818M	28.55	50.00	-21.45	10.18	Line	-	18.37	0.15	0.14	9.89			
QP	20.904M	46.86	60.00	-13.14	10.58	Line	-	36.28	0.25	0.33	10.00			
AV	20.904M	32.87	50.00	-17.13	10.58	Line	-	22.29	0.25	0.33	10.00			

Mode 1

12/08/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	150k	56.57	66.00	-9.43	9.86	Neutral	"Worst"	46.71	0.04	0.03	9.79			
AV	150k	41.98	56.00	-14.02	9.86	Neutral	-	32.12	0.04	0.03	9.79			
QP	217.5k	39.11	62.92	-23.81	9.86	Neutral	-	29.25	0.04	0.03	9.79			
AV	217.5k	28.56	52.92	-24.36	9.86	Neutral	-	18.70	0.04	0.03	9.79			
QP	339k	38.90	59.23	-20.33	9.88	Neutral	-	29.02	0.04	0.03	9.81			
AV	339k	26.56	49.23	-22.67	9.88	Neutral	-	16.68	0.04	0.03	9.81			
QP	1.091M	32.51	56.00	-23.49	9.92	Neutral	-	22.59	0.06	0.04	9.82			
AV	1.091M	21.97	46.00	-24.03	9.92	Neutral	-	12.05	0.06	0.04	9.82			
QP	13.722M	34.67	60.00	-25.33	10.32	Neutral	-	24.35	0.19	0.21	9.92			
AV	13.722M	24.26	50.00	-25.74	10.32	Neutral	-	13.94	0.19	0.21	9.92			
QP	21.228M	45.99	60.00	-14.01	10.56	Neutral	-	35.43	0.23	0.33	10.00			
AV	21.228M	31.88	50.00	-18.12	10.56	Neutral	-	21.32	0.23	0.33	10.00			



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)	645k	997.001k	997KF1D	640k	987.006k

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;

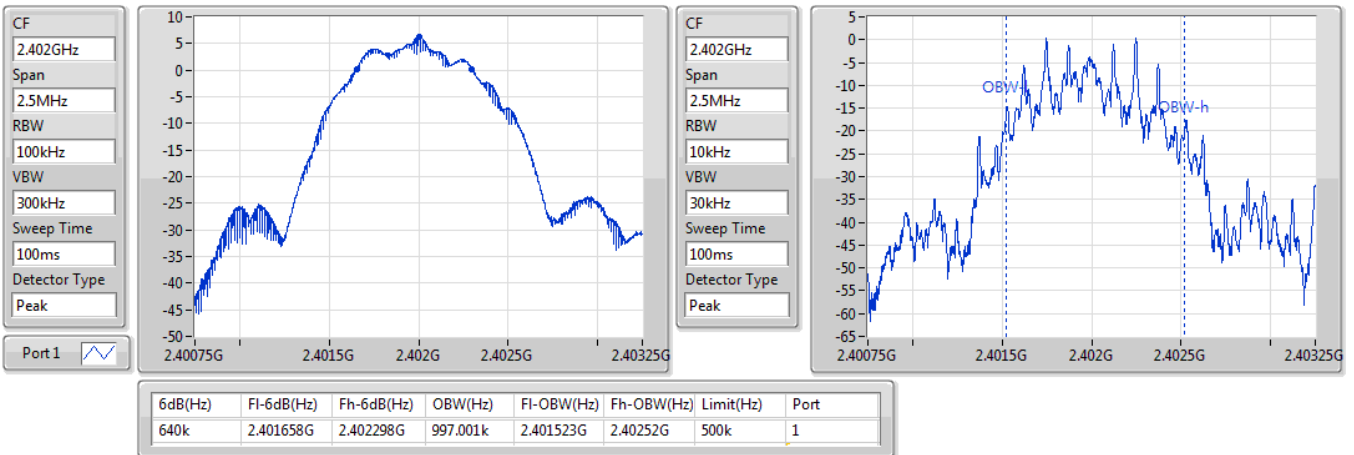
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	640k	997.001k
2440MHz	Pass	500k	645k	989.505k
2480MHz	Pass	500k	643.75k	987.006k

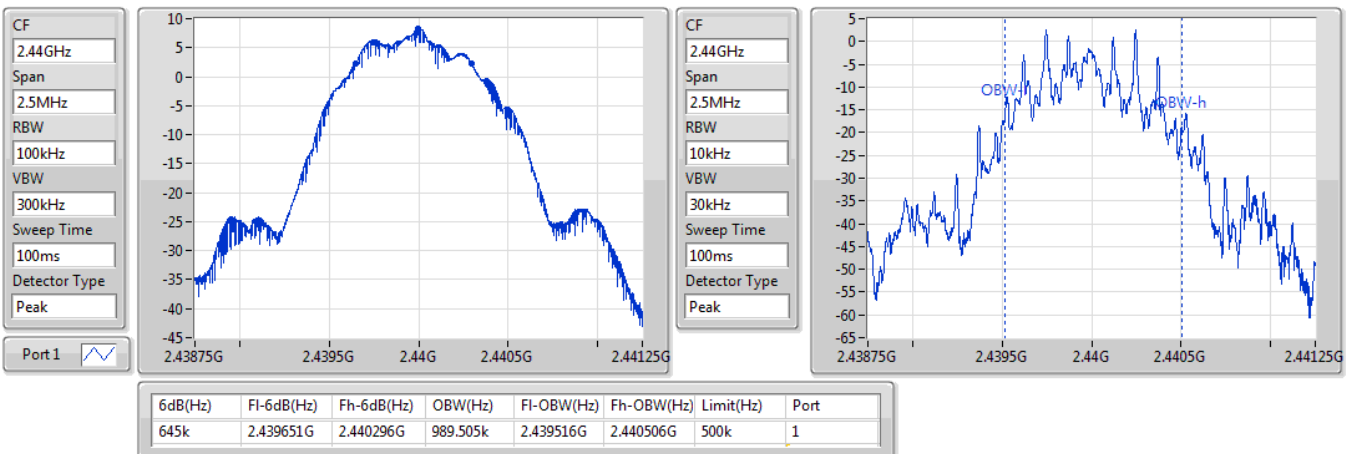
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz

19/08/2020


BT-LE(1Mbps)
2440MHz

19/08/2020

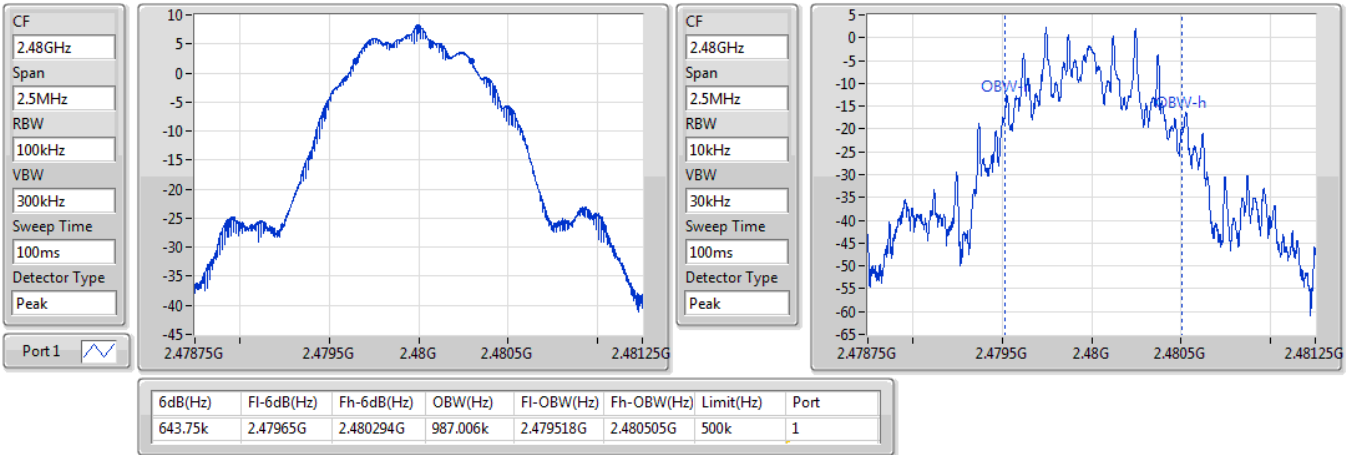


BT-LE(1Mbps)

2480MHz

EBW

19/08/2020





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	8.34	0.00682



Average Power-DTS

Appendix C

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-5.59	6.17	30.00
2440MHz	Pass	-5.59	8.34	30.00
2480MHz	Pass	-5.59	7.94	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	1.33

RBW=3 kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-5.59	-0.37	8.00
2440MHz	Pass	-5.59	1.33	8.00
2480MHz	Pass	-5.59	0.25	8.00

DG = Directional Gain; RBW=3 kHz;

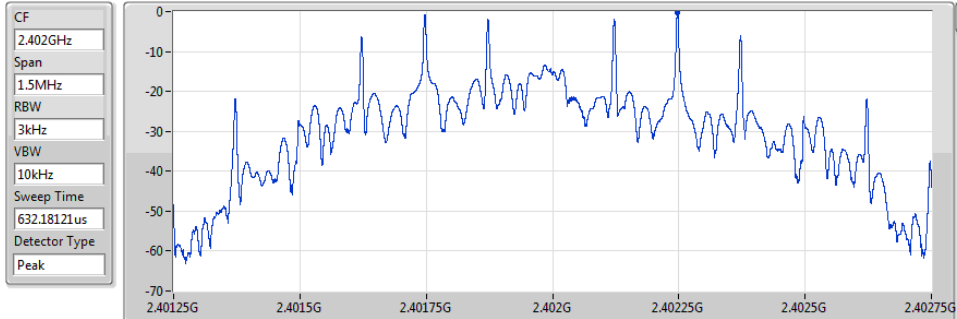
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps)

PSD

2402MHz

19/08/2020



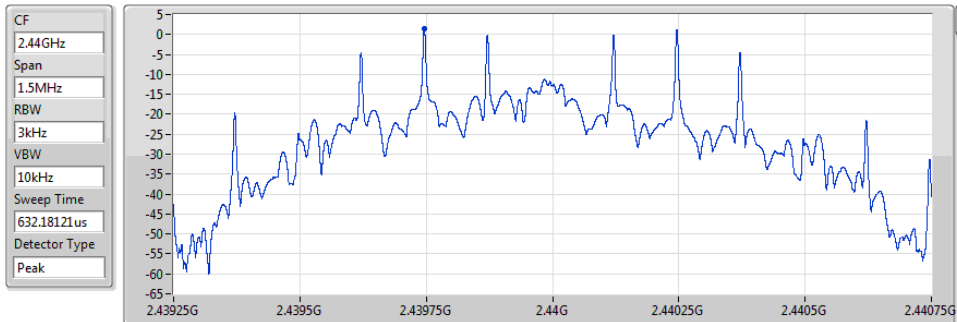
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.37	-0.37	-0.37

BT-LE(1Mbps)

PSD

2440MHz

19/08/2020



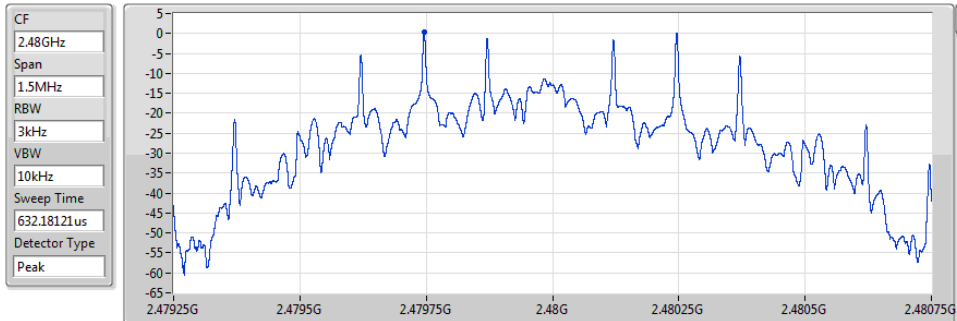
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
1.33	1.33	1.33

BT-LE(1Mbps)

