Report No.: ET-26041265E

TEST REPORT

Applicant:	HYTTO PTE. LTD.
Address of Applicant:	152 Beach Road, #11-05 Gateway East, Singapore 189721
Manufacturer:	HYTTO PTE. LTD.
Address of Manufacturer:	152 Beach Road, #11-05 Gateway East, Singapore 189721
Product Name:	Valor
Model No.:	C20
Trade Mark:	LOVENSE
FCC ID:	2AXNT-C20
Applicable standards:	CFR Title 47 Part 15.247
Date of Test:	Apr.07, 2026 - Apr.13, 2026
Date of report issued:	Apr.14, 2026

Remark:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:	Reviewed by:	Approved by:
Project Engineer	Project Manager	Authorized Signature

This test report is valid for the tested samples only. It cannot be reproduced except in full without prior written consent of Shenzhen ETR Standard Technology Co., Ltd.

Report Revision History		
Report No.	Description	Issue Date
ET-26041265E	Original	Apr.14, 2026

Contents

Page

1. TEST SUMMARY 4

2. GENERAL INFORMATION 5

2.1 GENERAL DESCRIPTION OF EUT 5
2.2 TEST MODE 7
2.3 DESCRIPTION OF SUPPORT UNITS 7
2.4 TEST FACILITY 7
2.5 ADDITIONAL INSTRUCTIONS 7

3. TEST INSTRUMENTS LIST 8

4. TEST RESULTS AND MEASUREMENT DATA 9

4.1 ANTENNA REQUIREMENT 9
4.2 CONDUCTED EMISSIONS 10
4.3 DUTY CYCLE 13
4.4 CONDUCTED OUTPUT POWER 15
4.5 6DB BANDWIDTH 16
4.6 POWER SPECTRAL DENSITY 18
4.7 BAND EDGES 20
Conducted Emission Method 20
Radiated Emission Method 22
4.8 SPURIOUS EMISSION 24
Conducted Emission Method 24
Radiated Emission Method 26

5. TEST SETUP PHOTO 33

6. EUT CONSTRUCTIONAL DETAILS 33

1. Test Summary

Test Item	Section	Result	Test by
Antenna requirement	47CFR part 15.203/15.247 (b)(4)	Pass	/
AC Power Line Conducted Emission	47CFR part 15.207	Pass	Jason Huang
Conducted Peak Output Power	47CFR part 15.247 (b)(3)	Pass	Kara Wu
6dB Bandwidth	47CFR part 15.247 (a)(2)	Pass	Kara Wu
Power Spectral Density	47CFR part 15.247 (e)	Pass	Kara Wu
Band Edge	47CFR part 15.247(d) 47CFR part 15.205/15.209	Pass	Kara Wu
Spurious Emission	47CFR part 15.247(d) 47CFR part 15.205/15.209	Pass	Jason Huang

Remarks:

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

2. Test according to ANSI C63.10-2020 and KDB558074 D01 15.247 Meas Guidance v05r02.

3. Note: Compliance determination rules

1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.

2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	0.72%	(1)
RF output power, conducted	±0.67 dB	(1)
Power Spectral Density, conducted	±0.51 dB	(1)
Unwanted Emissions, conducted	±0.64 dB	(1)
AC Power Line Conducted Emission	± 3.38 dB	(1)
Radiated emissions 9K-30MHz	±4.26 dB	(1)
Radiated emissions 30M- 1GHz	±4.88 dB	(1)
Radiated emissions 1GHz-18GHz	± 4.16 dB	(1)
Radiated emissions 18GHz-40GHz	±4.14 dB	(1)
Frequency error	Uc=6X10-7	(1)
Duty Cycle	0.03	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.		

2. General Information

2.1 General Description of EUT

Product Name:	Valor
Model No.:	C20
Difference of model(s)	N/A
Test Model:	C20
Hardware version:	V1.06
Software version:	4
Sample(s) Status	Engineer sample
Operation Frequency:	2402MHz~2480MHz
Channel Numbers:	40
Channel separation:	2MHz
Modulation technology:	GFSK
Antenna Type:	PCB Antenna
Antenna gain:	0.67 dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Power supply:	DC 7.4V From Battery or DC 5V From Adapter
Battery:	DC 7.4V 1000mAh
Adapter:	N/A

Remark: For more details, refer to the user's manual of the EUT.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

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:

Test channel	Frequency (MHz)
Lowest channel	2402MHz
Middle channel	2440MHz
Highest channel	2480MHz

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
/	/	/	/	/

2.4 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064
IC Company Number:	28440
IC CAB identifier:	CN0132
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

2.5 Additional Instructions

Test Software	ADB Special Serial Port Commands
Power level setup	Default

3. Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101214	2026.3.05	2027.3.04
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2026.3.05	2027.3.04
3	Loop Antenna	schwarabeck	FMZB 1519 B	128	2026.3.08	2028.3.07
4	Broadband antenna	schwarabeck	VULB9168	1064	2026.3.11	2028.3.10
5	Horn antenna	schwarabeck	BBHA9120D	2288	2026.3.08	2028.3.07
6	amplifier	EMtrace	RP01A	50117	2026.3.05	2027.3.04
7	AMN	schwarabeck	NSLK8127	8127483	2026.3.05	2027.3.04
8	AMN	ETS	3186/2NM	1132	2026.3.05	2027.3.04
9	10dB attenuator	HUBER+SUHNR	10dB	/	2026.3.05	2027.3.04
10	amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2026.3.05	2027.3.04
11	Filter	Xingbo	XBLBQ-GTA19	210410-3-1	2026.3.05	2027.3.04
12	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2026.3.05	2027.3.04
13	Power control box	MWRFtest	MW100-PSB	MW201020JYT	2026.3.05	2027.3.04
14	Power Sensor	Keysight	U2021XA	MY54111006	2026.3.05	2027.3.04
15	amplifier	SKET	LNPA_1840-50 (18-40GHz)	19113001	2026.3.05	2027.3.04
16	Horn antenna	schwarabeck	BBHA 9170	946	2026.3.08	2028.3.07
17	Temp. & Humidity Chamber	Jiecheng Instrument	QA-LP-80	20160705001	2026/3/06	2027/3/05

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

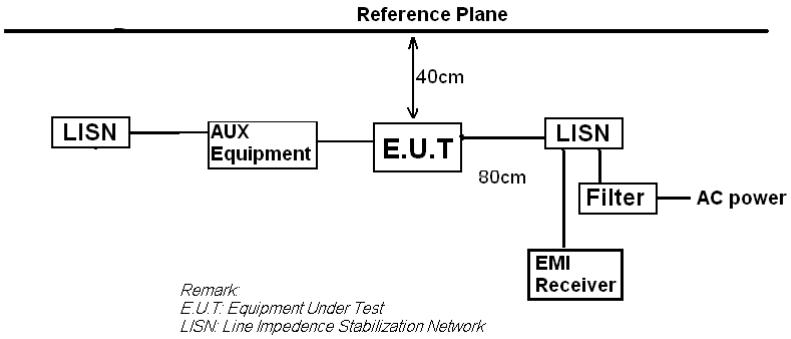
Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4. Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	47CFR Part 15.203 /247(b)(4)
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. **15.247(b) (4) requirement:** If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power limit shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is PCB Antenna, the best case gain of the antenna is 0.67dBi, reference to the ET-26041265IP for details.	

