

FCC Report

Product Name : TLSR8278DG48D
Trade mark : N/A
Model No. : TLSR8278DG48D
FCC ID : OEOTLSR8278DG48D
Report Number : BLA-EMC-202005-A05-01
Date of sample receipt : 2020/5/6
Date of Test : 2020/5/8 to 2020/5/11
Date of Issue : 2020/5/11
Test standard : 47 CFR Part 15, Subpart C 15.247
Test result : Pass

Prepared for:

TELINK SEMICONDUCTOR (Shanghai) CO, LTD
Bldg 3, No.1500, Zuchongzhi Rd, Zhangjiang Hi-Tech Park, Shanghai
201203, China

Prepared by:

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Date: 2020/5/11



2 Version

Version No.	Date	Description
00	2020/5/11	Original

BlueAsia

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Output Power	15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.10:2013.

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Applicant	TELINK SEMICONDUCTOR (Shanghai) CO, LTD
Address	Bldg 3, No.1500, Zuchongzhi Rd, Zhangjiang Hi-Tech Park, Shanghai 201203, China
Manufacturer	TELINK SEMICONDUCTOR (Shanghai) CO, LTD
Address	Bldg 3, No.1500, Zuchongzhi Rd, Zhangjiang Hi-Tech Park, Shanghai 201203, China
Factory	TELINK SEMICONDUCTOR (Shanghai) CO, LTD
Address	Bldg 3, No.1500, Zuchongzhi Rd, Zhangjiang Hi-Tech Park, Shanghai 201203, China
Product Name	TLSR8278DG48D
Test Model No.	TLSR8278DG48D

Hardware Version	1.0
Software Version	1.0
Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Channel Spacing:	2 MHz
Number of Channels:	40
Antenna Type:	PCB Antenna
Antenna Gain:	0 dBi

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	11	2422MHz	21	2442MHz	31	2462MHz
2	2404MHz	12	2424MHz	22	2444MHz	32	2464MHz
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
9	2418MHz	19	2438MHz	29	2458MHz	39	2478MHz
10	2420MHz	20	2440MHz	30	2460MHz	40	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2442MHz
The Highest channel	2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode with modulation
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5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Notebook computer	E470C	PF-10FB5C

5.4 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> FCC — Designation No.: CN1252 <i>BlueAsia of Technical Services(Shenzhen) Co., Ltd</i> has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Designation CN1252. ISED — CAB identifier No.: CN0028 <i>BlueAsia of Technical Services(Shenzhen) Co., Ltd</i> has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifier CN0028

5.5 Test Location

All tests were performed at:
<p>All tests were performed at: BlueAsia of Technical Services(Shenzhen) Co., Ltd. IOT Test Centre of BlueAsia No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673 No tests were sub-contracted.</p>

6 Test Instruments list

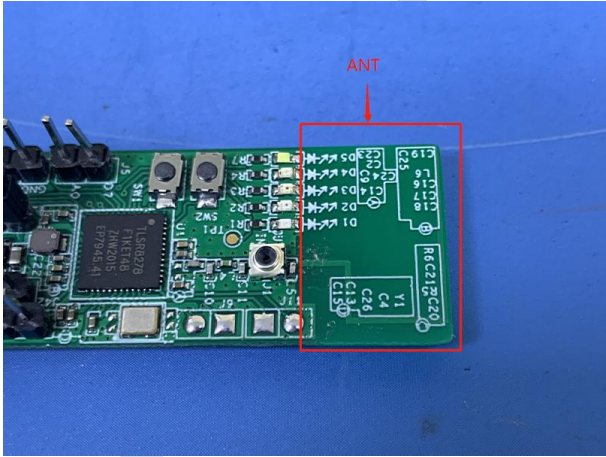
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m SAC	SKET	9m*6 m*6m	966	06-10-2018	06-09-2023
2	Broadband Antenna	SCHWARZBECK	VULB9168	00836 P:00227	07-14-2019	07-13-2020
3	Horn Antenna	SCHWARZBECK	9120D	01892 P:00331	07-14-2019	07-13-2020
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A
5	Pre-amplifier	SKET	N/A	N/A	07-19-2019	07-18-2020
6	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	05-24-2019	05-23-2020
7	EMI Test Receiver	Rohde & Schwarz	ESR7	101199	03-21-2019	03-20-2020
8	Controller	SKET	N/A	N/A	N/A	N/A
9	Vector Signal Generator	Agilent	E4438C	MY45092582	05-24-2019	05-23-2020
10	Signal Generator	Agilent	E8257D	MY44320250	05-24-2019	05-23-2020
11	Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
12	Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
13	Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMI Test Receiver	Rohde & Schwarz	ESPI3	101082	06-10-2019	06-09-2020
2	LISN	CHASE	MN2050D	1447	12-18-2019	12-17-2020
3	LISN	Rohde & Schwarz	ENV216	3560.6550.15	07-19-2019	07-18-2020
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A
5	Temperature Humidity Chamber	Mingle	TH101B	N/A	07-19-2019	07-18-2020
6	Coaxial Cable	BlueAsia	BLA-XC-05	N/A	N/A	N/A

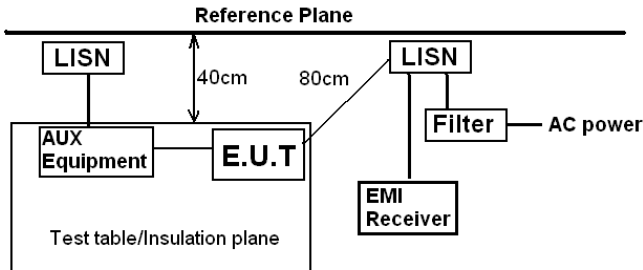
RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Spectrum Analyzer	Agilent	N9030A	MY50510123	05-24-2019	05-23-2020
2	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	05-24-2019	05-23-2020
3	Vector Signal Generator	Agilent	E4438C	MY45092582	05-24-2019	05-23-2020
4	Signal Generator	Agilent	E8257D	MY44320250	05-24-2019	05-23-2020
5	Power Sensor	D.A.R.E	RPR3006W	17I00015SNO27	05-24-2019	05-23-2020
6	Power Sensor	D.A.R.E	RPR3006W	17I00015SNO28	05-24-2019	05-23-2020
7	DC Power Supply	LODESTAR	LP305DE	N/A	07-19-2019	07-18-2020
8	Temperature Humidity Chamber	Mingle	TH101B	N/A	07-19-2019	07-18-2020