PSD

2480MHz

19/08/2020



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.25	0.25	0.25



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	2.44G	8.35	-21.65	2.01928G	-52.34	2.4G	-37.28	2.4G	-38.62	2.48539G	-51.88	24.87065G	-46.63	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	2.44G	8.35	-21.65	2.01928G	-52.34	2.4G	-37.28	2.4G	-38.62	2.48539G	-51.88	24.87065G	-46.63	1
2440MHz	Pass	2.44G	8.35	-21.65	2.12767G	-51.94	2.39792G	-51.83	2.4835G	-55.28	2.49938G	-50.20	24.87065G	-46.33	1
2480MHz	Pass	2.44G	8.35	-21.65	461.81M	-52.08	2.39341G	-52.01	2.4835G	-52.00	2.48397G	-48.38	16.47945G	-46.40	1

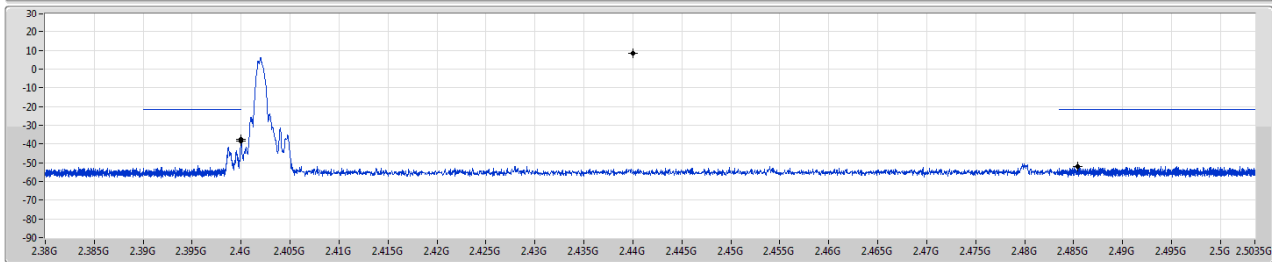
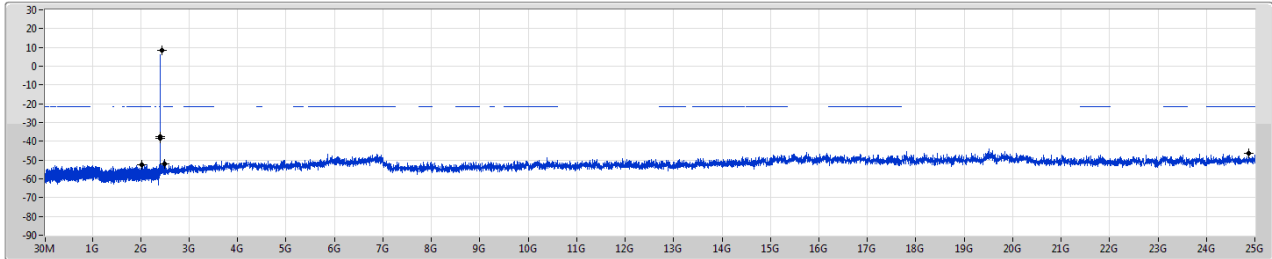
BT-LE(1Mbps)

2402MHz

CSE NdB

19/08/2020

Port1



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

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
2.44G	8.35	-21.65	2.01928G	-52.34	2.4G	-37.28	2.4G	-38.62	2.48539G	-51.88	2.47065G	-46.63	1

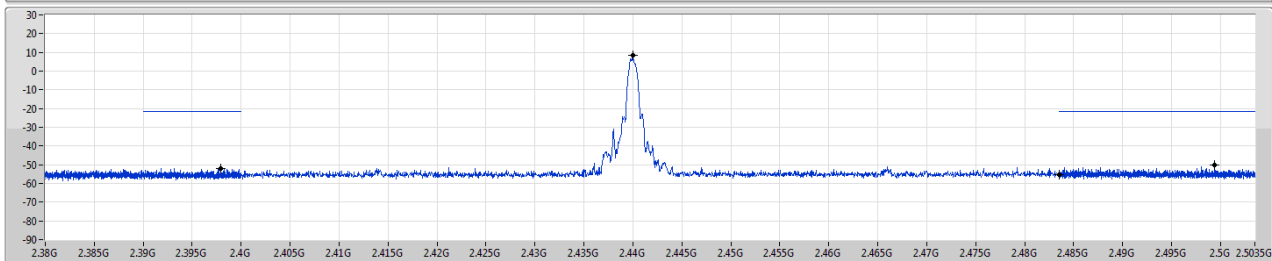
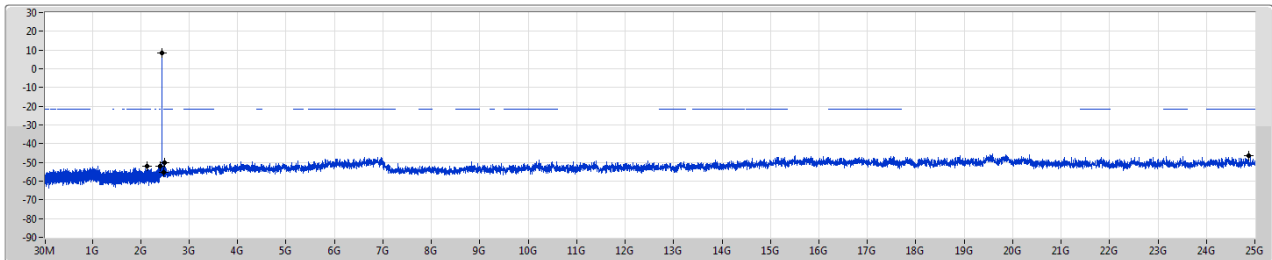
BT-LE(1Mbps)

2440MHz

CSE NdB

19/08/2020

Port1



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

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
2.44G	8.35	-21.65	2.12767G	-51.94	2.39792G	-51.83	2.4835G	-55.28	2.49938G	-50.20	2.47065G	-46.33	1