4.2 Conducted Emissions

Test Requirement:	47CFR part 15.207
Test Method:	ANSI C63.10-2020 § 6.2
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	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 * Decreases with the logarithm of the frequency.
Test setup:	
Test procedure:	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 C63.10-2020 on conducted measurement.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test environment:	Temp.: 26.4°C Humid.: 45% Press.: 1012mbar
Test voltage:	AC 120V 60Hz
Test results:	Pass

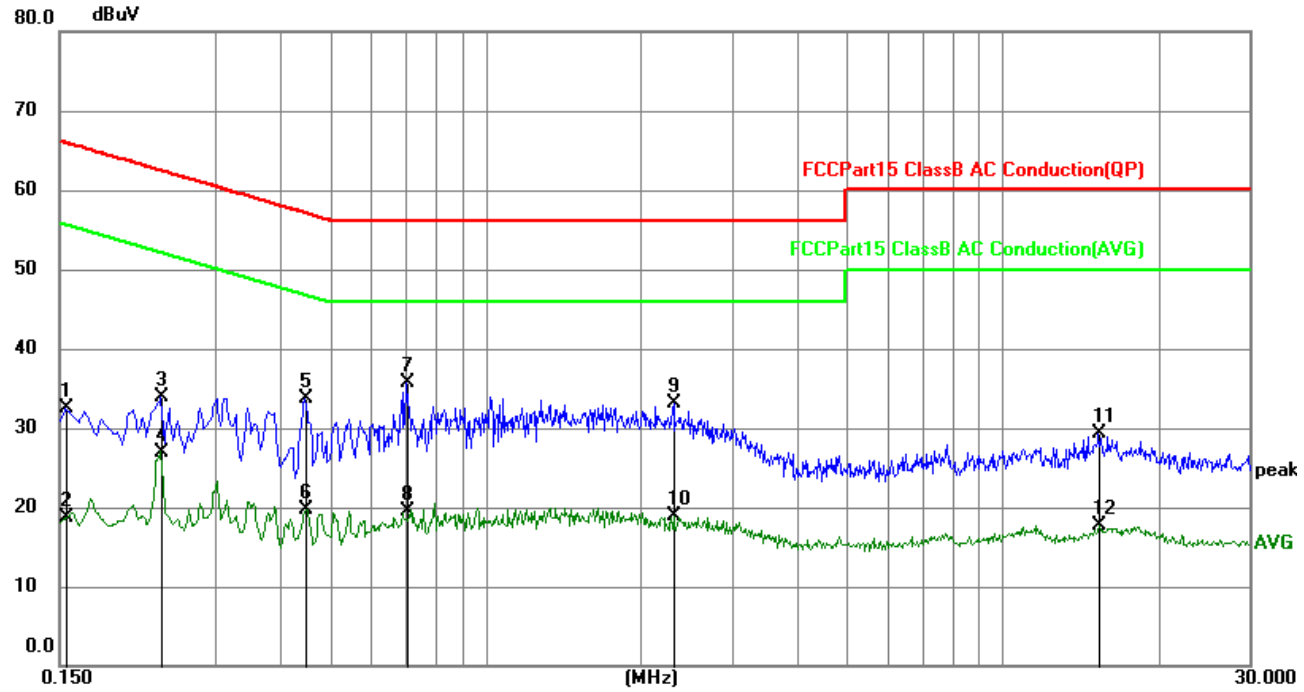
Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.

2. All mode have been tested, the report only shows the worst mode (2440MHz) data.

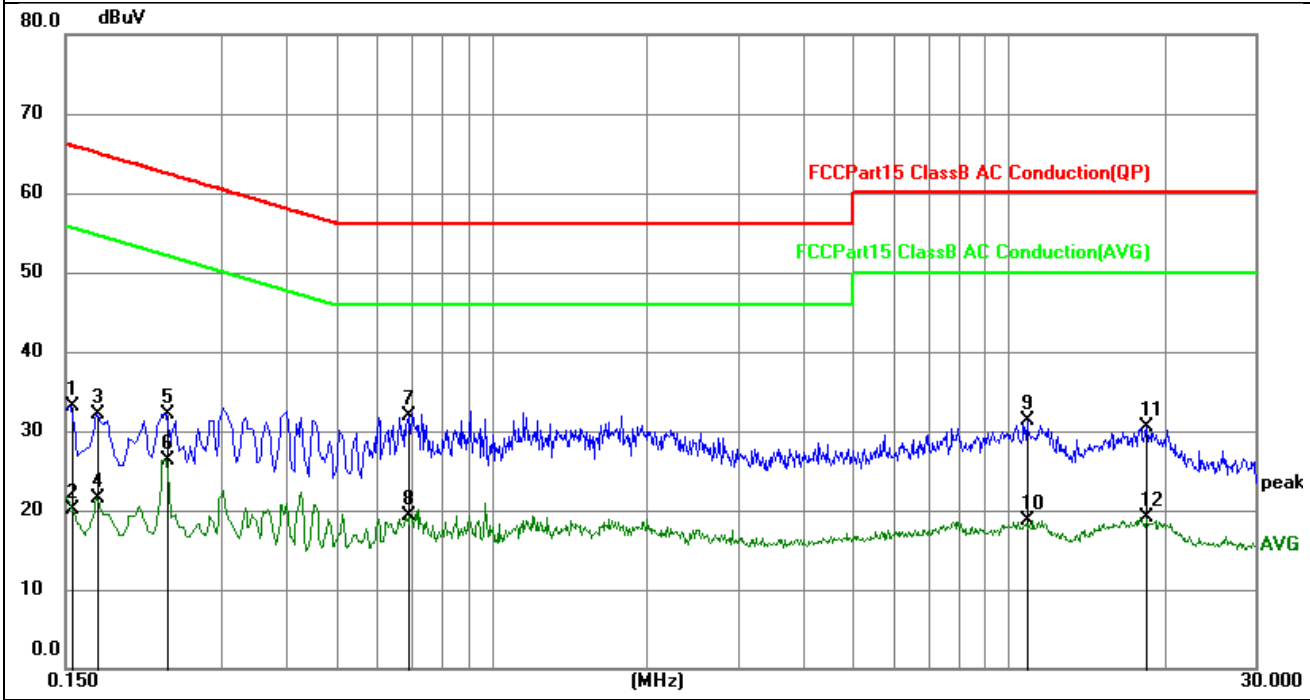
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1545	22.48	9.97	32.45	65.75	-33.30	QP
2	0.1545	8.79	9.97	18.76	55.75	-36.99	AVG
3	0.2355	23.93	9.98	33.91	62.25	-28.34	QP
4	0.2355	17.02	9.98	27.00	52.25	-25.25	AVG
5	0.4470	23.56	10.06	33.62	56.93	-23.31	QP
6	0.4470	9.70	10.06	19.76	46.93	-27.17	AVG
7	0.7035	25.59	10.08	35.67	56.00	-20.33	QP
8	0.7035	9.52	10.08	19.60	46.00	-26.40	AVG
9	2.3190	23.16	10.00	33.16	56.00	-22.84	QP
10	2.3190	8.93	10.00	18.93	46.00	-27.07	AVG
11	15.3420	19.40	9.99	29.39	60.00	-30.61	QP
12	15.3420	7.74	9.99	17.73	50.00	-32.27	AVG

Neutral:

