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# 14. FCC LINE CONDUCTED EMISSION TEST

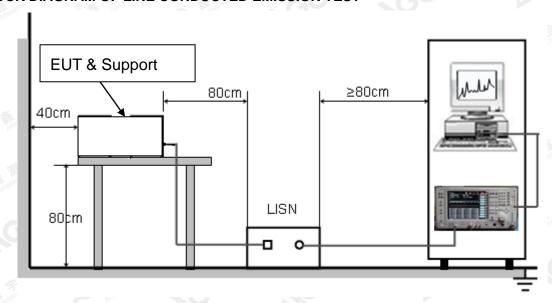
# 14.1. LIMITS OF LINE CONDUCTED EMISSION TEST

F	Maximum RF Line Voltage						
Frequency	Q.P.( dBuV)	Average( dBuV)					
150kHz~500kHz	66-56	56-46					
500kHz~5MHz	56 Th 18 miles	46					
5MHz~30MHz	© 60 mg/d 2000 00 1	50					

#### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

#### 14.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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#### 14.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC charging voltage by adapter which received 120V/60Hzpower by a LISN..
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 14.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- The test data of the worst case condition(s) was reported on the Summary Data page.

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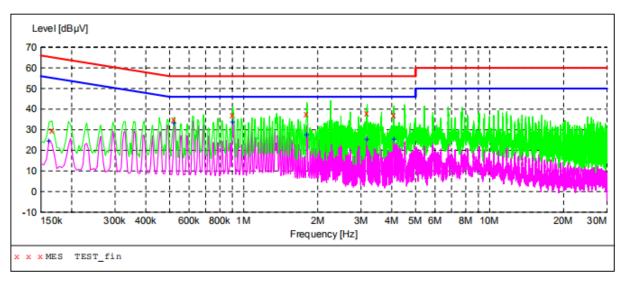
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#### 14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

# LINE CONDUCTED EMISSION TEST LINE 1-L

SCAN TABLE: "Voltage (9K-30M) FS L"

Short Description: 9k-30M Voltage



#### MEASUREMENT RESULT: "TEST\_fin"

25/2019 3:5	ЗРМ						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.166000	29.70	10.3	65	35.5	QP	L1	FLO
0.522000	34.80	10.3	56	21.2	QP	L1	FLO
0.902000	37.20	10.4	56	18.8	OP	L1	FLO
1.806000	37.80	10.4	56	18.2	ОР	L1	FLO
3.178000	38.00	10.4	56	18.0	OP	L1	FLO
4.082000	37.10	10.4	56	18.9	QP	L1	FLO
	Frequency MHz 0.166000 0.522000 0.902000 1.806000 3.178000	Frequency MHz dBμV  0.166000 29.70 0.522000 34.80 0.902000 37.20 1.806000 37.80 3.178000 38.00	Frequency MHz dBμV dB  0.166000 29.70 10.3 0.522000 34.80 10.3 0.902000 37.20 10.4 1.806000 37.80 10.4 3.178000 38.00 10.4	Frequency MHz dBμV dB dBμV  0.166000 29.70 10.3 65 0.522000 34.80 10.3 56 0.902000 37.20 10.4 56 1.806000 37.80 10.4 56 3.178000 38.00 10.4 56	Frequency MHz         Level dBμV         Transd dB dBμV         Limit dBμV         Margin dB           0.166000         29.70         10.3         65         35.5           0.522000         34.80         10.3         56         21.2           0.902000         37.20         10.4         56         18.8           1.806000         37.80         10.4         56         18.2           3.178000         38.00         10.4         56         18.0	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Frequency MHz         Level dBμV         Transd dB μV         Limit dBμV         Margin dB         Detector dB         Line dBμV           0.166000         29.70         10.3         65         35.5         QP         L1           0.522000         34.80         10.3         56         21.2         QP         L1           0.902000         37.20         10.4         56         18.8         QP         L1           1.806000         37.80         10.4         56         18.2         QP         L1           3.178000         38.00         10.4         56         18.0         QP         L1