7 Test results and Measurement Data

7.1 Antenna requirement

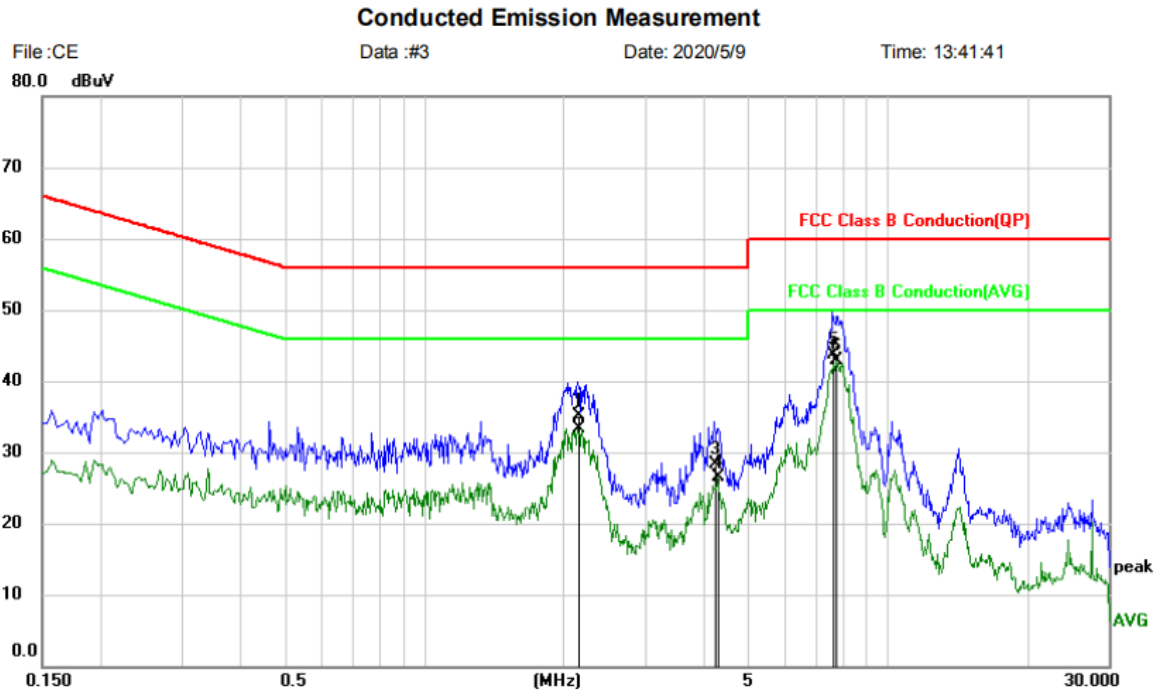
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p>	
E.U.T Antenna:	
<p><i>The antenna is PCB antenna, the best case gain of the antenna is 0 dBi</i></p> 	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Test Frequency Range:	150KHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* Decreases with the logarithm of the frequency.</p>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test setup:	 <p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>														
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. 														
Test Instruments:	Refer to section 6.0 for details														
Test mode:	Refer to section 5.2 for details														
Test results:	Pass														

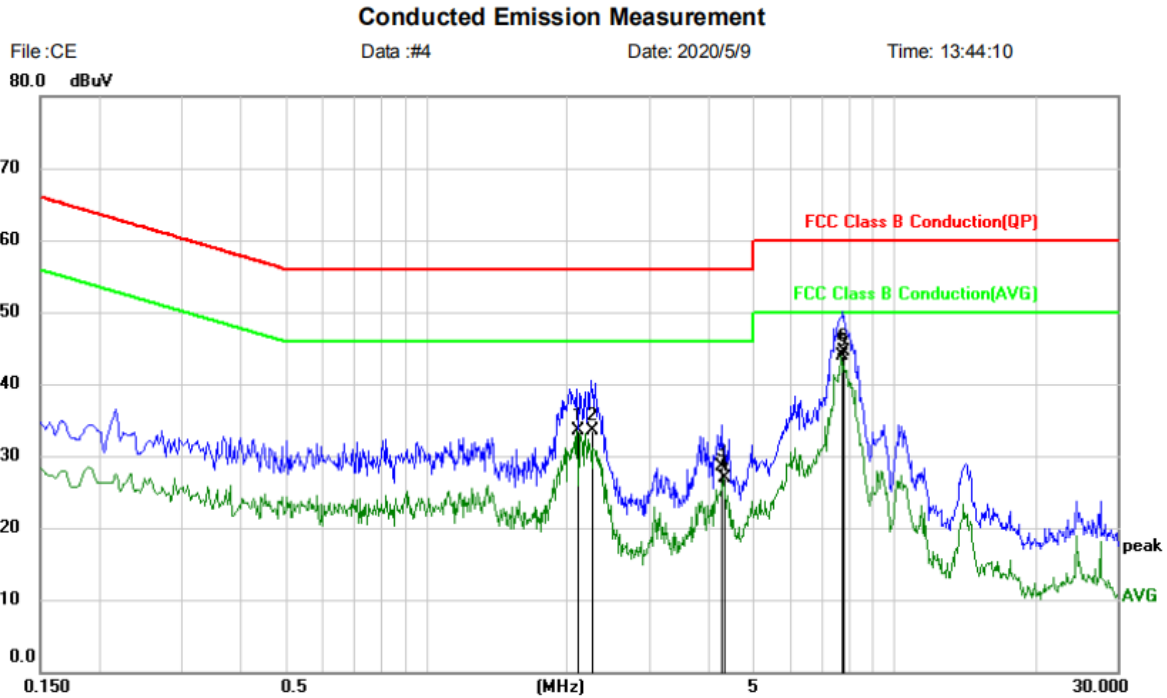
Measurement data

EUT:	TLSR8278DG48D	Probe:	L1
Model:	TLSR8278DG48D	Power Source:	AC120V/60Hz
Mode:	BLE mode	Test by:	Ben
Temp./Hum.(%RH):	26°C/60%RH		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		2.1500	25.29	9.82	35.11	56.00	-20.89	QP	
2		2.1500	23.51	9.82	33.33	46.00	-12.67	AVG	
3		4.2380	18.45	9.84	28.29	56.00	-27.71	QP	
4		4.3100	16.64	9.84	26.48	46.00	-19.52	AVG	
5		7.6380	33.93	9.86	43.79	60.00	-16.21	QP	
6	*	7.7540	33.02	9.87	42.89	50.00	-7.11	AVG	

EUT:	TLSR8278DG48D	Probe:	N
Model:	TLSR8278DG48D	Power Source:	AC120V/60Hz
Mode:	BLE mode	Test by:	Ben
Temp./Hum.(%RH):	26°C/60%RH		