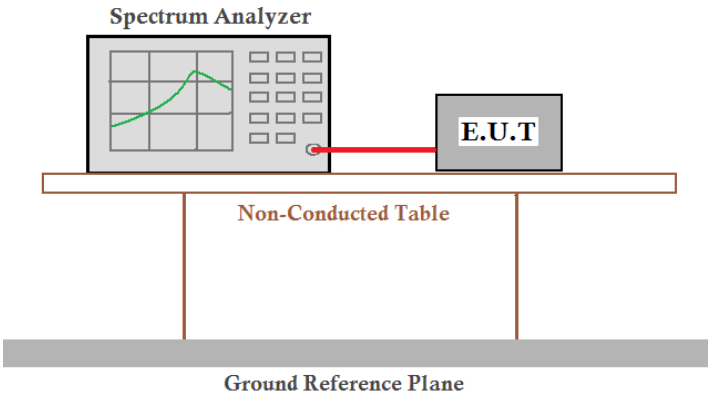


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1545	23.18	9.97	33.15	65.75	-32.60	QP
2	0.1545	10.17	9.97	20.14	55.75	-35.61	AVG
3	0.1725	22.17	9.97	32.14	64.84	-32.70	QP
4	0.1725	11.55	9.97	21.52	54.84	-33.32	AVG
5	0.2355	22.07	9.98	32.05	62.25	-30.20	QP
6	0.2355	16.42	9.98	26.40	52.25	-25.85	AVG
7	0.6900	21.86	10.08	31.94	56.00	-24.06	QP
8	0.6900	9.18	10.08	19.26	46.00	-26.74	AVG
9	10.8510	21.27	10.06	31.33	60.00	-28.67	QP
10	10.8510	8.62	10.06	18.68	50.00	-31.32	AVG
11	18.5145	20.62	9.95	30.57	60.00	-29.43	QP
12	18.5145	9.11	9.95	19.06	50.00	-30.94	AVG

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. Level =Receiver Read level + Factor (Factor= LISN Factor + Cable Loss+ Attenuator Factor)
4. 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.

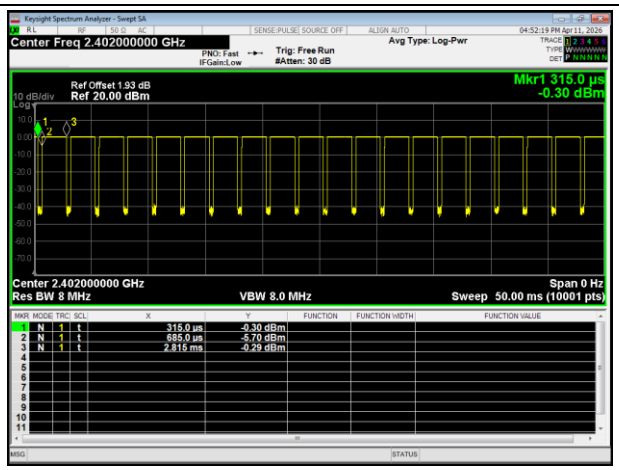
4.3 Duty cycle

Test Method :	ANSI C63.10-2020 § 11.6	
Limit:	/	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 26.4°C	Humid.: 45%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

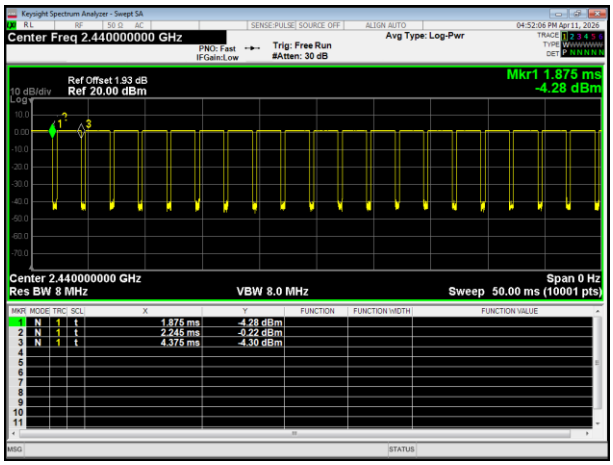
Measurement Result

Test channel	Duty Cycle (%)	Correction Factor (dB)
Lowest	85.2	0.7
Middle	85.2	0.7
Highest	85.2	0.7

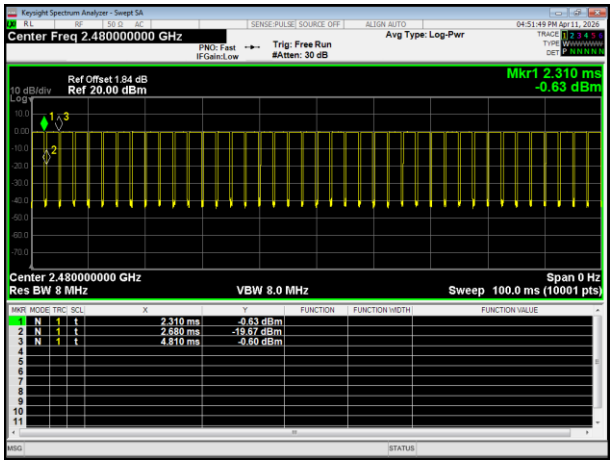
Test plot as follows:



Lowest channel

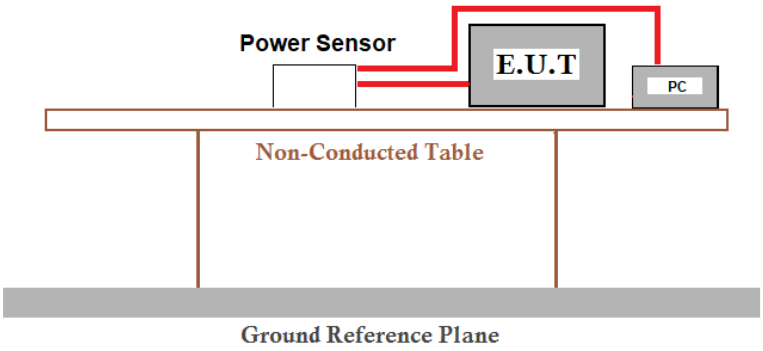


Middle channel



Highest channel

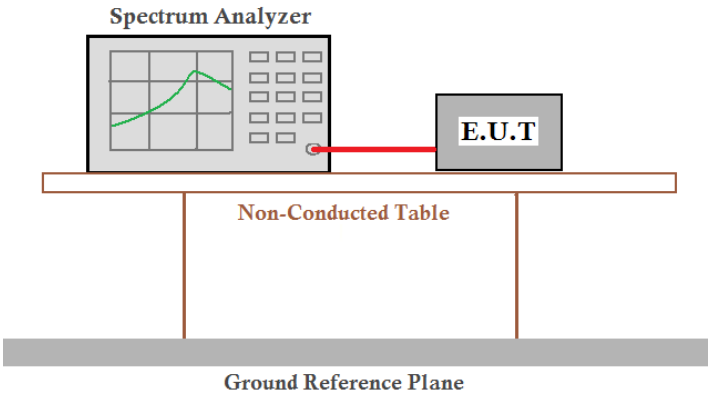
4.4 Conducted Output Power

Test Requirement :	47CFR Part 15.247 (b)(3)	
Test Method :	ANSI C63.10-2020 § 11.9 KDB558074 D01 15.247 Meas Guidance v05r02	
Limit:	30dBm for conducted	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.3°C	Humid.: 60%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

Measurement Result

Test channel	Output Power (dBm)	Limit(dBm)	Result
Lowest	0.40	30.00	Pass
Middle	0.80		
Highest	-0.56		