#### MEASUREMENT RESULT: "TEST fin2"

3	/25/2019 3:5	3PM						
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.162000	24.40	10.3	55	31.0	AV	T 1	ET O
		24.40	10.3	55	31.0	AV	L1	FLO
	0.522000	33.10	10.3	46	12.9	AV	L1	FLO
	0.906000	33.70	10.4	46	12.3	AV	L1	FLO
	1.806000	27.70	10.4	46	18.3	AV	L1	FLO
	3.178000	25.10	10.4	46	20.9	AV	L1	FLO
	4.082000	25.50	10.4	46	20.5	AV	L1	FLO

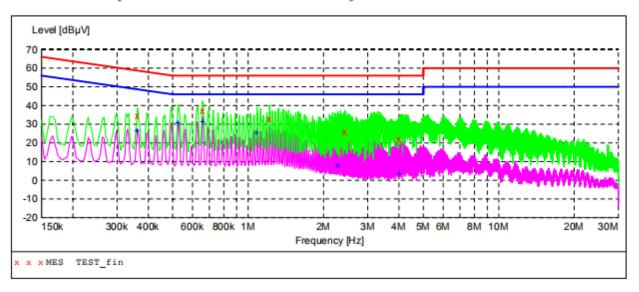
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#### LINE CONDUCTED EMISSION TEST LINE 2-N

SCAN TABLE: "Voltage (9K-30M)FS L"

Short Description: 9k-30M Voltage



#### MEASUREMENT RESULT: "TEST fin"

3	/25/2019 3:3	9PM						
	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dΒμV	dB	dΒμV	dB			
	0.362000	34.30	10.3	59	24.4	QP	N	FLO
	0.658000	37.00	10.3	56	19.0	QP	N	FLO
	1.218000	33.10	10.4	56	22.9	QP	N	FLO
	2.438000	25.90	10.4	56	30.1	QP	N	FLO
	4.018000	22.00	10.4	56	34.0	QP	N	FLO

#### MEASUREMENT RESULT: "TEST fin2"

3/25/2019	3:39PM						
Frequen	cy Leve	el Transo	l Limit	Margin	Detector	Line	PE
M	Hz dB	uV dI	dB <sub>µ</sub> V	dB			
0.3620	00 26.	60 10.3	3 49	22.1	AV	N	FLO
0.5260	00 30.	70 10.3	3 46	15.3	AV	N	FLO
0.6580	00 31.	30 10.3	3 46	14.7	AV	N	FLO
1.0860	00 25.	40 10.4	46	20.6	AV	N	FLO
2.2740	00 7.	90 10.4	46	38.1	AV	N	FLO
4.0180	00 3.	40 10.4	46	42.6	AV	N	FLO

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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP



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# RADIATED EMISSION ABOVE 1G TEST SETUP



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# APPENDIX B: PHOTOGRAPHS OF TEST SETUP

ALL VIEW OF EUT



THE MODEL NAME OF B21 TOP VIEW OF EUT



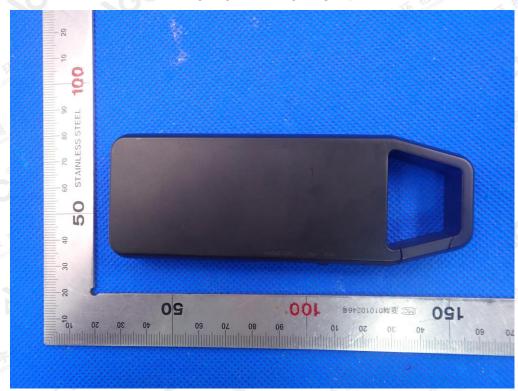
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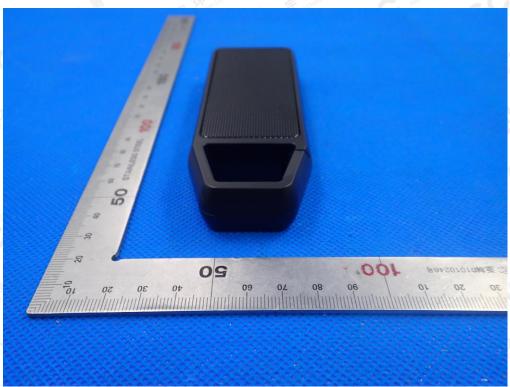
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# **BOTTOM VIEW OF EUT**