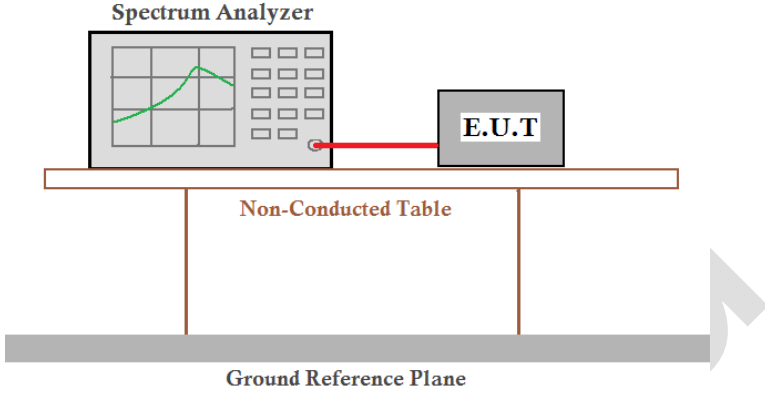
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		2.1020	23.73	9.86	33.59	46.00	-12.41	AVG	
2		2.2580	23.69	9.86	33.55	56.00	-22.45	QP	
3		4.2819	18.71	9.85	28.56	56.00	-27.44	QP	
4		4.3260	17.14	9.85	26.99	46.00	-19.01	AVG	
5	*	7.7140	34.05	9.86	43.91	50.00	-6.09	AVG	
6		7.7940	34.60	9.86	44.46	60.00	-15.54	QP	



Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. *Final Level = Receiver Read level + Correct factor*
4. *Correct factor = LISN Factor + Cable Loss*
5. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

7.3 Conducted Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

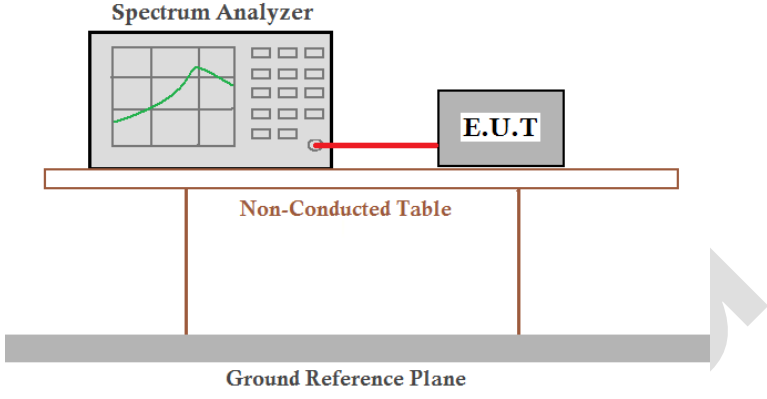
Measurement Data

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	3.29	<=30	PASS
		2442	2.67	<=30	PASS
		2480	1.18	<=30	PASS

Test plot as follows:



7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

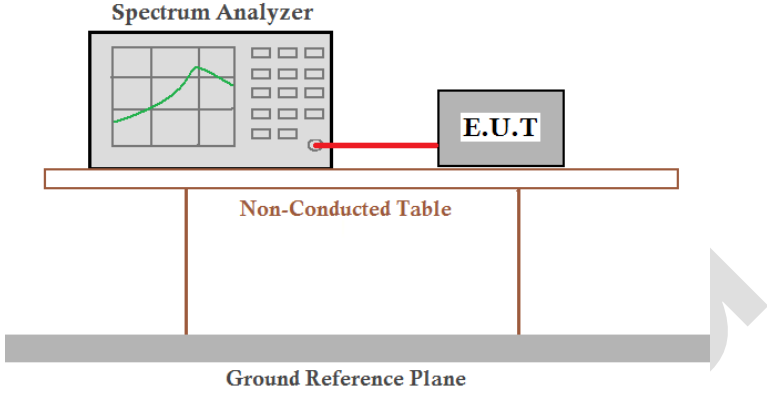
Measurement Data

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant1	2402	0.632	2401.652	2402.284	>=0.5	PASS
		2442	0.628	2441.652	2442.280	>=0.5	PASS
		2480	0.632	2479.652	2480.284	>=0.5	PASS

Test plot as follows:



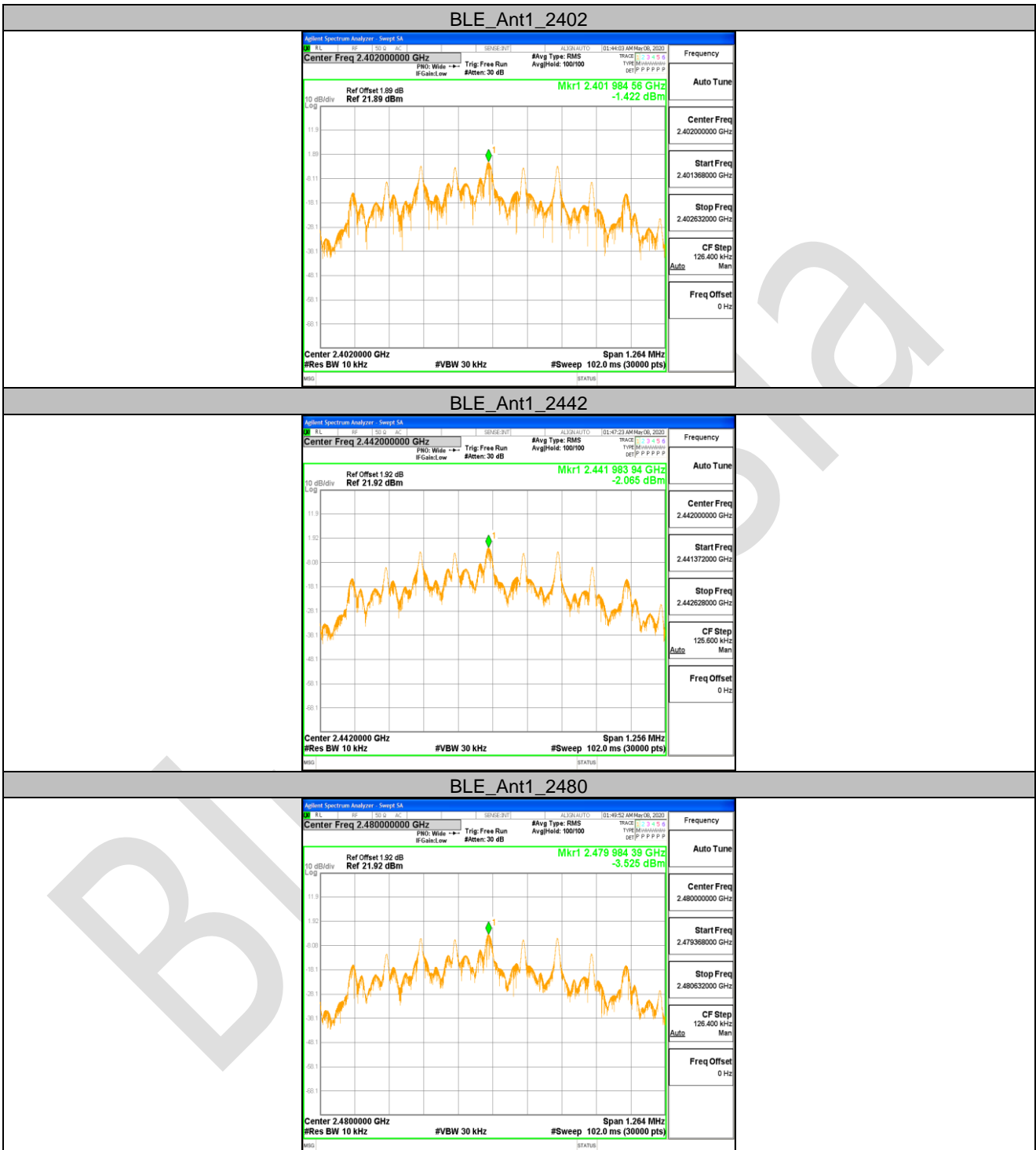
7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