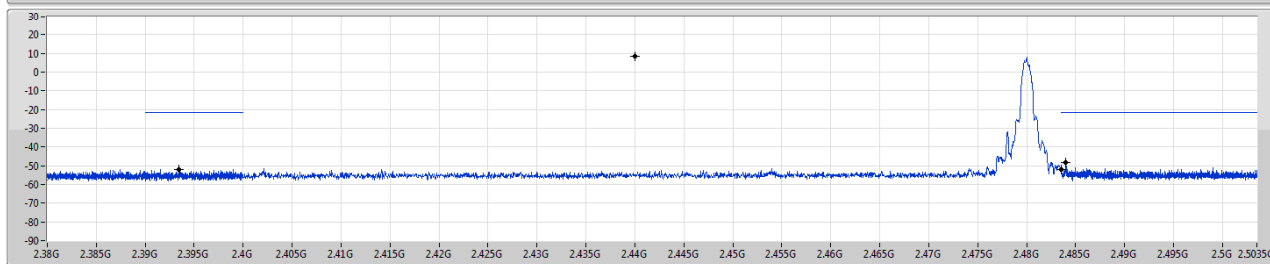
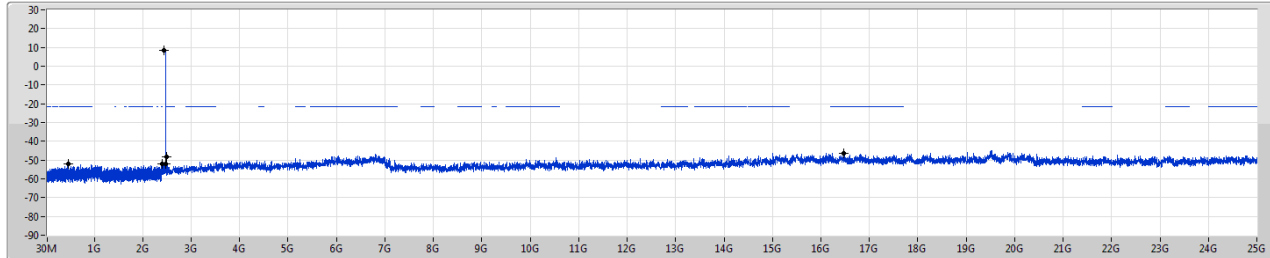
BT-LE(1Mbps)

2480MHz

CSE NdB

19/08/2020

Port 1



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

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
2.44G	8.35	-21.65	461.81M	-52.08	2.39341G	-52.01	2.4835G	-52.00	2.48397G	-48.38	16.47945G	-46.40	1



Radiated Emissions below 1GHz

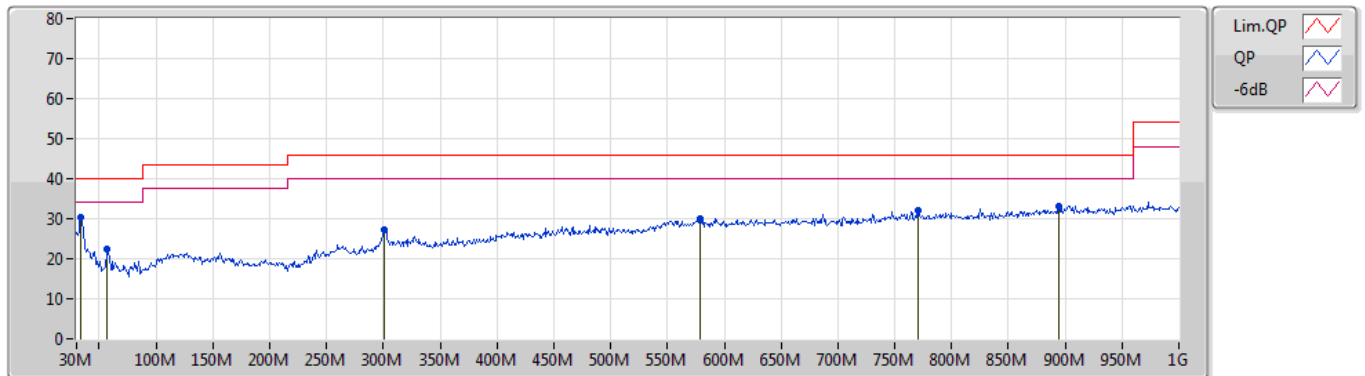
Appendix F.1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	PK	33.88M	30.23	40.00	-9.77	Vertical

Mode 1

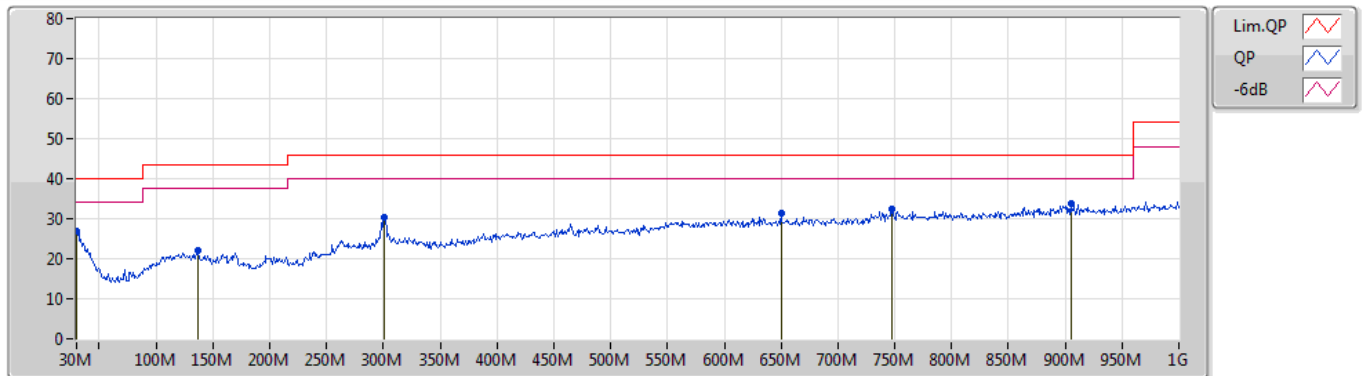
01/09/2020



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	33.88M	30.23	40.00	-9.77	-7.92	3	Vertical	118	2.00	"Worst"	38.15	22.30	1.28	31.50
PK	57.16M	22.58	40.00	-17.42	-17.85	3	Vertical	360	1.00	-	40.43	12.79	1.14	31.78
PK	300.63M	27.25	46.00	-18.75	-10.90	3	Vertical	360	2.00	-	38.15	18.62	2.50	32.02
PK	579.02M	29.99	46.00	-16.01	-4.83	3	Vertical	115	1.25	-	34.82	24.03	3.42	32.28
PK	770.11M	32.16	46.00	-13.84	-3.18	3	Vertical	148	1.50	-	35.34	25.15	3.96	32.29
PK	894.27M	33.24	46.00	-12.76	-1.91	3	Vertical	356	1.25	-	35.15	25.89	4.55	32.35