FRONT VIEW OF EUT

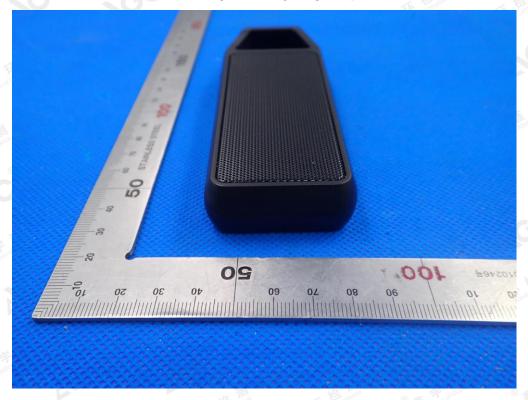


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# **BACK VIEW OF EUT**



**LEFT VIEW OF EUT** 

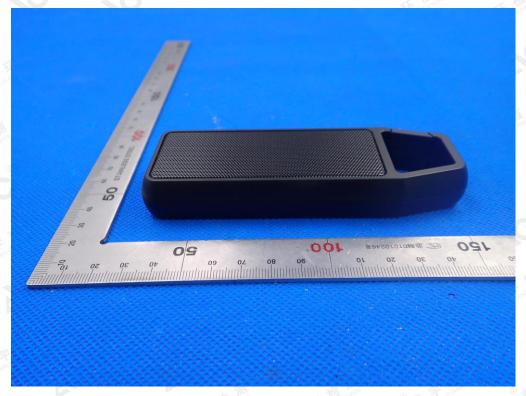


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#### RIGHT VIEW OF EUT



**OPEN VIEW OF EUT-1** 



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#### **OPEN VIEW OF BATTERY**



**OPEN VIEW OF EUT-2** 



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# **OPEN VIEW OF EUT-3**



**INTERNAL VIEW OF EUT-1** 

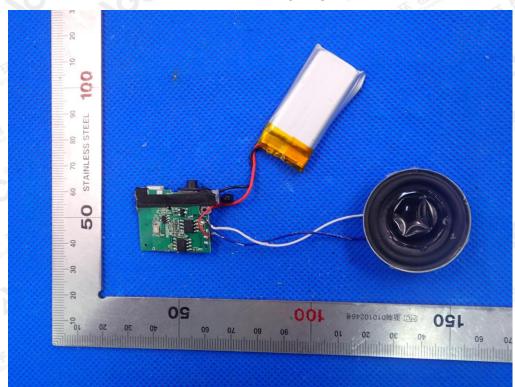


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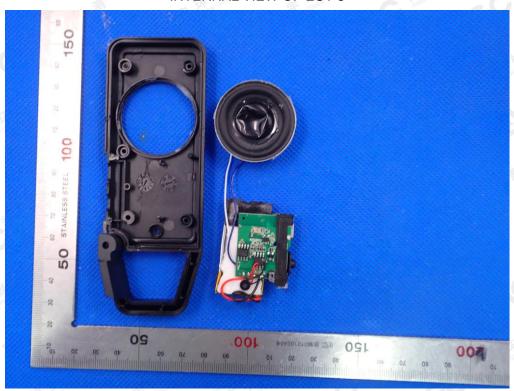
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# **INTERNAL VIEW OF EUT-2**



**INTERNAL VIEW OF EUT-3** 

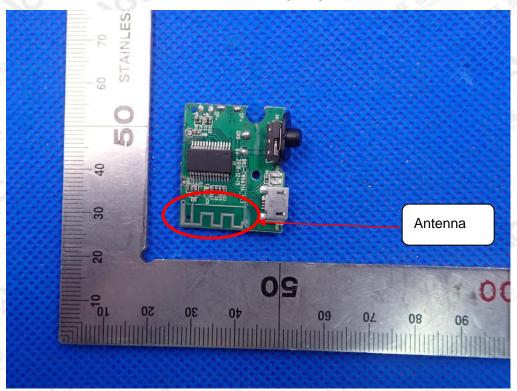


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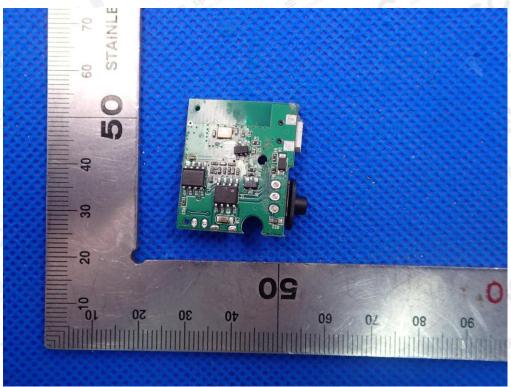
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# **INTERNAL VIEW OF EUT-4**