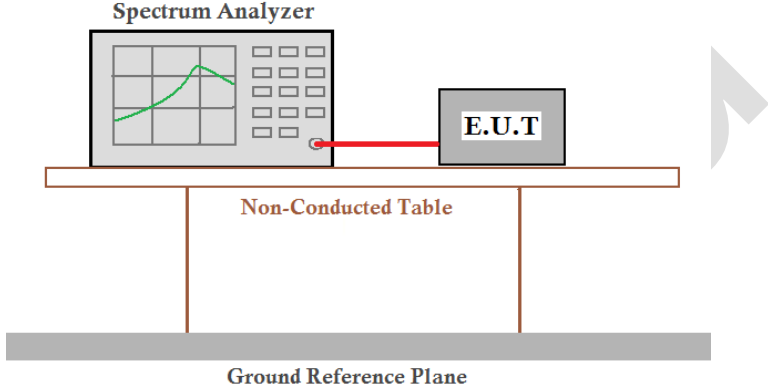
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant1	2402	-1.42	<=8	PASS
		2442	-2.07	<=8	PASS
		2480	-3.53	<=8	PASS

Test plot as follows:



7.6 Band edges

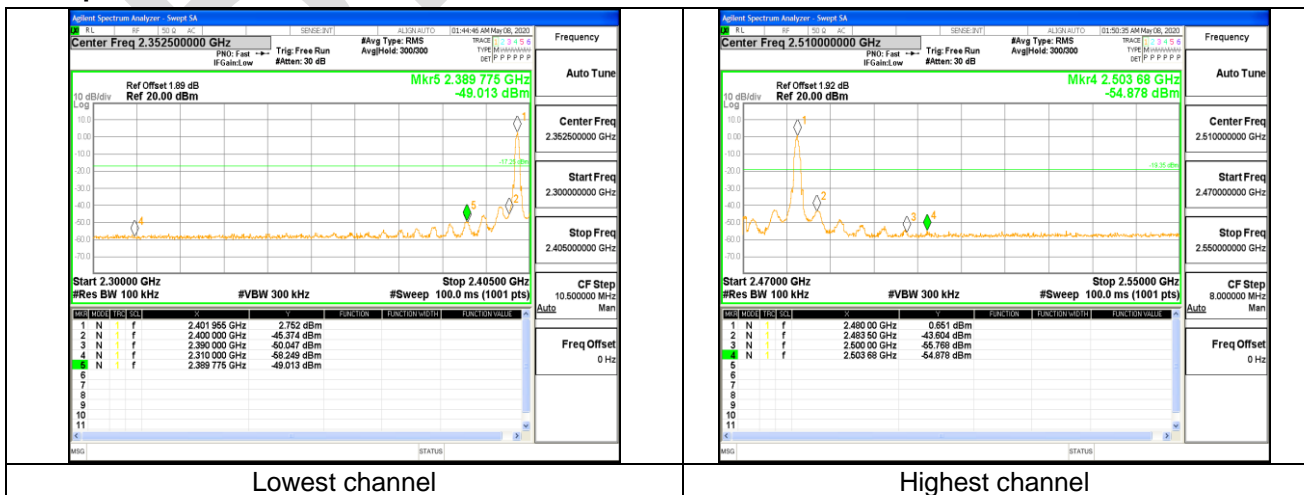
7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

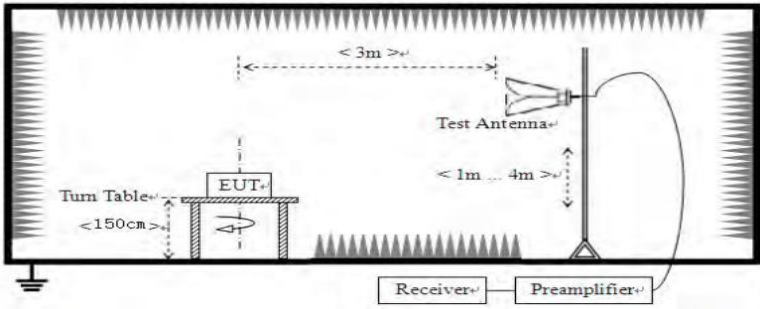
Measurement Data

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	Low	2402	2.75	-49.01	<=-17.25	PASS
		High	2480	0.65	-54.88	<=-19.35	PASS

Test plot as follows:



7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2390MHz, 2483.5MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		RMS	1MHz	3MHz	Average
Limit:	Frequency	Limit (dBuV/m @3m)		Value	
	Above 1GHz	54.00		Average	
		74.00		Peak	
Test setup:					
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report. 				
Test Instruments:	Refer to section 6.0 for details				
Test mode:	Refer to section 5.2 for details				
Test results:	Pass				

Measurement data:

BlueAsia of Technical Services(Shenzhen) Co., Ltd.
 IOT Test Centre of BlueAsia,
 No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China
 Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673
 Email:marketing@cblueasia.com

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	41.94	-4.2	37.74	74	-36.26	Horizontal
2390	44.65	-3.88	40.77	74	-33.23	Horizontal
2310	43.72	-4.49	39.23	74	-34.77	Vertical
2390	43.8	-4.21	39.59	74	-34.41	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	30.01	-4.2	25.81	54	-28.19	Horizontal
2390	31.81	-3.88	27.93	54	-26.07	Horizontal
2310	30.81	-4.49	26.32	54	-27.68	Vertical
2390	30.32	-4.21	26.11	54	-27.89	Vertical

Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	50.85	-3.38	47.47	74	-26.53	Horizontal
2500	45.09	-3.3	41.79	74	-32.21	Horizontal
2483.5	48.12	-3.77	44.35	74	-29.65	Vertical
2500	55.12	-3.7	51.42	74	-22.58	Vertical