Mode 1

01/09/2020



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	30M	27.02	40.00	-12.98	-6.17	3	Horizontal	31	1.50	-	33.19	24.19	1.20	31.56
PK	136.7M	22.09	43.50	-21.41	-12.69	3	Horizontal	0	1.50	-	34.78	17.50	1.78	31.97
PK	300.63M	30.40	46.00	-15.60	-10.90	3	Horizontal	103	1.25	-	41.30	18.62	2.50	32.02
PK	649.83M	31.29	46.00	-14.71	-4.48	3	Horizontal	88	2.00	-	35.77	24.44	3.60	32.52
PK	748M	32.37	46.00	-13.63	-3.28	3	Horizontal	237	2.00	-	35.65	25.03	3.99	32.30
PK	904.94M	33.92	46.00	-12.08	-1.85	3	Horizontal	46	1.25	"Worst"	35.77	25.89	4.59	32.33



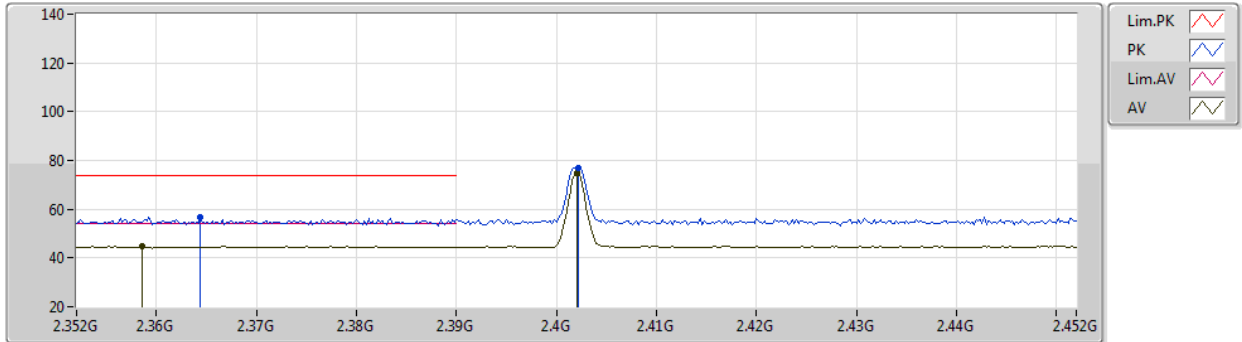
Summary

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	2.493G	45.21	54.00	-8.79	3	Vertical	112	1.83	-

BT-LE(1Mbps)

2402MHz_TX

01/09/2020



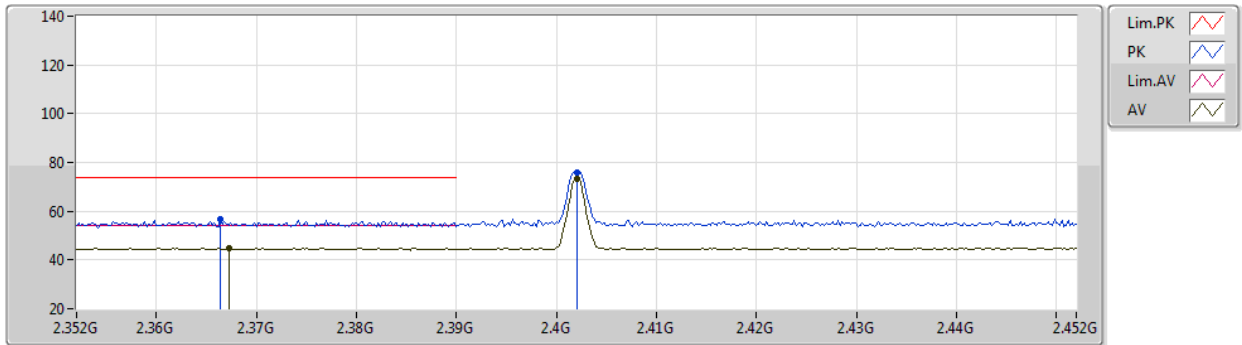
EUT_Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3644G	56.78	74.00	-17.22	25.09	3	Vertical	122	1.78	-	28.19	3.50	-
AV	2.3586G	44.78	54.00	-9.22	13.10	3	Vertical	122	1.78	-	28.18	3.50	-
PK	2.4022G	77.10	Inf	-Inf	45.29	3	Vertical	122	1.78	-	28.31	3.50	-
AV	2.402G	74.68	Inf	-Inf	42.87	3	Vertical	122	1.78	-	28.31	3.50	-

BT-LE(1Mbps)

2402MHz_TX

01/09/2020



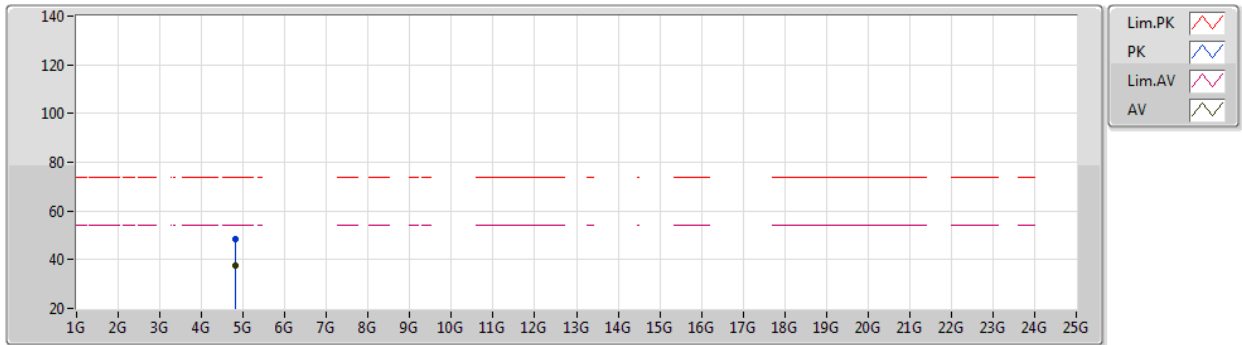
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3664G	56.62	74.00	-17.38	24.92	3	Horizontal	61	1.39	-	28.20	3.50	-
AV	2.3672G	45.00	54.00	-9.00	13.30	3	Horizontal	61	1.39	-	28.20	3.50	-
PK	2.402G	75.83	Inf	-Inf	44.02	3	Horizontal	61	1.39	-	28.31	3.50	-
AV	2.402G	73.25	Inf	-Inf	41.44	3	Horizontal	61	1.39	-	28.31	3.50	-