#### **INTERNAL VIEW OF EUT-5**



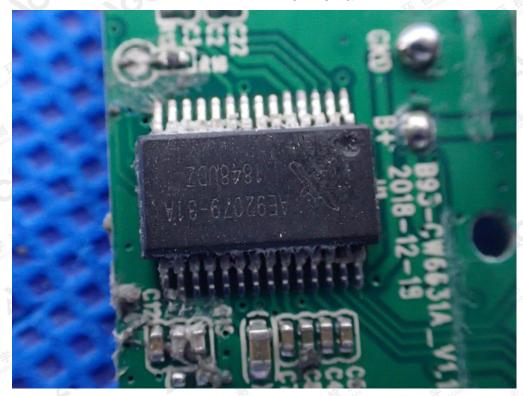
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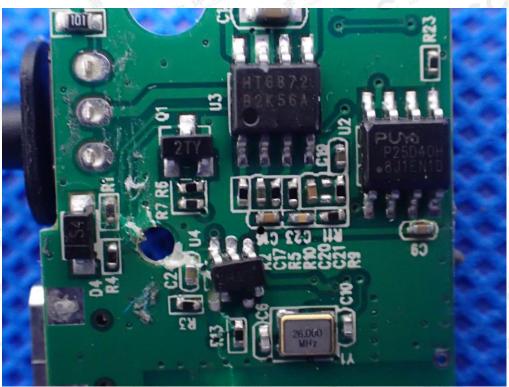




# INTERNAL VIEW OF EUT-6



**INTERNAL VIEW OF EUT-7** 

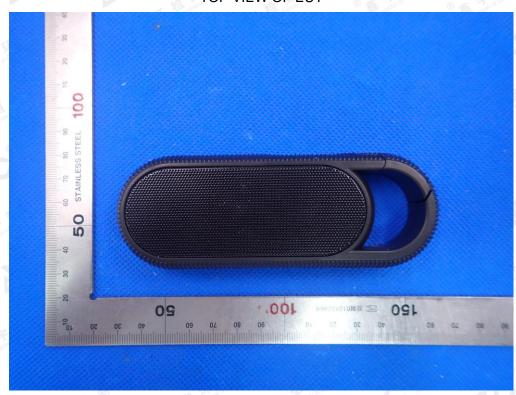


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# THE MODEL NAME OF B93 TOP VIEW OF EUT



# **BOTTOM VIEW OF EUT**



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#### FRONT VIEW OF EUT



**BACK VIEW OF EUT** 



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# LEFT VIEW OF EUT



**RIGHT VIEW OF EUT** 



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# THE MODEL NAME OF LC-D201 TOP VIEW OF EUT



**BOTTOM VIEW OF EUT** 

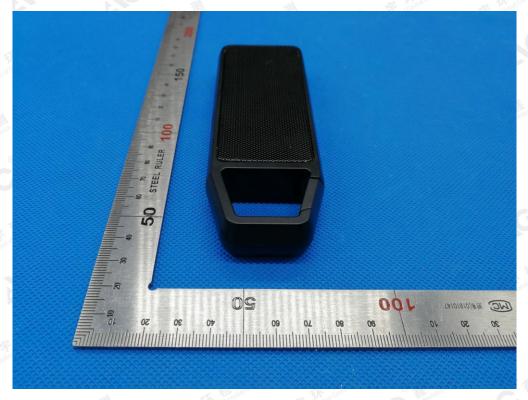


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# FRONT VIEW OF EUT



**BACK VIEW OF EUT** 



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# LEFT VIEW OF EUT



RIGHT VIEW OF EUT



----THE END ----

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