

Fig.96. Number of hopping frequencies:  $\pi/4$  DQPSK, Channel 0 - 39

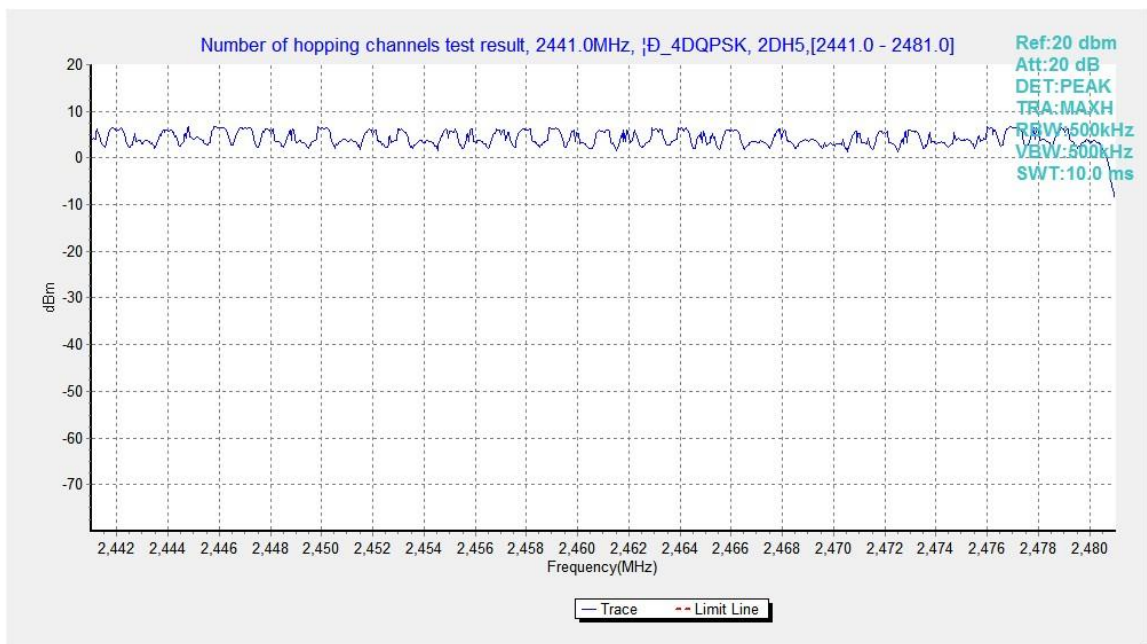


Fig.97. Number of hopping frequencies:  $\pi/4$  DQPSK, Channel 40 - 78

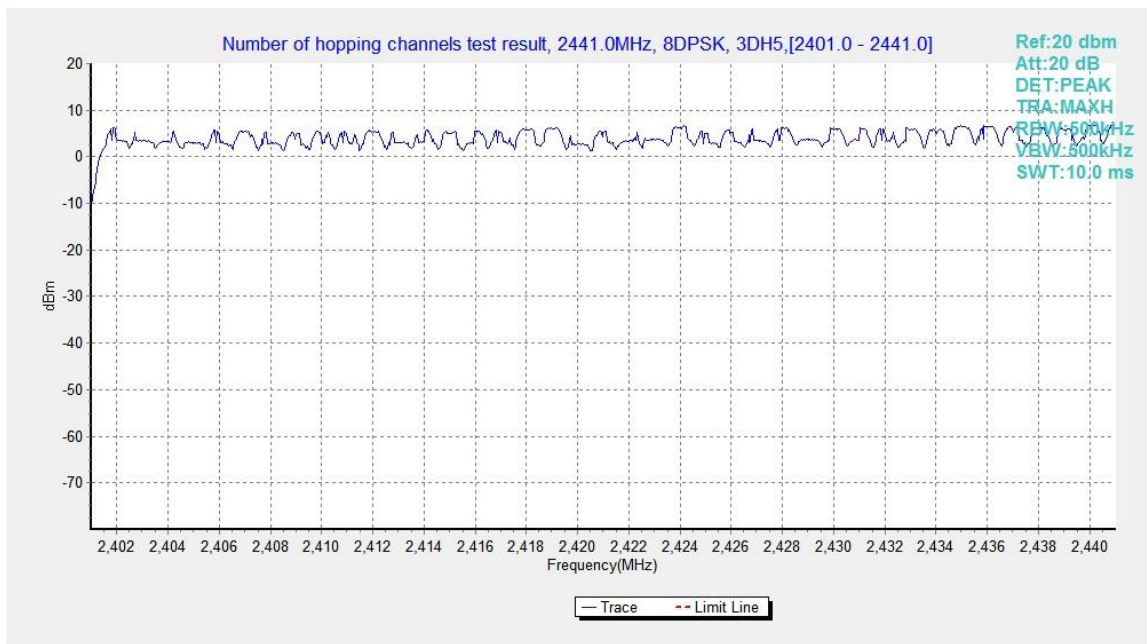


