TEST REPORT

Report Reference No. ..... :	**TRE1704011603**	R/C…….: 59884
FCC ID ..... :	**2AHY3-PICASSO**	
Applicant's name ..... :	**Simbans Limited**	
Address ..... :	806, 8th Floor, Tai Tak Industrial Building 2-12 Kwai Fat Road, Kwai Chung,Hong Kong	
Manufacturer.....:	Simbans Limited	
Address.....:	806, 8th Floor, Tai Tak Industrial Building 2-12 Kwai Fat Road, Kwai Chung,Hong Kong	
Test item description ..... :	**Simbans Picasso 10 Inch Tablet**	
Trade Mark ..... :	Simbans	
Model/Type reference ..... :	Picasso	
Listed Model(s) ..... :	-	
Standard……:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247**	
Date of receipt of test sample……:	Apr. 14, 2017	
Date of testing……...:	Apr. 17, 2017 – May 07, 2017	
Date of issue……:	May 07, 2017	
Result……....:	**PASS**	

Compiled by (position+printedname+signature).. :	File administrators Shayne Zhu	Shayne Zhu
Supervised by (position+printedname+signature)... :	Project Engineer Jeff Sun	Jeff Sun
Approved by (position+printedname+signature)... :	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address ..... :	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Contents

1.	**TEST STANDARDS AND REPORT VERSION**	**3**
1.1.	**Applicable Standards**	**3**
1.2.	**Report version**	**3**
2.	**TEST DESCRIPTION**	**4**
3.	**SUMMARY**	**5**
3.1.	**Client Information**	**5**
3.2.	**Product Description**	**5**
3.3.	**Operation state**	**6**
3.4.	**EUT configuration**	**6**
3.5.	**Modifications**	**6**
4.	**TEST ENVIRONMENT**	**7**
4.1.	**Address of the test laboratory**	**7**
4.2.	**Test Facility**	**7**
4.3.	**Equipments Used during the Test**	**8**
4.4.	**Environmental conditions**	**9**
4.5.	**Statement of the measurement uncertainty**	**9**
5.	**TEST CONDITIONSAND RESULTS**	**10**
5.1.	**Antenna requirement**	**10**
5.2.	**Conducted Emissions (AC Main)**	**11**
5.3.	**Conducted Peak Output Power**	**14**
5.4.	**Power Spectral Density**	**15**
5.5.	**6dB bandwidthand**	**17**
5.6.	**Restricted band**	**19**
5.7.	**Band edge and Spurious Emissions (conducted)**	**21**
5.8.	**Spurious Emissions (radiated)**	**23**
6.	**TEST SETUP PHOTOS OF THE EUT**	**28**
7.	**EXTERNAL AND INTERNAL PHOTOS OF THE EUT**	**29**

1. Test standards and Report version

1.1. Applicable Standards

The tests were performed according to following standards:
FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10:2013:American National Standard for Testing Unlicensed Wireless Devices

KDB558074 D01 DTS Meas Guidance v04:Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating under §15.247

1.2. Report version

Version No.	Date of issue	Description
00	May 07, 2017	Original

2. Test Description

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
Line Conducted Emissions (AC Main)	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Power Spectral Density	15.247 (e)	Pass
6dB Bandwidth	15.247 (a)(2)	Pass
Restricted band	15.247(d)/15.205	Pass
Spurious Emissions	15.247(d)/15.209	Pass

Note: The measurement uncertainty is not included in the test result.

3. Summary

3.1. Client Information

Applicant:	Simbans Limited
Address:	806, 8th Floor, Tai Tak Industrial Building 2-12 Kwai Fat Road, Kwai Chung, Hong Kong
Manufacturer:	Simbans Limited
Address:	806, 8th Floor, Tai Tak Industrial Building 2-12 Kwai Fat Road, Kwai Chung, Hong Kong

3.2. Product Description

Name of EUT	Simbans Picasso 10 Inch Tablet
Trade Mark:	Simbans
Model No.:	Picasso
Listed Model(s):	-
Power supply:	DC 3.7V from internal battery
Adapter information:	Model: KA23-0502000DEU Input: 100-240Va.c.,50/60Hz, 0.35A Output:5Vd.c., 2000mA
Bluetooth	
Version:	Supported BT4.0+BLE
Modulation:	GFSK
Operation frequency:	2402MHz - 2480MHz
Channel number:	40
Channel separation:	2MHz
Antenna type:	Internal Antenna
Antenna gain:	1.5dBi

3.3. Operation state

➢ **Test frequency list**

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Channel	Frequency (MHz)
00	2402
02	2404
⋮	⋮
19	2440
⋮	⋮
38	2478
39	2480

➢ **Test mode**

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit(duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For RF test axis
EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

		Manufacturer :	/
		Model No. :	/
		Manufacturer :	/
		Model No. :	/

3.5. Modifications

No modifications were implemented to meet testing criteria.