Average value:

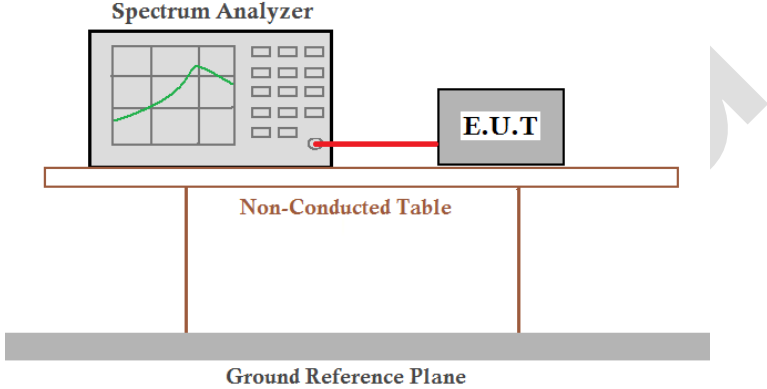
Frequency (MHz)	Read Level (dBuV)	Correct factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	38.92	-3.38	35.54	54	-18.46	Horizontal
2500	34.58	-3.3	31.28	54	-22.72	Horizontal
2483.5	39.13	-3.77	35.36	54	-18.64	Vertical
2500	38.78	-3.7	35.08	54	-18.92	Vertical

Remark:

1. Final Level = Receiver Read level + Correct factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Correct factor = Antenna Factor + Cable Loss - Pre-amplifier Factor

7.7 Spurious Emission

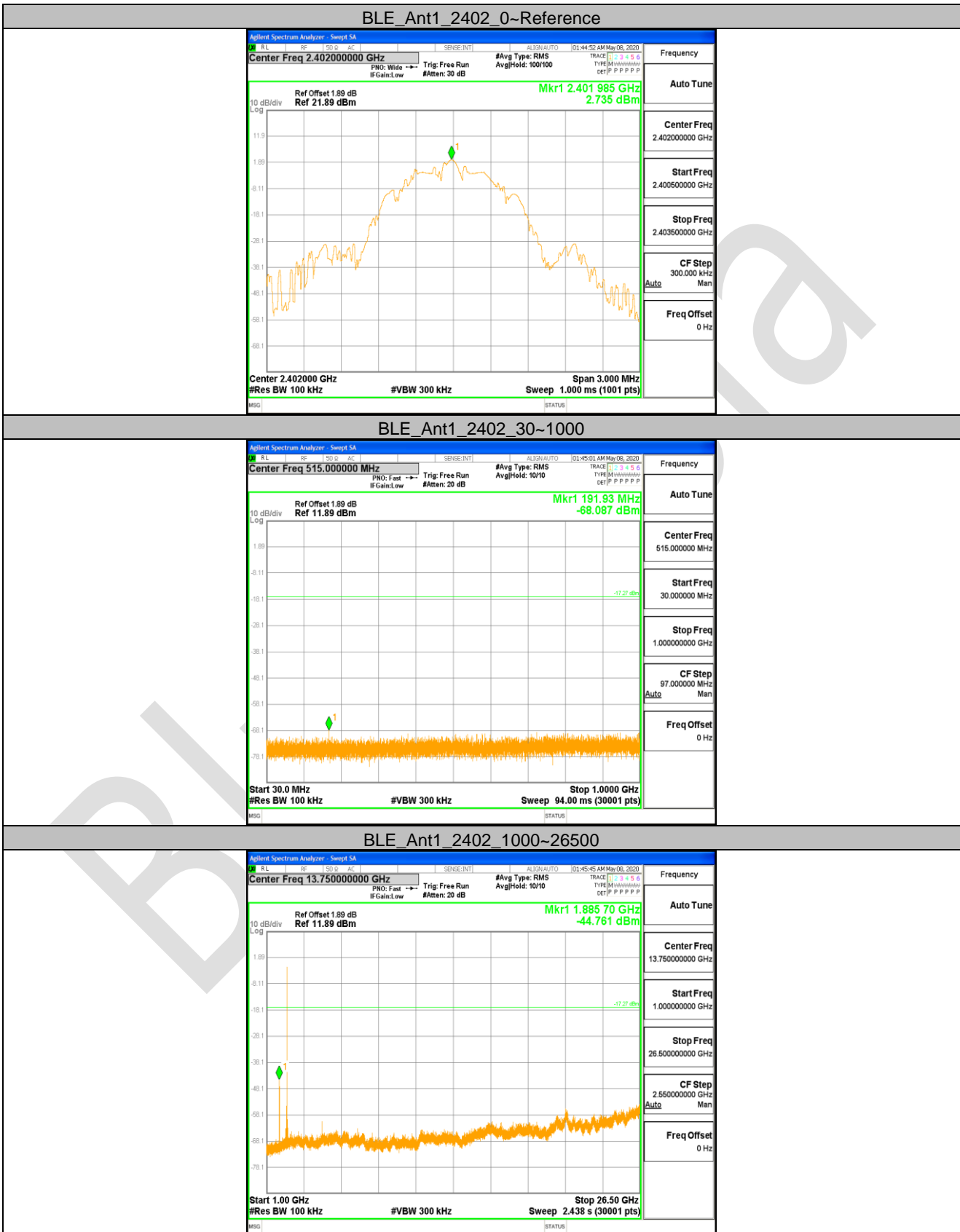
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	Reference	2.74	2.74	---	PASS
			30~1000	30~1000	-68.087	<=-17.265	PASS
			1000~26500	1000~26500	-44.761	<=-17.265	PASS
		2442	Reference	2.07	2.07	---	PASS
			30~1000	30~1000	-67.089	<=-17.926	PASS
			1000~26500	1000~26500	-53.256	<=-17.926	PASS
		2480	Reference	0.61	0.61	---	PASS
			30~1000	30~1000	-67.932	<=-19.391	PASS
			1000~26500	1000~26500	-53.297	<=-19.391	PASS

Test plot as follows:

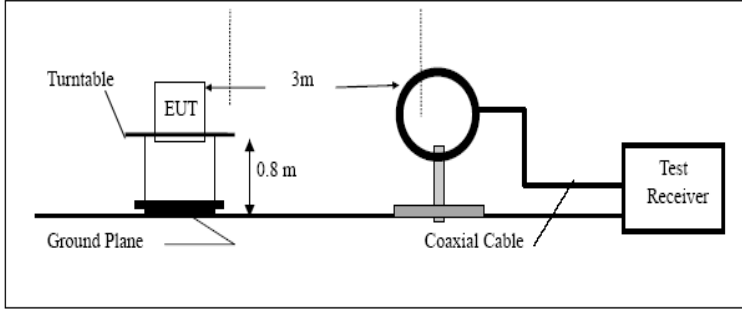
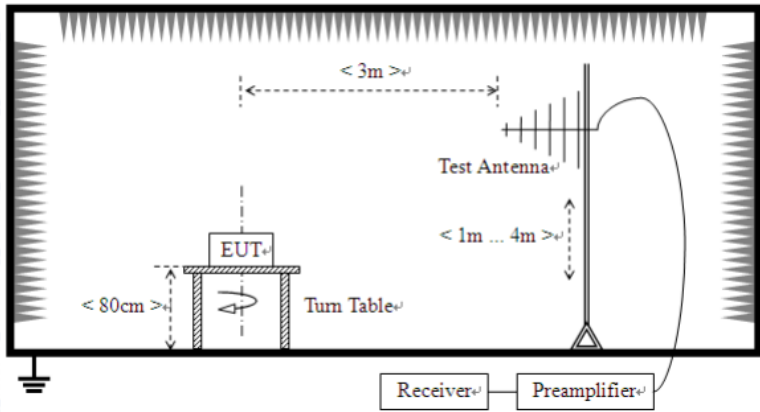
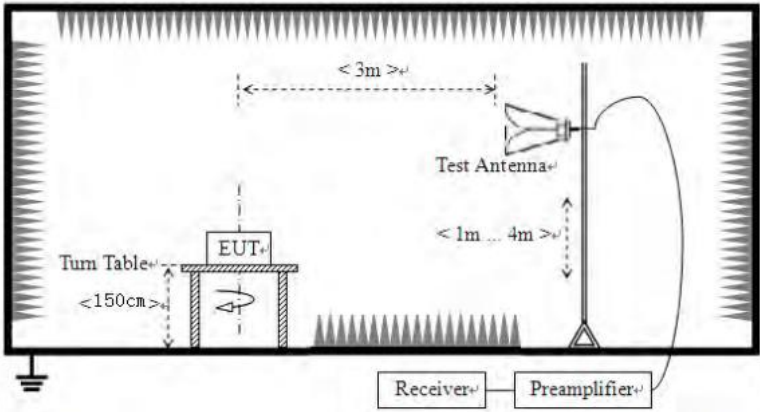






7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	
Limit: (Spurious Emissions)	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-0.490MHz	2400/F(KHz)	QP	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	30m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Above 1GHz	500	Average		
5000		Peak			
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				

<p>Test setup:</p>	<p>Below 30MHz</p>  <p>Below 1GHz</p>  <p>Above 1GHz</p> 
<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both

	<p>horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

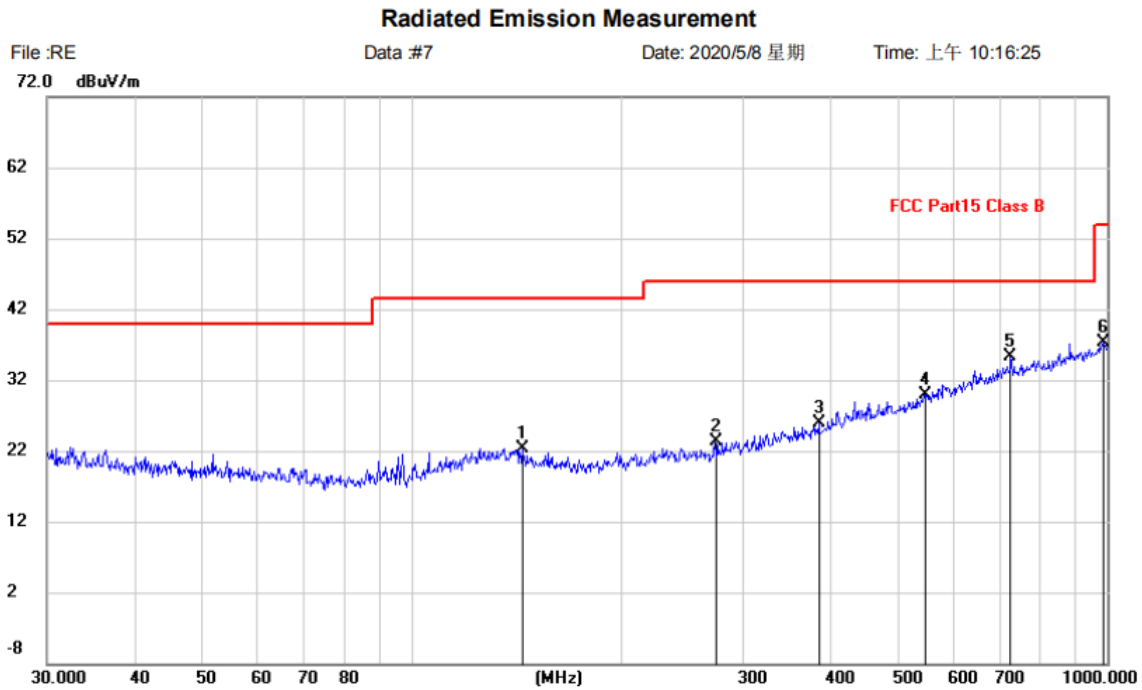
Measurement Data

■ **9 kHz ~ 30 MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Below 1GHz
Horizontal:

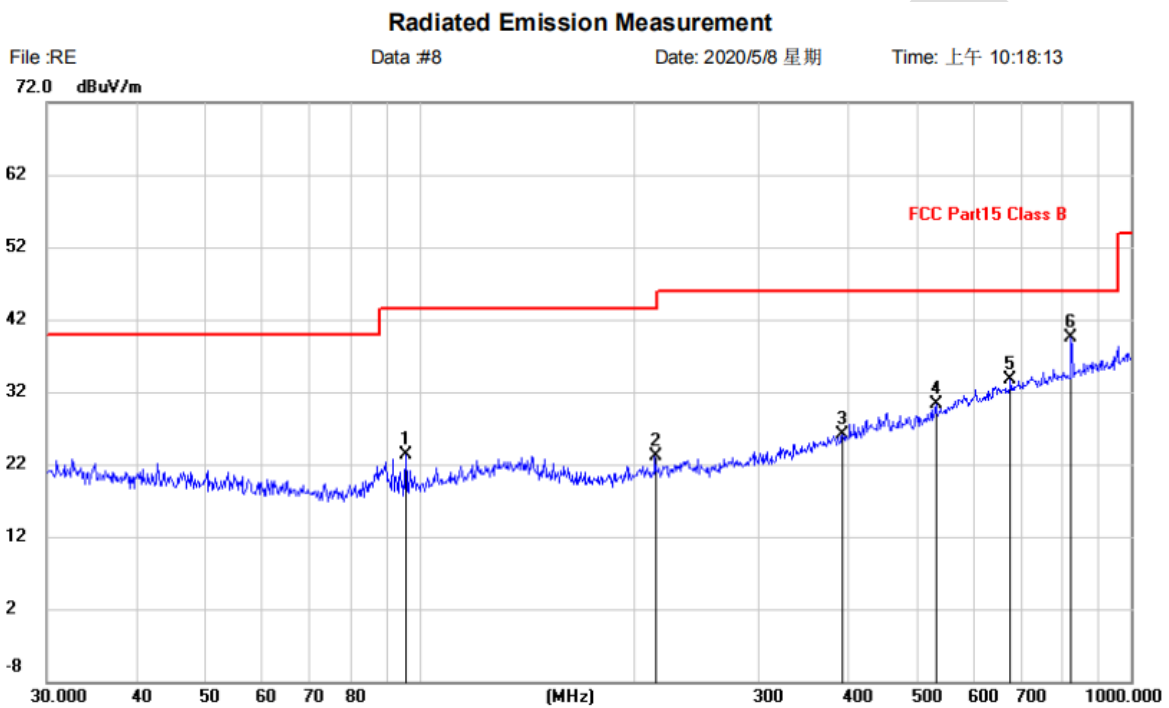
EUT:	TLSR8278DG48D	Probe:	Horizontal
Model:	TLSR8278DG48D	Power Source:	AC120V/60Hz
Mode:	BLE mode	Test by:	Ben
Temp./Hum.(%RH):	26°C/60%RH		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		144.3348	-0.98	23.28	22.30	43.50	-21.20	QP
2		273.2341	0.19	23.19	23.38	46.00	-22.62	QP
3		385.2805	-0.74	26.56	25.82	46.00	-20.18	QP
4		545.1826	-0.01	30.00	29.99	46.00	-16.01	QP
5	*	726.8052	2.08	33.15	35.23	46.00	-10.77	QP
6		986.0717	0.99	36.37	37.36	54.00	-16.64	QP

Vertical:

EUT:	TLSR8278DG48D	Probe:	Vertical
Model:	TLSR8278DG48D	Power Source:	AC120V/60Hz
Mode:	BLE mode	Test by:	Ben
Temp./Hum.(%RH):	26°C/60%RH		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		95.7622	3.14	20.21	23.35	43.50	-20.15	QP
2		214.5143	1.94	21.14	23.08	43.50	-20.42	QP
3		393.4723	-0.77	26.81	26.04	46.00	-19.96	QP
4		531.9635	0.62	29.71	30.33	46.00	-15.67	QP
5		677.5798	1.34	32.36	33.70	46.00	-12.30	QP
6	*	824.5968	5.03	34.47	39.50	46.00	-6.50	QP

■ Above 1GHz

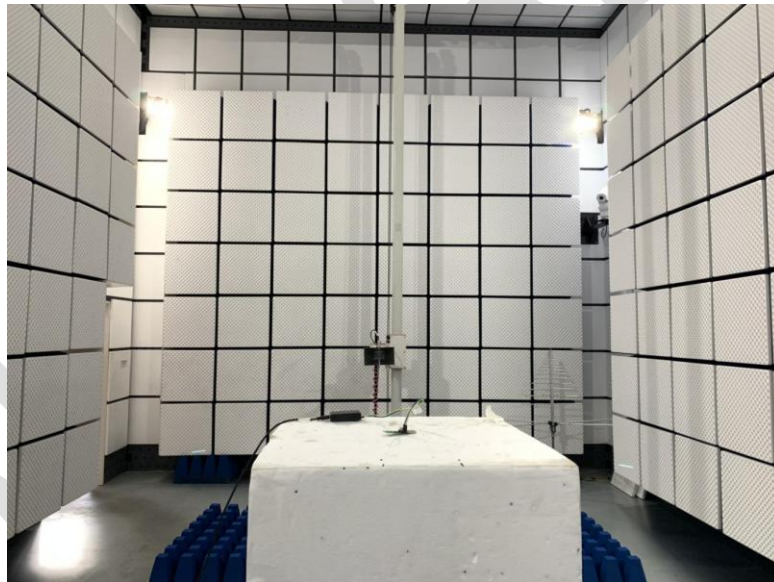
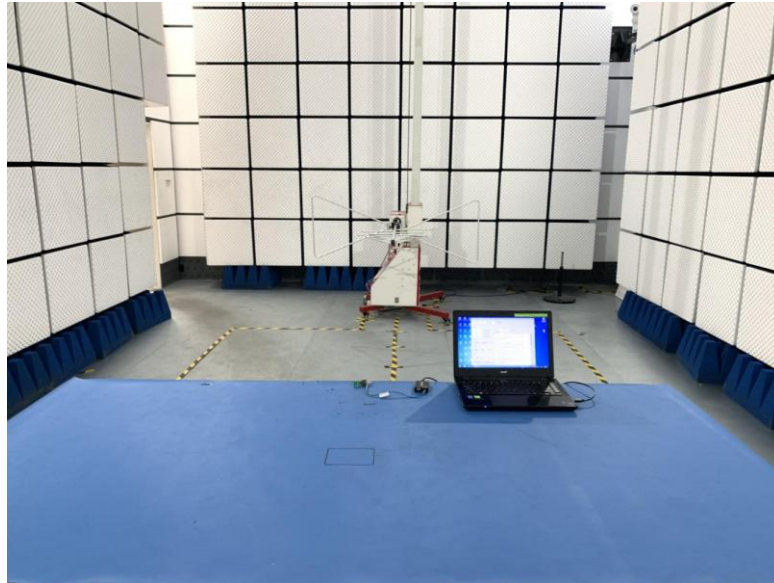
Test channel:lowest							
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Value
4804	57.32	2.57	59.89	74	-14.11	H	Peak
4804	41.24	2.57	43.81	54	-10.19	H	AV
7206	58.78	7.58	66.36	74	-7.64	H	Peak
7206	41.52	7.58	49.1	54	-4.9	H	AV
4804	60.58	2.57	63.15	74	-10.85	V	Peak
4804	41.26	2.57	43.83	54	-10.17	V	AV
7206	60.91	7.58	68.49	74	-5.51	V	Peak
7206	40.92	7.58	48.5	54	-5.5	V	AV
Test channel:Middle							
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Value
4884	58.61	0.1	58.71	74	-15.29	H	Peak
4884	41.82	0.1	41.92	54	-12.08	H	AV
7326	58.37	7.6	65.97	74	-8.03	H	Peak
7326	41.91	7.6	49.51	54	-4.49	H	AV
4884	60.02	0.1	60.12	74	-13.88	V	Peak
4884	40.13	0.1	40.23	54	-13.77	V	AV
7326	61.57	7.6	69.17	74	-4.83	V	Peak
7326	39.74	7.6	47.34	54	-6.66	V	AV
Test channel:Highest							
Frequency (MHz)	Read Level (dBuV)	Correct factor	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Value
4960	54.81	1.04	55.85	74	-18.15	H	Peak
4960	50.05	1.04	51.09	54	-2.91	H	AV
7440	59.49	7.55	67.04	74	-6.96	H	Peak
7440	38.33	7.55	45.88	54	-8.12	H	AV
4960	60.03	2.53	62.56	74	-11.44	V	Peak
4960	38.47	2.53	41	54	-13	V	AV
7440	58.41	7.55	65.96	74	-8.04	V	Peak
7440	39.51	7.55	47.06	54	-6.94	V	AV