BT-LE(1Mbps)

01/09/2020

2402MHz_TX



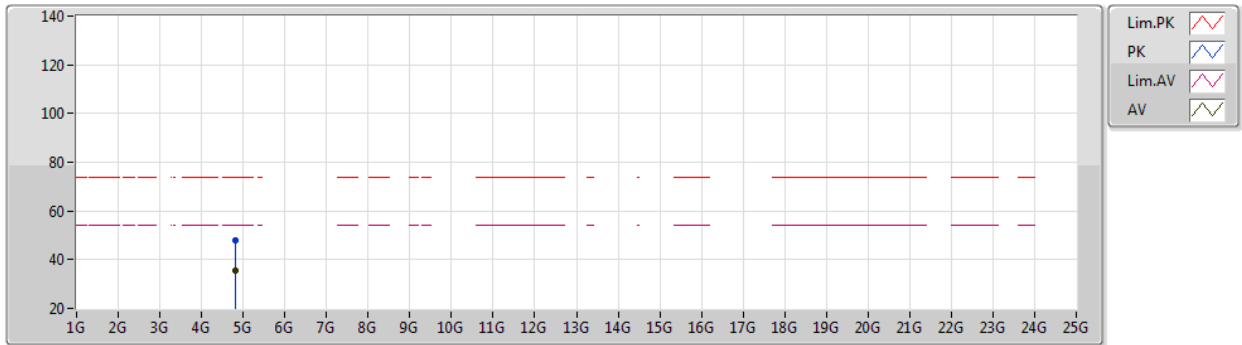
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80016G	48.36	74.00	-25.64	41.53	3	Vertical	32	2.37	-	32.80	5.80	31.77
AV	4.79996G	37.70	54.00	-16.30	30.87	3	Vertical	32	2.37	-	32.80	5.80	31.77

BT-LE(1Mbps)

2402MHz_TX

01/09/2020



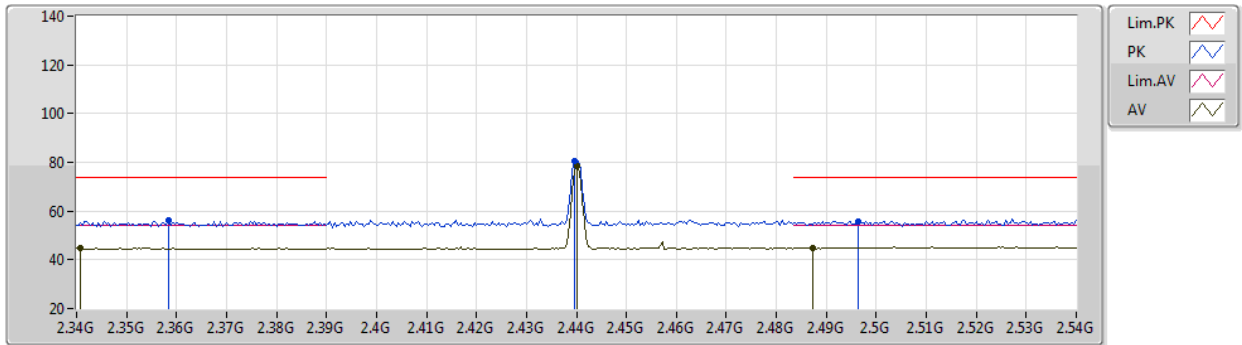
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Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80377G	47.96	74.00	-26.04	41.11	3	Horizontal	19	2.77	-	32.82	5.80	31.77
AV	4.80351G	35.72	54.00	-18.28	28.88	3	Horizontal	19	2.77	-	32.81	5.80	31.77

BT-LE(1Mbps)

2440MHz_TX

01/09/2020



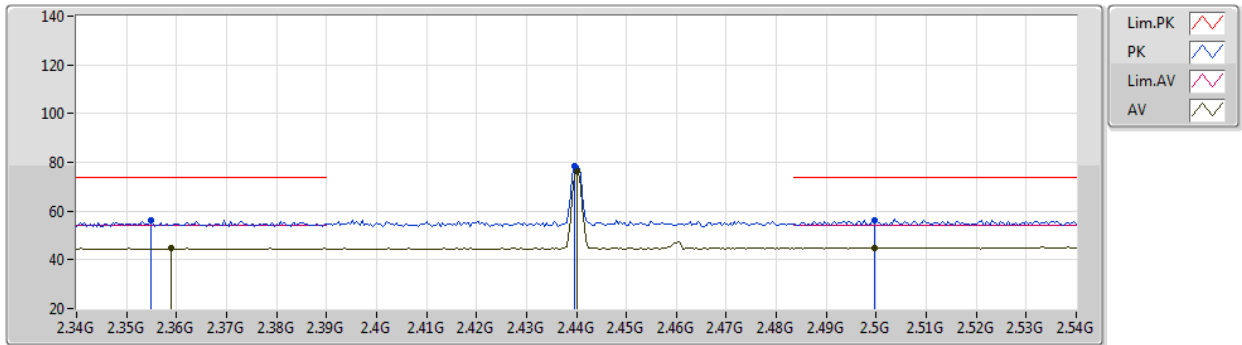
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3584G	56.22	74.00	-17.78	24.54	3	Vertical	104	1.00	-	28.18	3.50	-
AV	2.3408G	44.81	54.00	-9.19	13.19	3	Vertical	104	1.00	-	28.12	3.50	-
PK	2.4396G	80.66	Inf	-Inf	48.70	3	Vertical	104	1.00	-	28.42	3.54	-
AV	2.44G	78.48	Inf	-Inf	46.52	3	Vertical	104	1.00	-	28.42	3.54	-
PK	2.4964G	55.89	74.00	-18.11	23.70	3	Vertical	104	1.00	-	28.59	3.60	-
AV	2.4872G	44.99	54.00	-9.01	12.84	3	Vertical	104	1.00	-	28.56	3.59	-