Fig.98. Number of hopping frequencies: 8DPSK, Channel 0 - 39

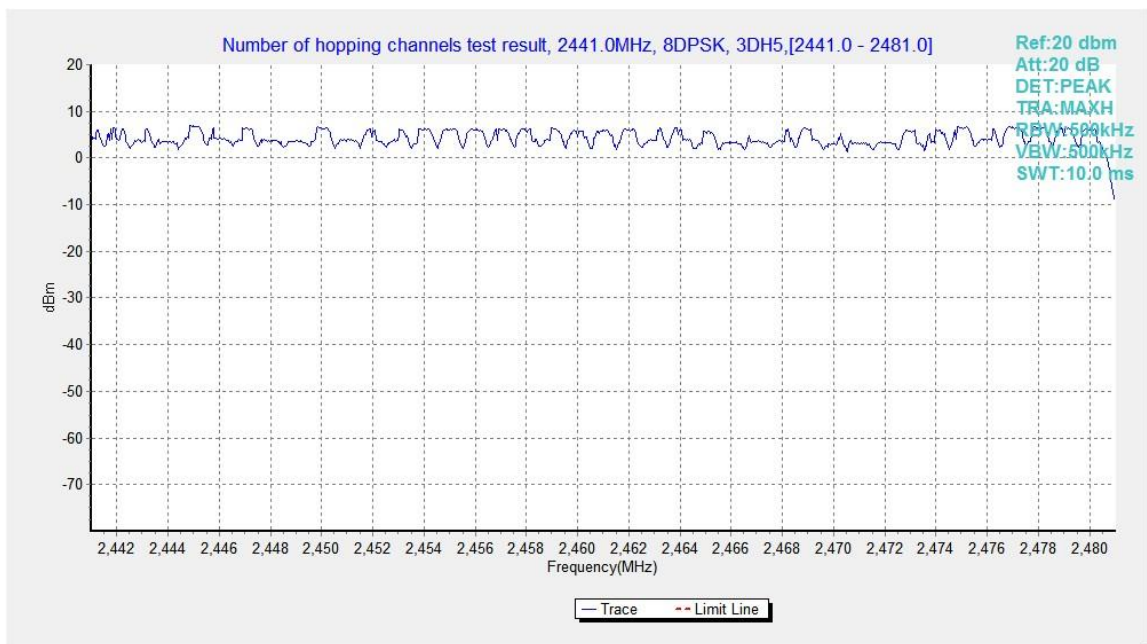


Fig.99. Number of hopping frequencies: 8DPSK, Channel 40 - 78

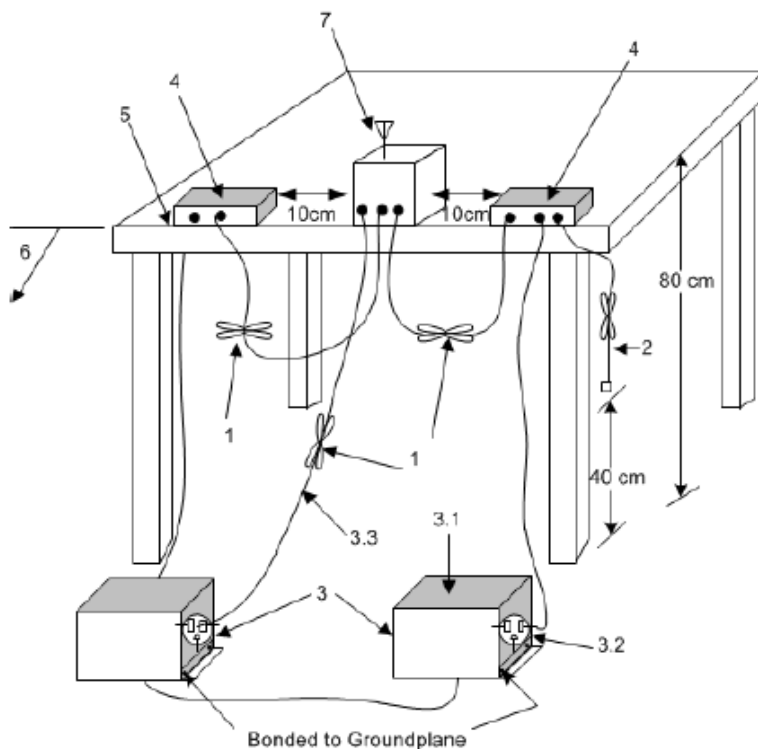
## B.11. AC Powerline Conducted Emission