Remark:

1. Final Level = Receiver Read level + Correct factor
2. Correct factor = Antenna Factor + Cable Loss – Preamplifier Factor

8 Test Setup Photo

Radiated Emission

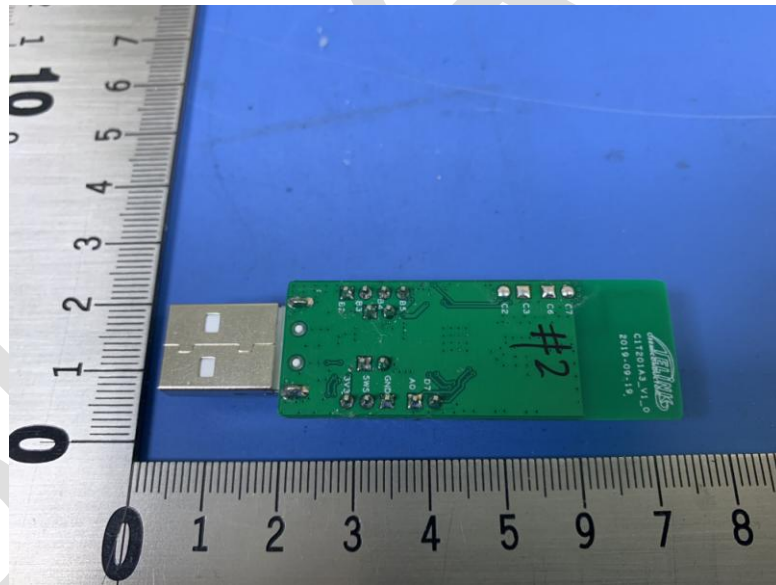
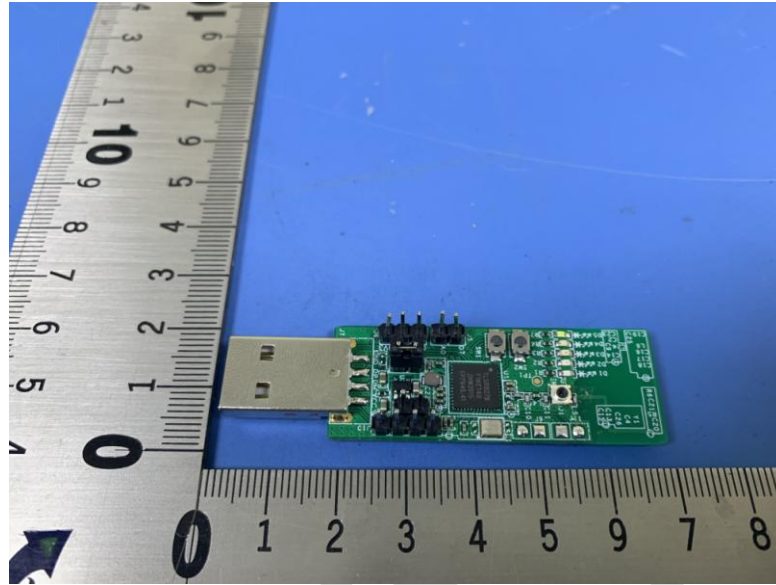


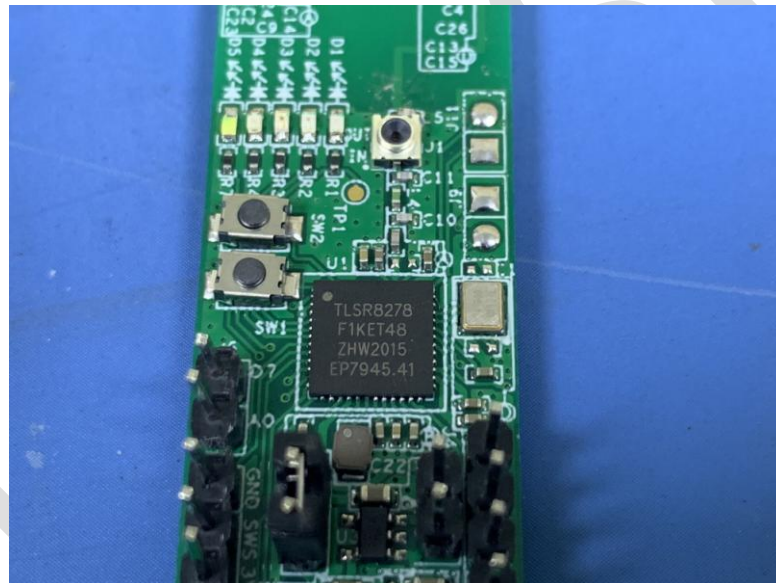
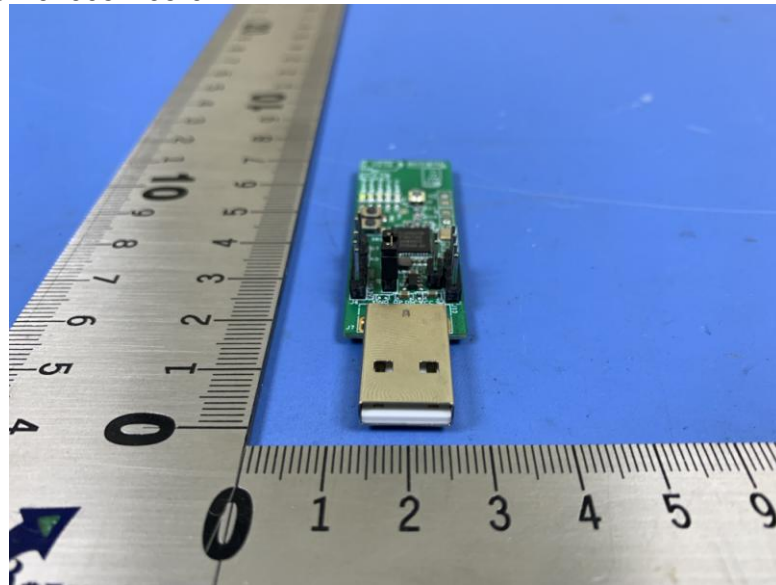
Conducted Emission



BlueAsia

9 EUT Constructional Details





*** End of Report ***

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