BT-LE(1Mbps)

2440MHz_TX

01/09/2020



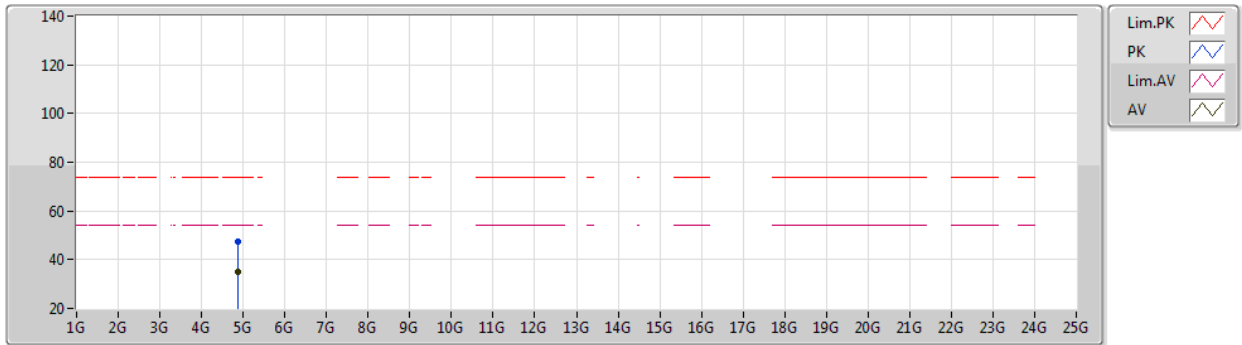
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3548G	56.35	74.00	-17.65	24.69	3	Horizontal	123	1.32	-	28.16	3.50	-
AV	2.3588G	44.89	54.00	-9.11	13.21	3	Horizontal	123	1.32	-	28.18	3.50	-
PK	2.4396G	78.48	Inf	-Inf	46.52	3	Horizontal	123	1.32	-	28.42	3.54	-
AV	2.44G	76.27	Inf	-Inf	44.31	3	Horizontal	123	1.32	-	28.42	3.54	-
PK	2.4996G	56.25	74.00	-17.75	24.05	3	Horizontal	123	1.32	-	28.60	3.60	-
AV	2.4996G	45.02	54.00	-8.98	12.82	3	Horizontal	123	1.32	-	28.60	3.60	-

BT-LE(1Mbps)

2440MHz_TX

01/09/2020



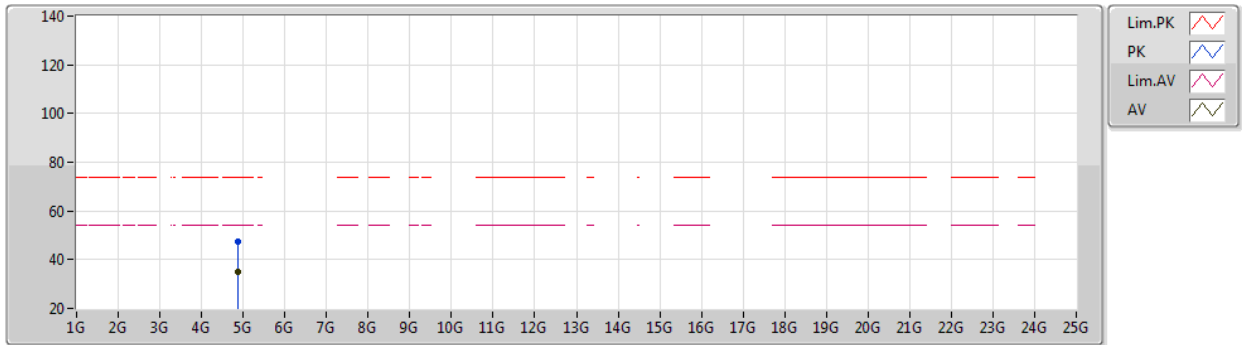
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.88712G	47.30	74.00	-26.70	40.11	3	Vertical	10	1.80	-	33.15	5.84	31.80
AV	4.88756G	34.89	54.00	-19.11	27.71	3	Vertical	10	1.80	-	33.15	5.84	31.81

BT-LE(1Mbps)

2440MHz_TX

01/09/2020



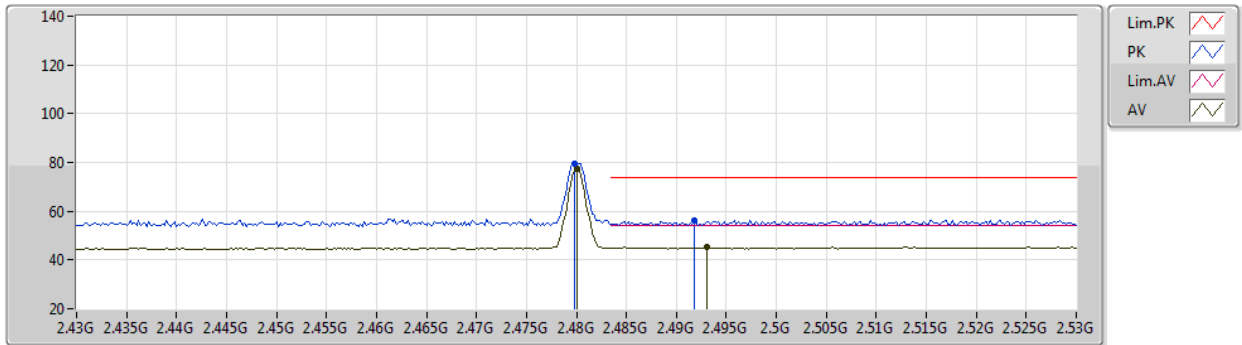
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.88564G	47.21	74.00	-26.79	40.03	3	Horizontal	353	1.80	-	33.14	5.84	31.80
AV	4.88048G	35.00	54.00	-19.00	27.84	3	Horizontal	353	1.80	-	33.12	5.84	31.80