**Method of Measurement:** See ANSI C63.10-clause 6.2

### Setup:

A stand-alone EUT shall be placed in the center along the back edge of the tabletop. For multiunit tabletop systems, the EUT shall be centered laterally (left to right facing the tabletop) on the tabletop and its rear shall be flush with the rear of the table.

Accessories that are part of an EUT system tested on a tabletop shall be placed in a test arrangement on one or both sides of the host with a 10 cm separation between the nearest points of the cabinets. The rear of the host and accessories shall be flush with the back of the supporting tabletop unless that would not be typical of normal use. If more than two accessories are present, then an equipment test arrangement shall be chosen that maintains 10 cm spacing between cabinets unless the equipment is normally located closer together.



### Exploratory ac power-line conducted emission measurements

Exploratory measurements shall be used to identify the frequency of the emission that has the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable positions, and with a typical system equipment configuration and arrangement. For each mode of operation and for each ac power current-carrying conductor, cable manipulation shall be performed within the range of likely configurations. For this measurement or series of measurements, the frequency spectrum of interest shall be monitored looking for the emission that has the highest amplitude relative to the limit. Once that emission is found for each current-carrying conductor of each power cord associated with the EUT (but not the cords associated with non-EUT equipment in the overall system), the one configuration and arrangement and mode of operation that produces the emission closest to the limit over all of the measured conductors shall be recorded.

**Final ac power-line conducted emission measurements**

Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation. If the EUT is composed of equipment units that have their own separate ac power connections (e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network), then each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be measured separately. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

**Test Condition:**

Voltage (V)	Frequency (Hz)
120	60

**Measurement Result and limit:**

**EUT ID: EUT1**

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBµV)	Result (dBµV)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	66 to 56	Fig.B.11.1	Fig.B.11.2	<b>P</b>
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

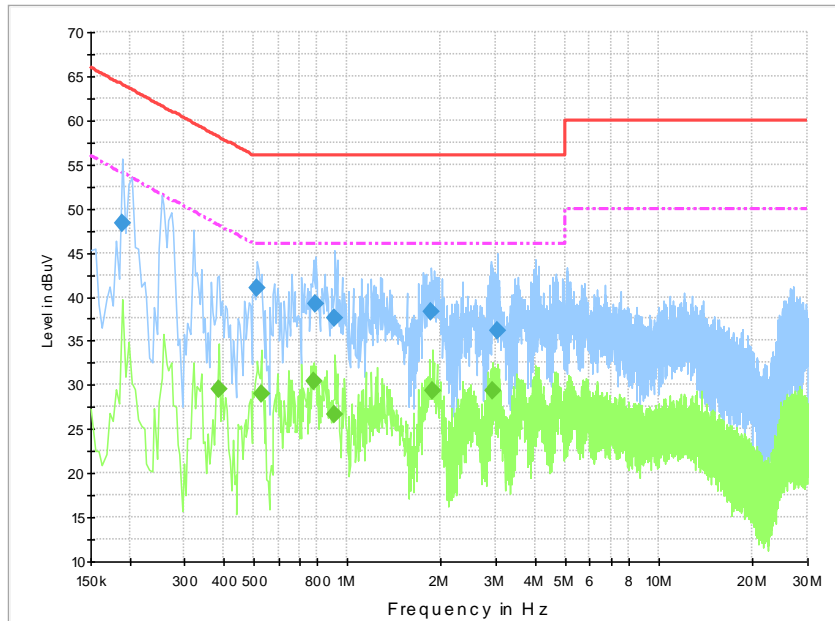
Bluetooth (Average Limit)

Frequency range (MHz)	Average Limit (dBµV)	Result (dBµV)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	56 to 46	Fig.B.11.1	Fig.B.11.2	<b>P</b>
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**Conclusion: Pass**

Test graphs as below:



**Fig.B.11.1 AC Powerline Conducted Emission- bluetooth**

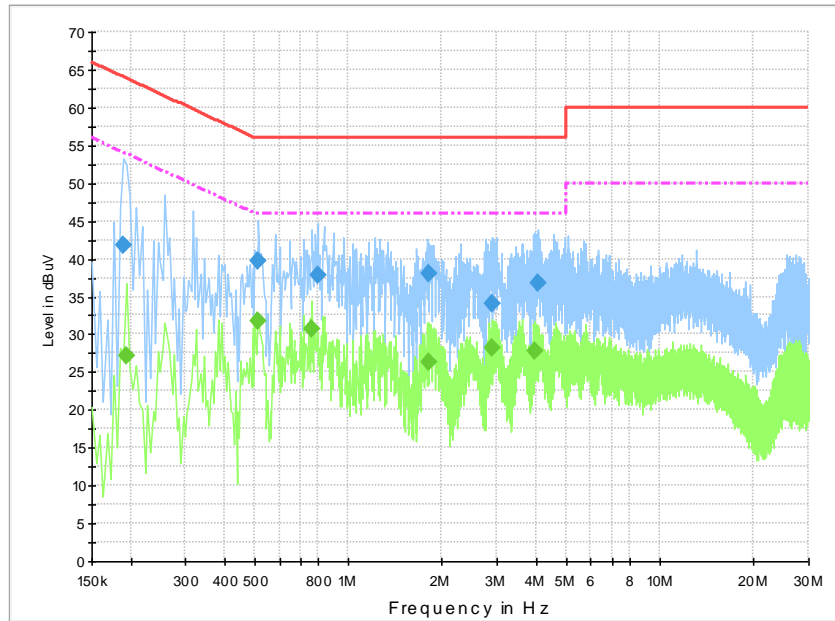
Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.190500	48.3	5000.0	9.000	On	N	20.0	15.7	64.0
0.514500	41.0	5000.0	9.000	On	L1	19.9	15.0	56.0
0.793500	39.2	5000.0	9.000	On	L1	19.8	16.8	56.0
0.910500	37.6	5000.0	9.000	On	L1	19.7	18.4	56.0
1.864500	38.4	5000.0	9.000	On	L1	19.7	17.6	56.0
3.034500	36.2	5000.0	9.000	On	L1	19.6	19.8	56.0

**Final Result 2**

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.388500	29.6	5000.0	9.000	On	L1	19.9	18.5	48.1
0.528000	29.1	5000.0	9.000	On	L1	19.8	16.9	46.0
0.780000	30.4	5000.0	9.000	On	L1	19.8	15.6	46.0
0.910500	26.7	5000.0	9.000	On	N	19.7	19.3	46.0
1.882500	29.4	5000.0	9.000	On	L1	19.7	16.6	46.0
2.935500	29.4	5000.0	9.000	On	L1	19.6	16.6	46.0



**Fig.B.11.2 AC Powerline Conducted Emission-Idle**

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.190500	41.9	5000.0	9.000	On	N	20.0	22.1	64.0
0.514500	39.7	5000.0	9.000	On	L1	19.9	16.3	56.0
0.798000	37.8	5000.0	9.000	On	L1	19.8	18.2	56.0
1.806000	38.0	5000.0	9.000	On	L1	19.7	18.0	56.0
2.890500	34.1	5000.0	9.000	On	N	19.6	21.9	56.0
4.038000	36.8	5000.0	9.000	On	L1	19.6	19.2	56.0

**Final Result 2**

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.195000	27.1	5000.0	9.000	On	N	19.9	26.7	53.8
0.514500	31.8	5000.0	9.000	On	L1	19.9	14.2	46.0
0.766500	30.8	5000.0	9.000	On	L1	19.8	15.2	46.0
1.815000	26.4	5000.0	9.000	On	N	19.7	19.6	46.0
2.881500	28.2	5000.0	9.000	On	L1	19.6	17.8	46.0
3.984000	27.8	5000.0	9.000	On	L1	19.6	18.2	46.0



## ANNEX C: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> <b>Certificate of Accreditation to ISO/IEC 17025:2017</b> <hr/>	
NVLAP LAB CODE: 600118-0	
<b>Telecommunication Technology Labs, CAICT</b> Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
<b>Electromagnetic Compatibility &amp; Telecommunications</b>	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
2021-09-29 through 2022-09-30 <i>Effective Dates</i>	  <i>For the National Voluntary Laboratory Accreditation Program</i>

\*\*\*END OF REPORT\*\*\*