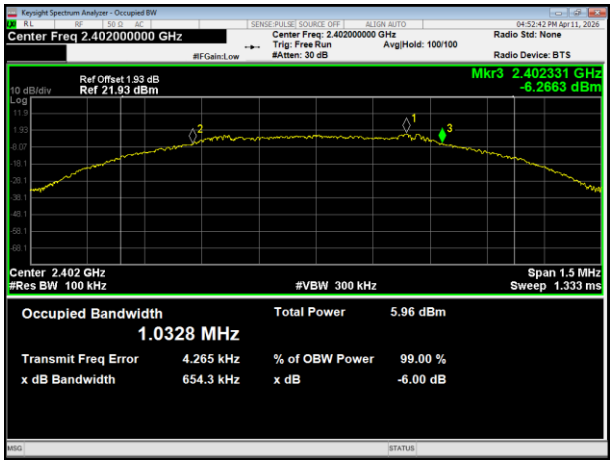
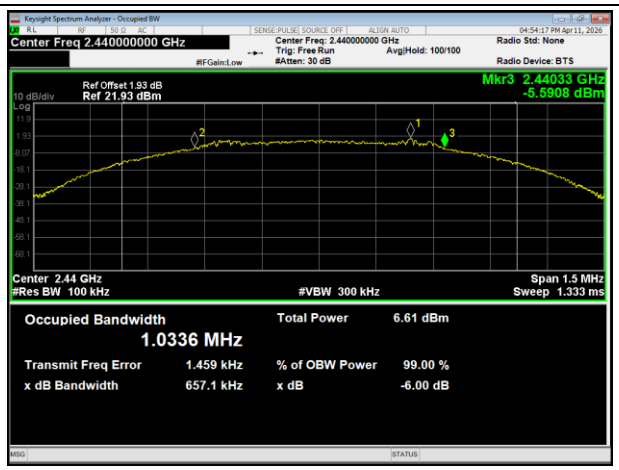
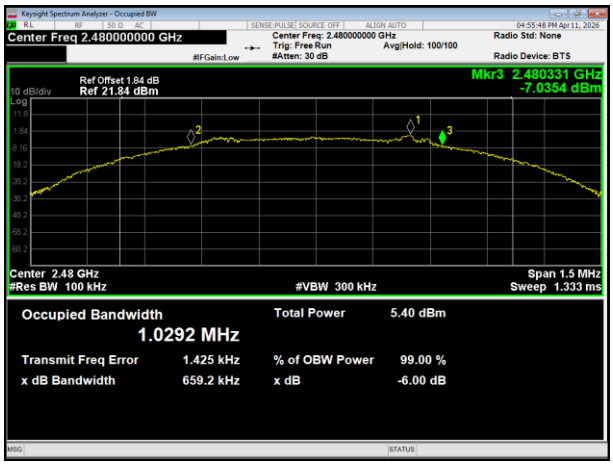
4.5 6dB Bandwidth

Test Requirement :	47CFR part 15.247 (a)(2)	
Test Method :	ANSI C63.10-2020 § 11.8	
Limit:	>500KHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.3°C	Humid.: 60%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

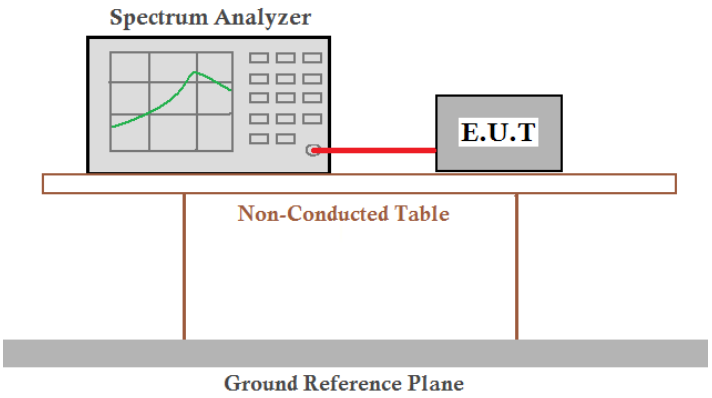
Measurement Result

Test channel	6dB Bandwidth (MHz)	Limit(KHz)	Result
Lowest	0.654	>500	Pass
Middle	0.657		
Highest	0.659		

Test plot as follows:

6dB Bandwidth

Lowest channel

Middle channel

Highest channel

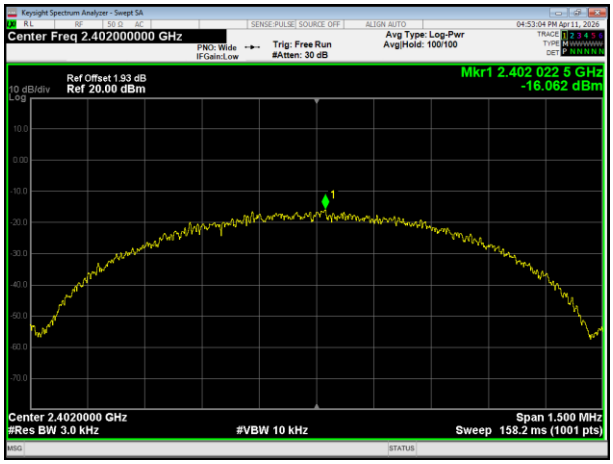
4.6 Power Spectral Density

Test Requirement:	47CFR Part 15.247 (e)	
Test Method:	ANSI C63.10-2020 § 11.10 KDB558074 D01 15.247 Meas Guidance v05r02	
Limit:	8dBm/3kHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.3°C	Humid.: 60%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

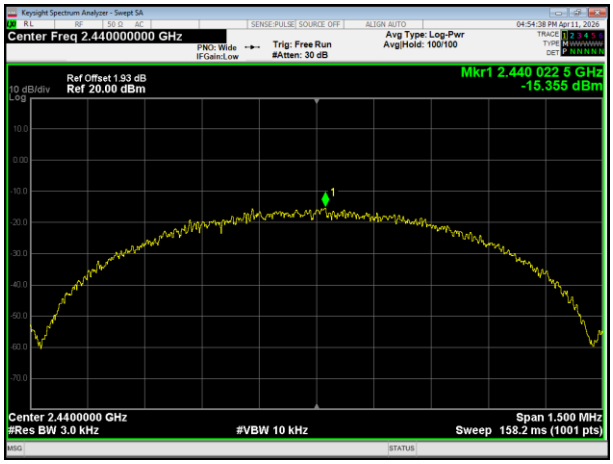
Measurement Result

Test channel	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Result
Lowest	-16.062	8.00	Pass
Middle	-15.355		
Highest	-16.679		

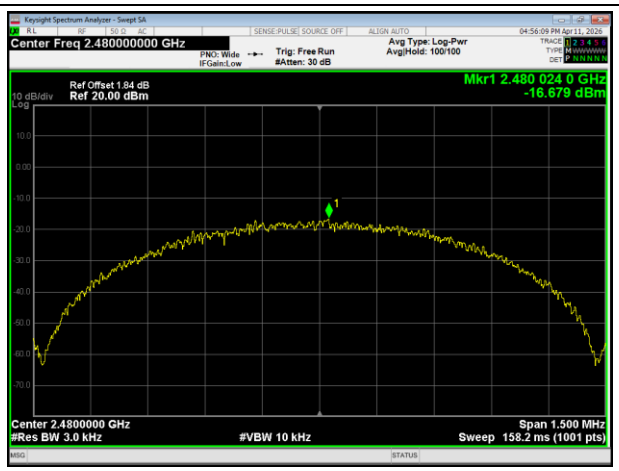
Test plot as follows:



Lowest channel



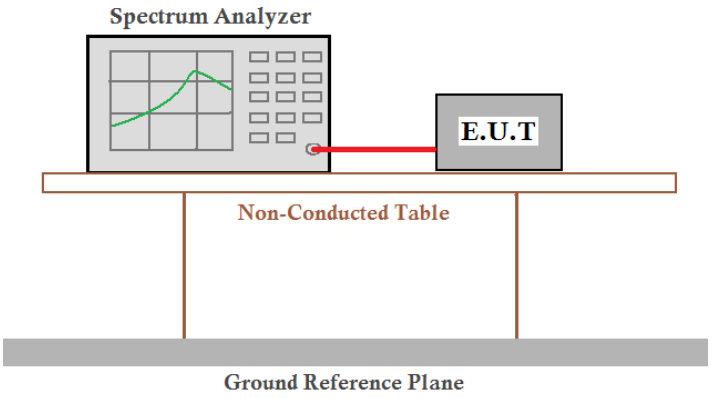
Middle channel



Highest channel

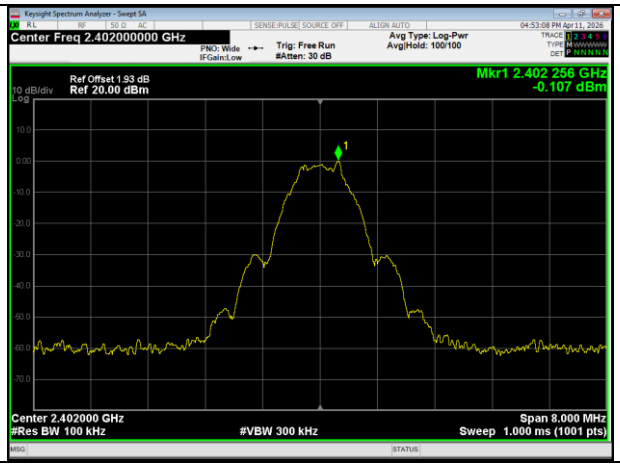
4.7 Band edges

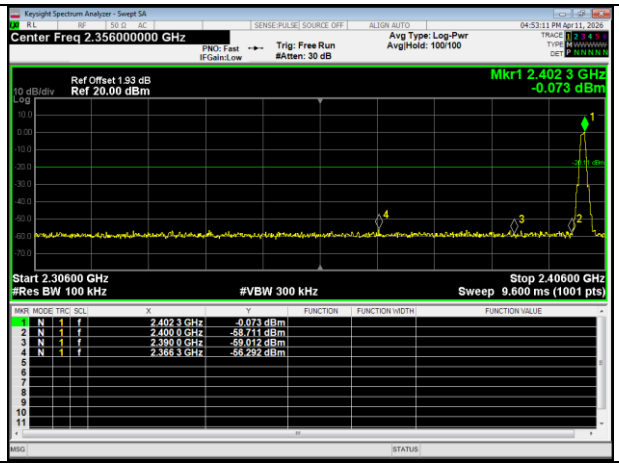
Conducted Emission Method

Test Requirement:	47CFR Part 15.247 (d)	
Test Method:	ANSI C63.10-2020 § 6.10	
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 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.3°C	Humid.: 60%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

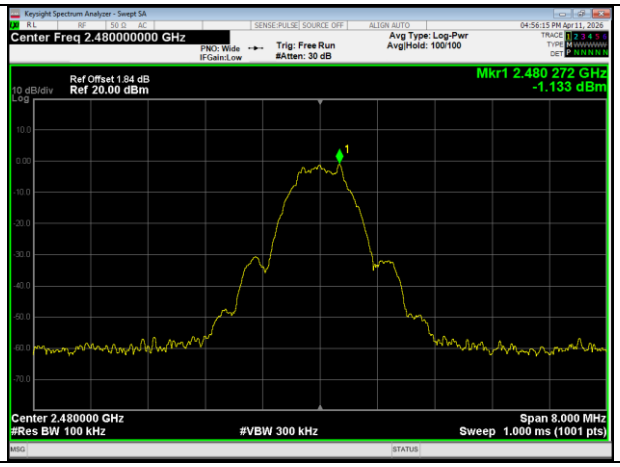
Test plot as follows:

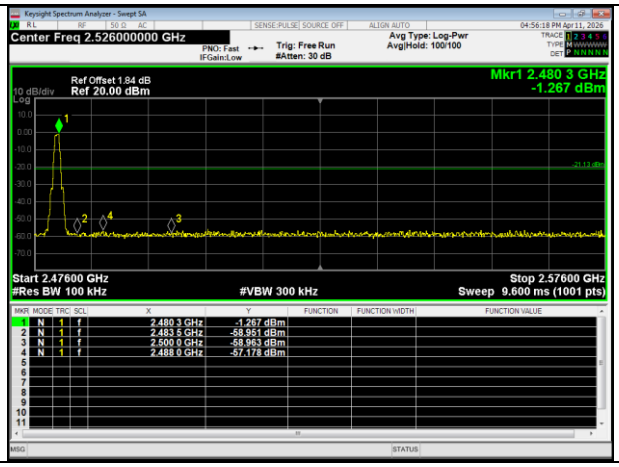
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-56.18	-20	Pass
NVNT	BLE 1M	2480	Ant1	-56.04	-20	Pass





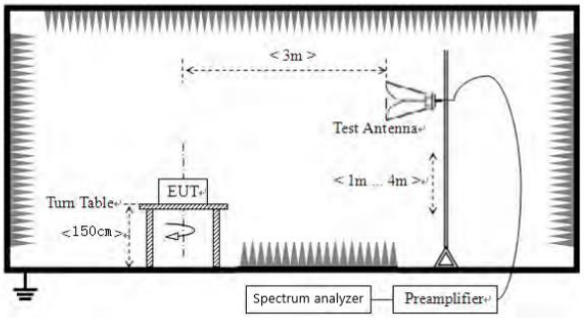
Lowest channel





Highest channel

Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td colspan="5">47CFR Part 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.10-2020 § 6.10&11.12</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.</td></tr>
<tr><td>Test site:</td><td colspan="5">Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td></td><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td></td><td>Average</td><td>1MHz</td><td>3MHz</td><td>Average</td></tr>
<tr><td>Limit:</td><td colspan="2">Frequency</td><td colspan="2">Limit (dBuV/m @3m)</td><td>Value</td></tr>
<tr><td></td><td colspan="2" rowspan="2">Above 1GHz</td><td colspan="2">54.00</td><td>Average</td></tr>
<tr><td></td><td colspan="2">74.00</td><td>Peak</td></tr>
<tr><td>Test setup:</td><td colspan="5"> 
</td></tr>
<tr><td>Test Procedure:</td><td colspan="5">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 Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.</td></tr>
<tr><td>Test Instruments:</td><td colspan="5">Refer to section 3.0 for details</td></tr>
<tr><td>Test mode:</td><td colspan="5">Refer to section 2.2 for details</td></tr>
<tr><td>Test environment:</td><td colspan="3">Temp.: 23.3°C</td><td colspan="2">Humid.: 60%RH</td></tr>
<tr><td>Test voltage:</td><td colspan="5">DC 7.4V by battery</td></tr>
<tr><td>Test results:</td><td colspan="5">Pass</td></tr>
</table>

Measurement Result:

Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization
2310.00	69.59	-13.36	56.23	74.00	-17.77	Horizontal
2390.00	75.24	-13.03	62.21	74.00	-11.79	Horizontal
2310.00	70.36	-13.36	57.00	74.00	-17.00	Vertical
2390.00	75.11	-13.03	62.08	74.00	-11.92	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	57.09	-13.36	43.73	54.00	-10.27	Horizontal
2390.00	62.50	-13.03	49.47	54.00	-4.53	Horizontal
2310.00	56.59	-13.36	43.23	54.00	-10.77	Vertical
2390.00	62.12	-13.03	49.09	54.00	-4.91	Vertical

Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	75.03	-12.64	62.39	74.00	-11.61	Horizontal
2500.00	70.79	-12.57	58.22	74.00	-15.78	Horizontal
2483.50	75.37	-12.64	62.73	74.00	-11.27	Vertical
2500.00	70.74	-12.57	58.17	74.00	-15.83	Vertical

Average value:

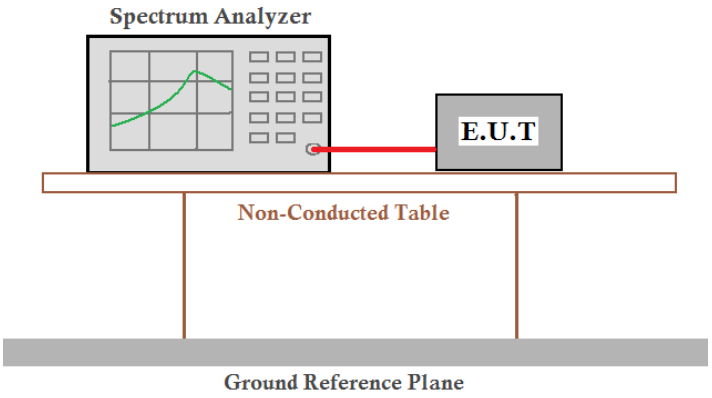
Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	62.70	-12.64	50.06	54.00	-3.94	Horizontal
2500.00	58.84	-12.57	46.27	54.00	-7.73	Horizontal
2483.50	63.38	-12.64	50.74	54.00	-3.26	Vertical
2500.00	57.71	-12.57	45.14	54.00	-8.86	Vertical

Remarks:

1. *Level = Read level + Factor*
2. *Factor=Antenna Factor + Cable Loss – Preamplifier Factor*
3. *Emissions more than 20 dB below the limit do not need to be reported.*
4. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*

4.8 Spurious Emission

Conducted Emission Method

Test Requirement:	47CFR Part 15.247(d),47CFR Part 15.209 and 15.205	
Test Method:	ANSI C63.10-2020 § 11.12	
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 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 23.3°C	Humid.: 60%RH
Test voltage:	DC 7.4V by battery	
Test results:	Pass	

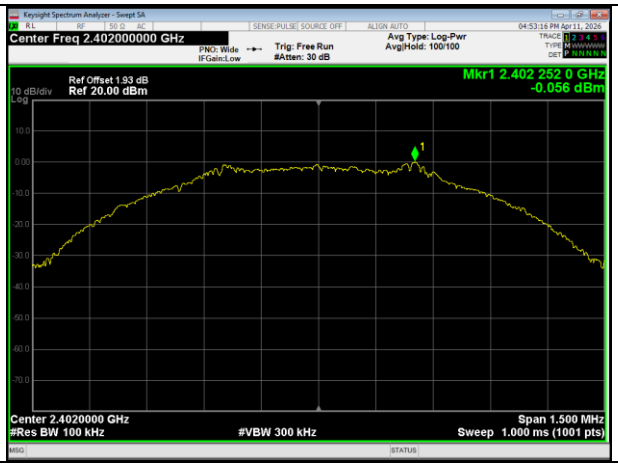
Remark:

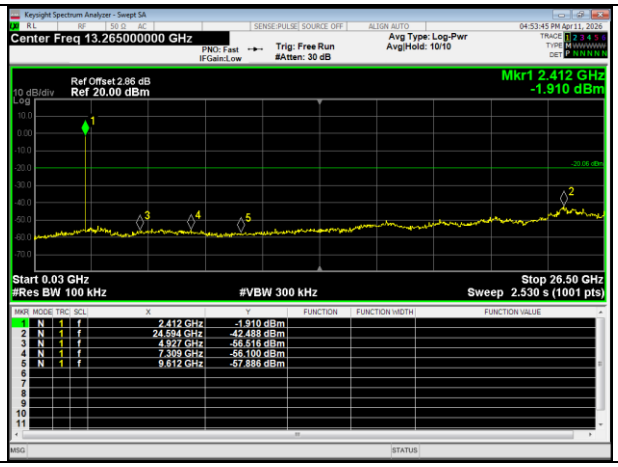
1. Cable loss data included in Offset.

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-42.42	-20	Pass
NVNT	BLE 1M	2440	Ant1	-43.34	-20	Pass
NVNT	BLE 1M	2480	Ant1	-41.66	-20	Pass

Test plot as follows:

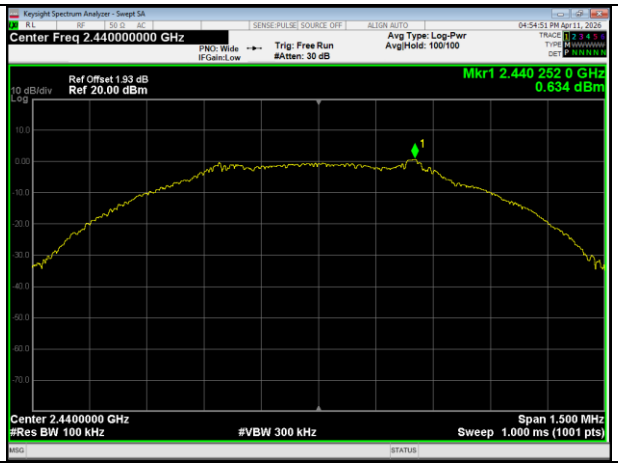
Lowest channel

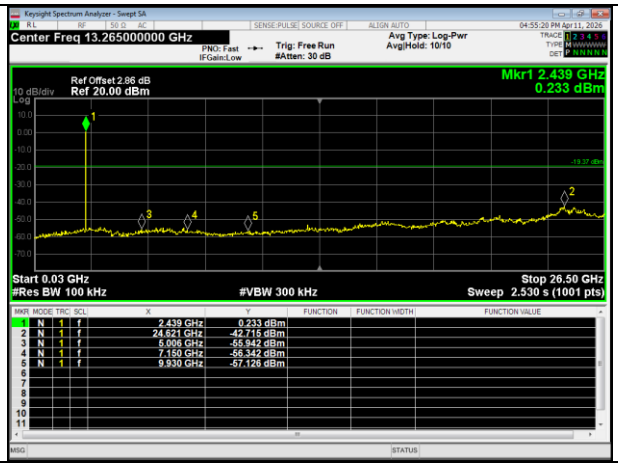




30MHz~25GHz

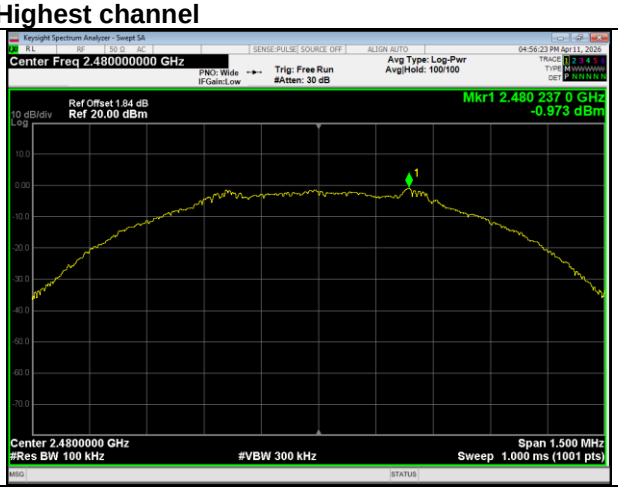
Middle channel

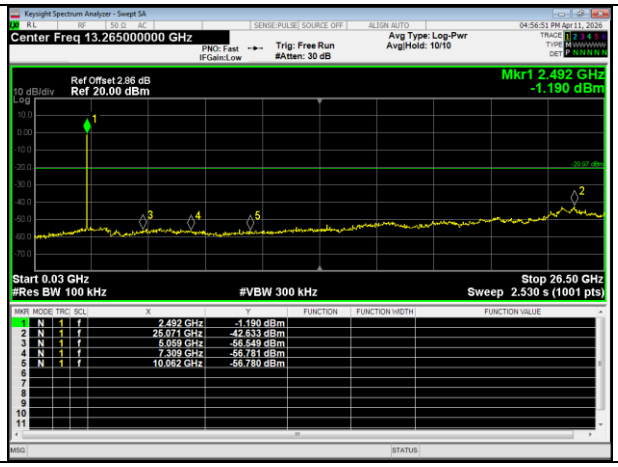




30MHz~25GHz

Highest channel





30MHz~25GHz

Radiated Emission Method

Test Requirement:	47CFR part 15.247(d),47CFR Part 15.209 and 15.205
Test Method:	ANSI C63.10-2020 § 6.4&6.5&6.6
Test Frequency Range:	9kHz to 25GHz
Test site:	Measurement Distance: 3m