BT-LE(1Mbps)

2480MHz_TX

01/09/2020



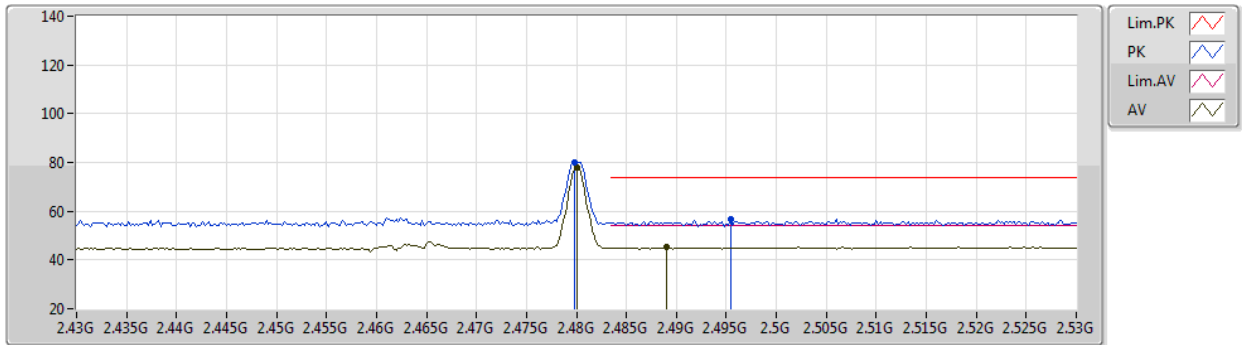
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4798G	79.41	Inf	-Inf	47.29	3	Vertical	112	1.83	-	28.54	3.58	-
AV	2.48G	77.18	Inf	-Inf	45.06	3	Vertical	112	1.83	-	28.54	3.58	-
PK	2.4918G	56.46	74.00	-17.54	24.29	3	Vertical	112	1.83	-	28.58	3.59	-
AV	2.493G	45.21	54.00	-8.79	13.04	3	Vertical	112	1.83	-	28.58	3.59	-

BT-LE(1Mbps)

2480MHz_TX

01/09/2020



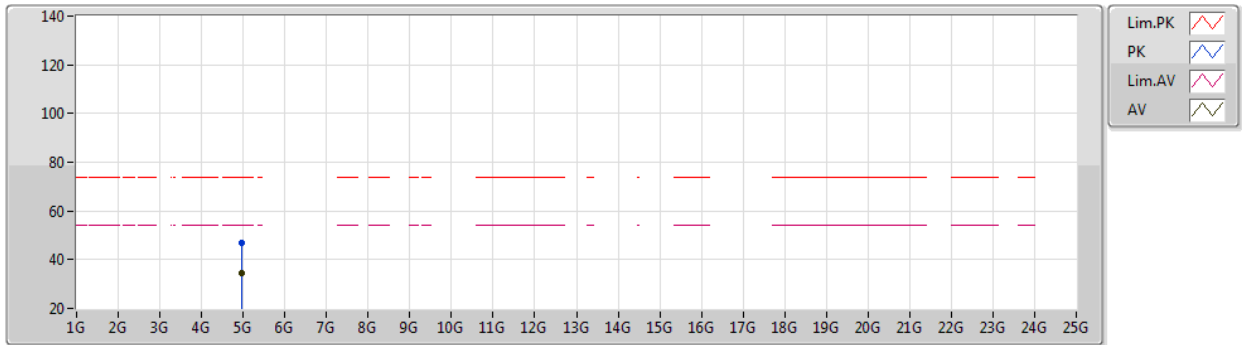
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4798G	80.17	Inf	-Inf	48.05	3	Horizontal	63	1.40	-	28.54	3.58	-
AV	2.48G	78.04	Inf	-Inf	45.92	3	Horizontal	63	1.40	-	28.54	3.58	-
PK	2.4954G	56.59	74.00	-17.41	24.40	3	Horizontal	63	1.40	-	28.59	3.60	-
AV	2.489G	45.17	54.00	-8.83	13.01	3	Horizontal	63	1.40	-	28.57	3.59	-

BT-LE(1Mbps)

2480MHz_TX

01/09/2020



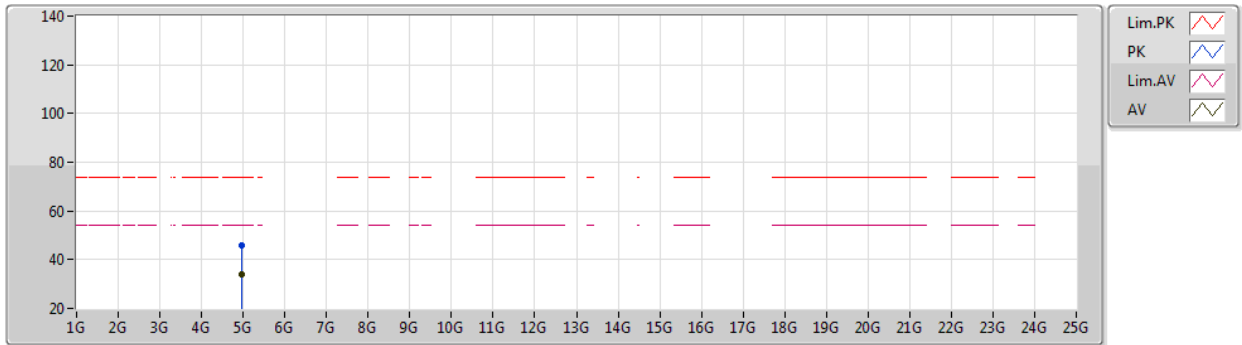
EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.967G	46.83	74.00	-27.17	39.51	3	Vertical	215	1.65	-	33.27	5.88	31.83
AV	4.9662G	34.32	54.00	-19.68	27.00	3	Vertical	215	1.65	-	33.27	5.88	31.83

BT-LE(1Mbps)

2480MHz_TX

01/09/2020



EUT Z_1TX
Setting 8
02-C-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.95908G	45.99	74.00	-28.01	38.68	3	Horizontal	47	1.59	-	33.26	5.88	31.83
AV	4.95832G	34.15	54.00	-19.85	26.84	3	Horizontal	47	1.59	-	33.26	5.88	31.83