4. Test Environment

4.1. Address of the test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory 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 our files. Registration 317478.

IC-Registration No.: 5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Equipments Used during the Test

Line Conducted Emission (AC Main)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	R&S	ESCI	101247	2016/11/13
2	Artificial Mains	Shwarzbeck	NNLK 8121	573	2016/11/13
3	Pulse Limiter	R&S	ESH3-Z2	101488	2016/11/13
4	Test Software	R&S	ES-K1	N/A	N/A
5	Test cable	ENVIROFLEX	3651	1101902	2016/11/13

Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2016/11/13
2	Power Meter	Anritsu	ML2480B	100798	2016/11/13
3	Power Sensor	Anritsu	MA2411B	100258	2016/11/13
4	Test cable	FARPU	MCX-J	N/A	2016/11/13
5	Temporary antenna connector	D-LENP	NJ-SMAK	N/A	2016/11/13

NOTE:The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	Rohde&Schwarz	ESI 26	100009	2016/11/13
2	RF Test Panel	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
3	EMI Test Software	Rohde&Schwarz	ESK1	N/A	N/A
4	Loop Antenna	Rohde&Schwarz	HZ-9	838622\013	2016/11/13
5	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2016/11/13
6	Horn Antenna	ShwarzBeck	9120D	1011	2016/11/13
7	Broadband Horn Antenna	Shwarzbeck	BBHA9170	BBHA917047 2	2016/11/13
8	Preamplifier	Shwarzbeck	BBV9742	9742-196	2016/11/13
9	Broadband Preamplifer	Shwarzbeck	BBV 9721	9721-102	2016/11/13
10	Broadband Preamplifer	Shwarzbeck	BBV 9718	9718-247	2016/11/13
11	Turn Table	MATURO	TT2.0	/	N/A
12	Antenna Mast	MATURO	TAM-4.0-P	/	N/A
13	EMI Test Software	Audix	E3	N/A	N/A
14	Test Software	R&S	ES-K1	N/A	N/A
15	Test cable	Siva Cables Italy	RG 58A/U	W14.02	2016/11/13

The Cal.Interval was one year

4.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
lative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2” and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system according to ISO/IEC 17025. Further more, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Here after the best measurement capability for Shenzhen Huatongwei is reported:

Test Items	MeasurementUncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-40 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

5. Test Conditionsand Results

5.1. Antenna requirement

REQUIREMENT:

FCC CFR Title 47 Part 15 Subpart C Section 15.203:
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 anantenna 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.

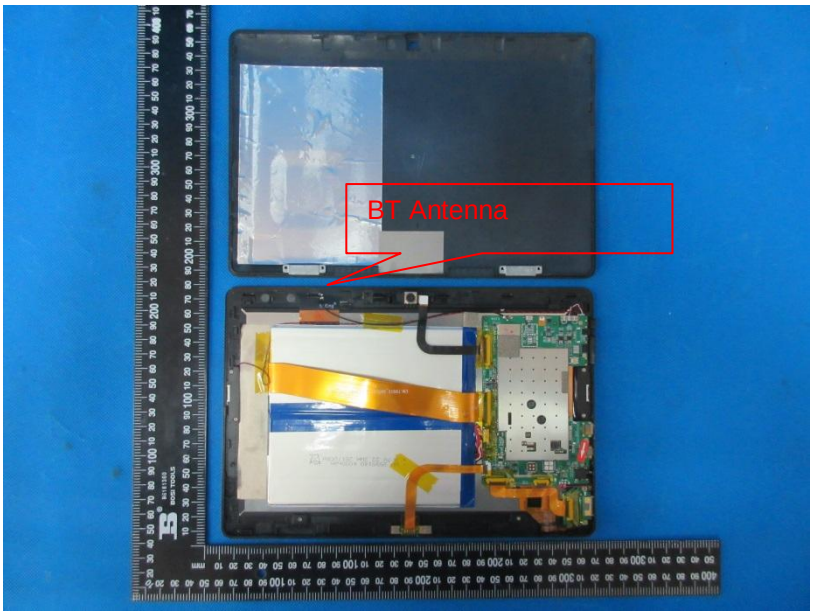
FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(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.