Receiver setup:

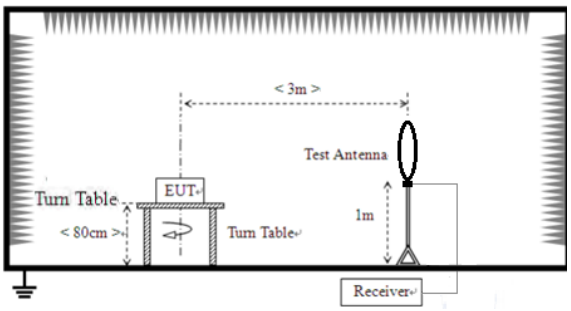
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

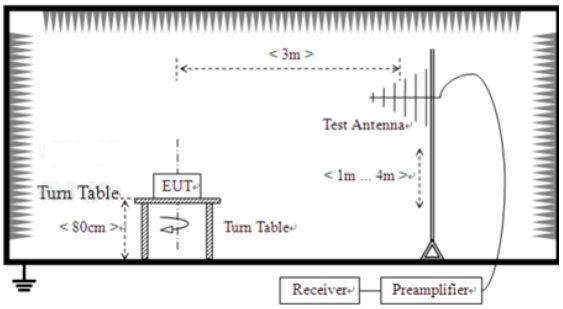
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

Test setup:

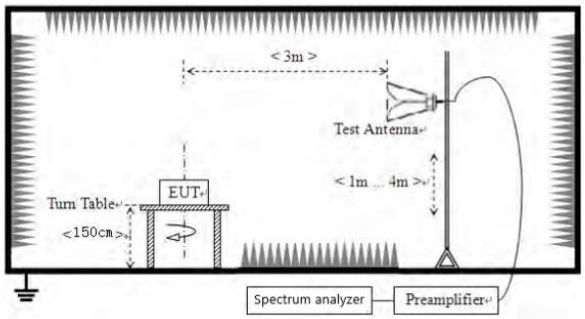
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz

	
Test Procedure:	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 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.
Test Instruments:	Refer to section 3.0 for details
Test mode:	Refer to section 2.2 for details
Test results:	Pass

Remarks:

1. The report only shows the worst mode.

2. 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 Result:

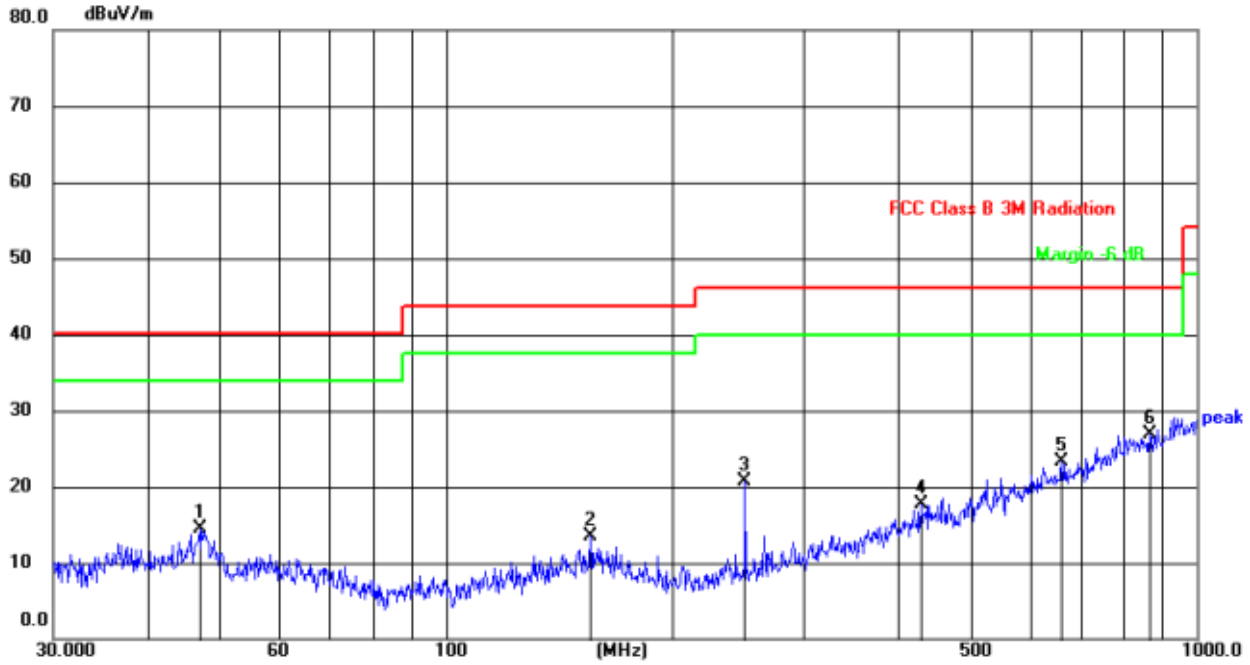
■ **9kHz~30MHz**

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 47CFR part 15.31(o), the test result no need to reported.

■ **Below 1GHz**

All mode has been tested, the report only shows the worst mode (2440MHz) data.

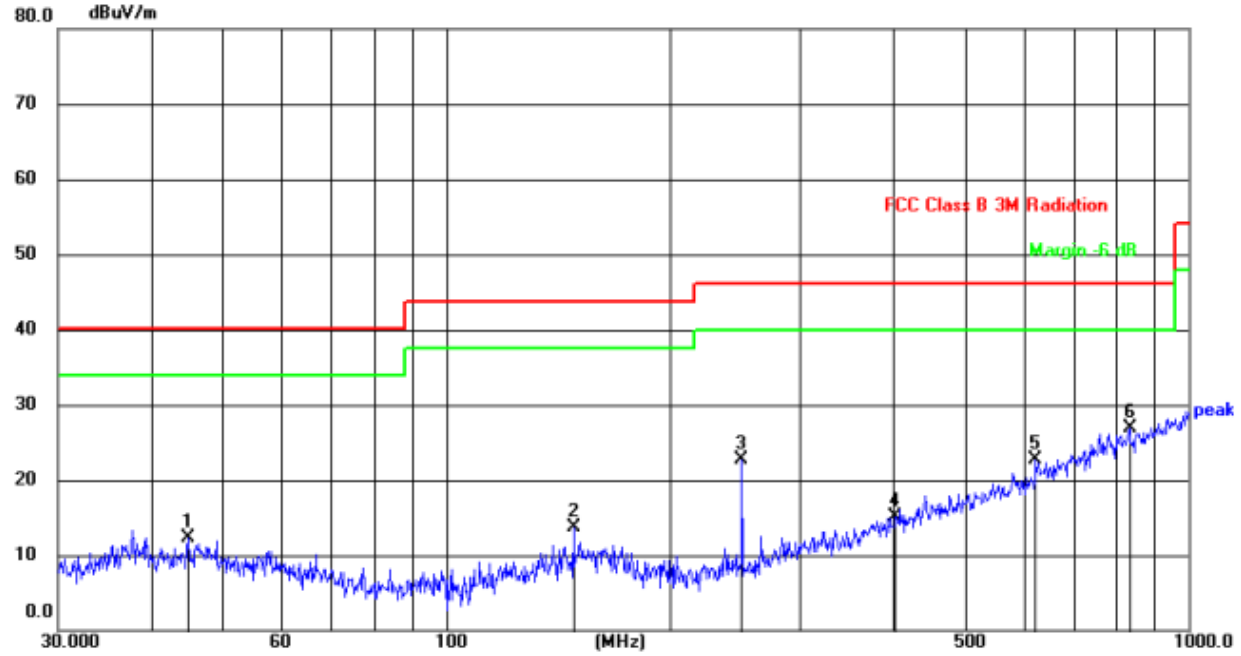
Test polarization:	Vertical	Test voltage:	DC 7.4V by battery
Temp.:	21.1°C	Humid.:	62%RH