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. Conducted Emissions (AC Main)

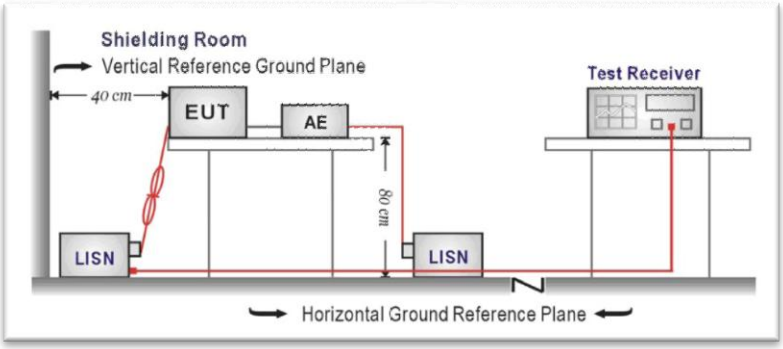
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

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 CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 10 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 10 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

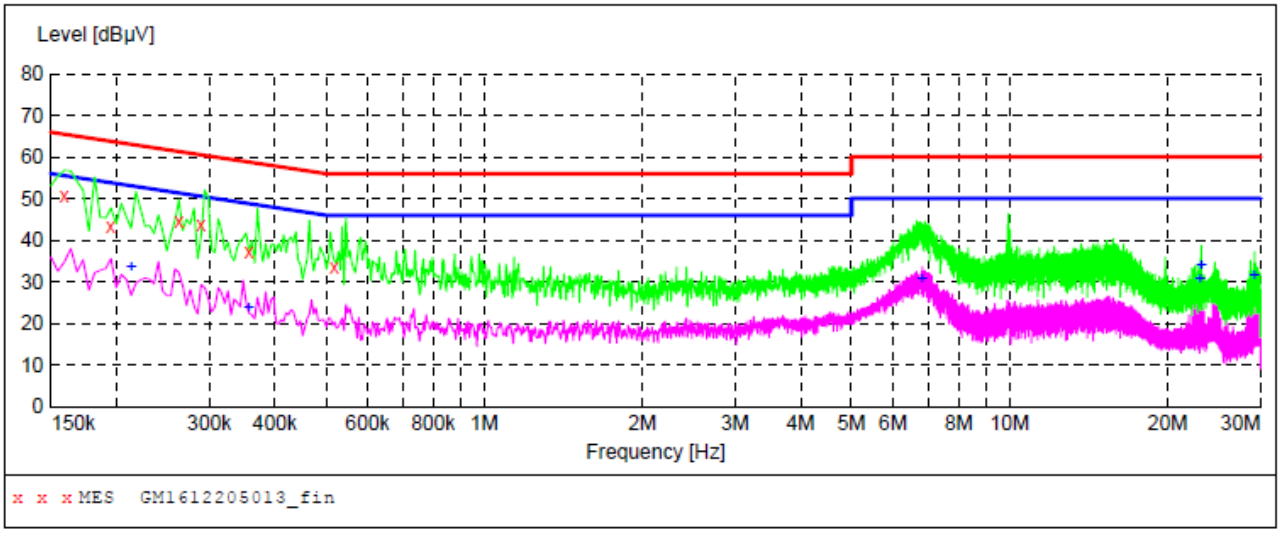
TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