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	46.9947	35.88	-21.44	14.44	40.00	-25.56	QP
2	155.9101	34.08	-20.54	13.54	43.50	-29.96	QP
3	250.3011	42.95	-22.25	20.70	46.00	-25.30	QP
4	429.5228	33.77	-16.13	17.64	46.00	-28.36	QP
5	661.1504	33.39	-10.18	23.21	46.00	-22.79	QP
6	866.0879	32.89	-6.01	26.88	46.00	-19.12	QP

Factor= Antenna Factor + Cable Loss – Preamplifier Factor
Level = Reading + Factor, Margin=level-Limit

Test polarization:	Horizontal	Test voltage:	DC 7.4V by battery
Temp.:	21.1°C	Humid.:	62%RH



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.9006	33.57	-21.18	12.39	40.00	-27.61	QP
2	148.4410	34.32	-20.68	13.64	43.50	-29.86	QP
3	250.3011	44.97	-22.25	22.72	46.00	-23.28	QP
4	403.2500	32.22	-17.16	15.06	46.00	-30.94	QP
5	622.8900	33.49	-10.78	22.71	46.00	-23.29	QP
6	833.3171	33.32	-6.35	26.97	46.00	-19.03	QP

Remarks:

Level =Receiver Reading + Factor

Factor= Antenna Factor + Cable Factor – Preamplifier Factor

■ **1GHz-25GHz**

Temp.:	21.1°C	Humid.:	62%RH
Test voltage:	DC 7.4V by battery		

Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4804.00	59.01	-7.69	51.32	74.00	-22.68	Vertical
7206.00	54.55	-1.70	52.85	74.00	-21.15	Vertical
9608.00	51.65	1.31	52.96	74.00	-21.04	Vertical
12010.00	*	--	--	74.00	--	Vertical
14412.00	*	--	--	74.00	--	Vertical
4804.00	58.44	-7.69	50.75	74.00	-23.25	Horizontal
7206.00	53.80	-1.70	52.10	74.00	-21.90	Horizontal
9608.00	51.55	1.31	52.86	74.00	-21.14	Horizontal
12010.00	*	--	--	74.00	--	Horizontal
14412.00	*	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m	Over Limit (dB)	polarization
4804.00	47.19	-7.69	39.50	54.00	-14.50	Vertical
7206.00	43.16	-1.70	41.46	54.00	-12.54	Vertical
9608.00	40.20	1.31	41.51	54.00	-12.49	Vertical
12010.00	*	--	--	54.00	--	Vertical
14412.00	*	--	--	54.00	--	Vertical
4804.00	47.41	-7.69	39.72	54.00	-14.28	Horizontal
7206.00	43.00	-1.70	41.30	54.00	-12.70	Horizontal
9608.00	39.90	1.31	41.21	54.00	-12.79	Horizontal
12010.00	*	--	--	54.00	--	Horizontal
14412.00	*	--	--	54.00	--	Horizontal

Remarks:

1. *Level = Read level + Factor*
2. *Factor =Antenna Factor + Cable Loss – Preamplifier Factor*
3. *"*", means this data is the too weak instrument of signal is unable to test.*
4. *Emissions more than 20 dB below the limit do not need to be reported.*

Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	64.10	-7.56	56.54	74.00	-17.46	Vertical
7320.00	58.98	-1.38	57.60	74.00	-18.12	Vertical
9760.00	56.34	1.19	57.53	74.00	-18.11	Vertical
12200.00	*	--	--	74.00	--	Vertical
14640.00	*	--	--	74.00	--	Vertical
4880.00	64.56	-7.56	57.00	74.00	-18.88	Horizontal
7320.00	58.56	-1.38	57.18	74.00	-18.53	Horizontal
9760.00	55.81	1.19	57.00	74.00	-18.63	Horizontal
12200.00	*	--	--	74.00	--	Horizontal
14640.00	*	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	51.84	-7.56	44.28	54.00	-9.72	Vertical
7320.00	46.61	-1.38	45.23	54.00	-8.77	Vertical
9760.00	43.38	1.19	44.57	54.00	-9.43	Vertical
12200.00	*	--	--	54.00	--	Vertical
14640.00	*	--	--	54.00	--	Vertical
4880.00	52.13	-7.56	44.57	54.00	-9.43	Horizontal
7320.00	46.45	-1.38	45.07	54.00	-8.93	Horizontal
9760.00	43.74	1.19	44.93	54.00	-9.07	Horizontal
12200.00	*	--	--	54.00	--	Horizontal
14640.00	*	--	--	54.00	--	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *Emissions more than 20 dB below the limit do not need to be reported.*

Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	63.50	-7.43	56.07	74.00	-17.93	Vertical
7440.00	57.91	-1.02	56.89	74.00	-17.11	Vertical
9920.00	55.17	1.08	56.25	74.00	-17.75	Vertical
12400.00	*	--	--	74.00	--	Vertical
14880.00	*	--	--	74.00	--	Vertical
4960.00	64.00	-7.43	56.57	74.00	-17.43	Horizontal
7440.00	58.14	-1.02	57.12	74.00	-16.88	Horizontal
9920.00	55.29	1.08	56.37	74.00	-17.63	Horizontal
12400.00	*	--	--	74.00	--	Horizontal
14880.00	*	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	51.03	-7.43	43.60	54.00	-10.40	Vertical
7440.00	46.17	-1.02	45.15	54.00	-8.85	Vertical
9920.00	43.62	1.08	44.70	54.00	-9.30	Vertical
12400.00	*	--	--	54.00	--	Vertical
14880.00	*	--	--	54.00	--	Vertical
4960.00	51.50	-7.43	44.07	54.00	-9.93	Horizontal
7440.00	45.96	-1.02	44.94	54.00	-9.06	Horizontal
9920.00	44.20	1.08	45.28	54.00	-8.72	Horizontal
12400.00	*	--	--	54.00	--	Horizontal
14880.00	*	--	--	54.00	--	Horizontal

Remarks:

1. *Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *Emissions more than 20 dB below the limit do not need to be reported.*

5. Test Setup Photo

Reference to the file No.: ET-26041265SP for details.

6. EUT Constructional Details

Reference to the file No.: ET-26041265EP and ET-26041265IP for details.

------End------