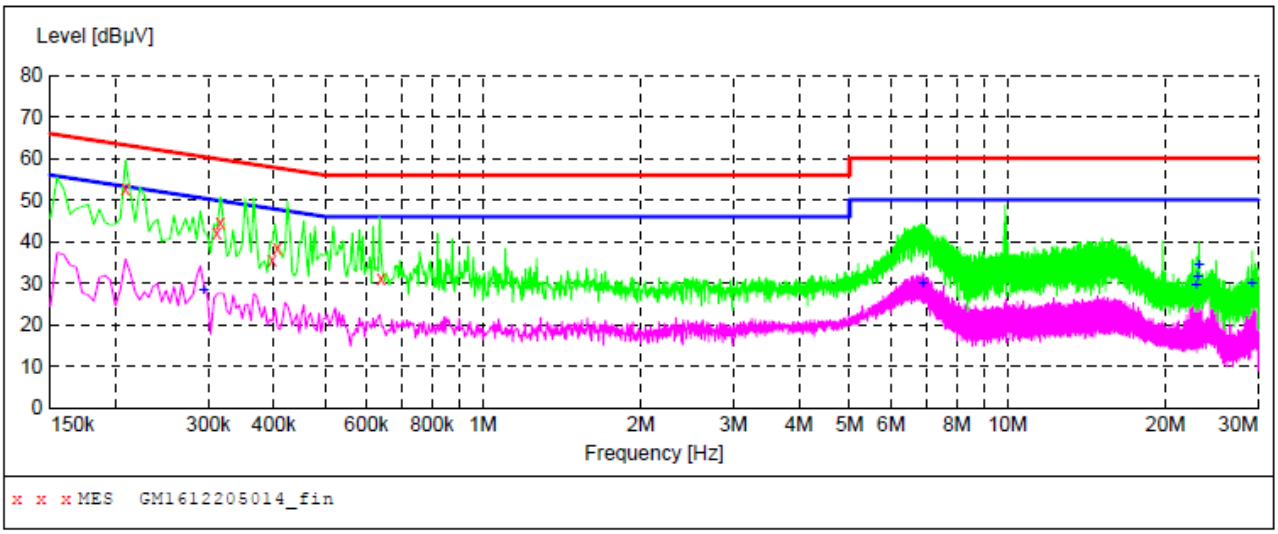
Test Line:	L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	50.80	10.4	66	14.7	QP	L1	GND
0.195000	43.50	10.3	64	20.3	QP	L1	GND
0.262500	44.40	10.3	61	17.0	QP	L1	GND
0.289500	43.80	10.2	61	16.7	QP	L1	GND
0.357000	37.10	10.2	59	21.7	QP	L1	GND
0.519000	33.50	10.2	56	22.5	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.213000	33.70	10.3	53	19.4	AV	L1	GND
0.357000	23.80	10.2	49	25.0	AV	L1	GND
6.805500	30.80	10.3	50	19.2	AV	L1	GND
23.068500	30.80	10.7	50	19.2	AV	L1	GND
23.131500	33.80	10.7	50	16.2	AV	L1	GND
29.238000	31.40	10.8	50	18.6	AV	L1	GND

Test Line:	N



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.208500	52.60	10.3	63	10.7	QP	N	GND
0.312000	42.00	10.2	60	17.9	QP	N	GND
0.316500	44.40	10.2	60	15.4	QP	N	GND
0.397500	35.70	10.2	58	22.2	QP	N	GND
0.406500	38.50	10.2	58	19.2	QP	N	GND
0.640500	31.30	10.2	56	24.7	QP	N	GND

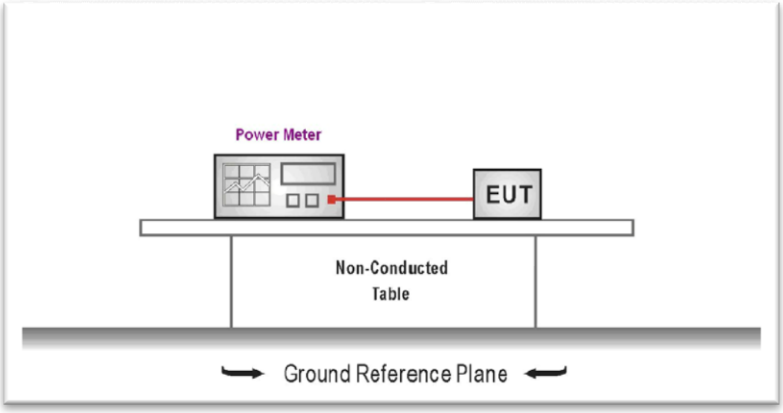
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.294000	28.30	10.2	50	22.1	AV	N	GND
6.891000	29.70	10.3	50	20.3	AV	N	GND
22.884000	29.60	10.7	50	20.4	AV	N	GND
23.068500	31.40	10.7	50	18.6	AV	N	GND
23.131500	34.40	10.7	50	15.6	AV	N	GND
29.238000	30.00	10.8	50	20.0	AV	N	GND

5.3. Conducted Peak Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3): **30dBm**:

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10: 2013and KDB 558074 D01 for compliance to FCC 47CFR 15.247requirements.
2. The maximum peak conducted output power may be measured using a broadband peak RF power meter.
3. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector
4. Record the measurement data.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

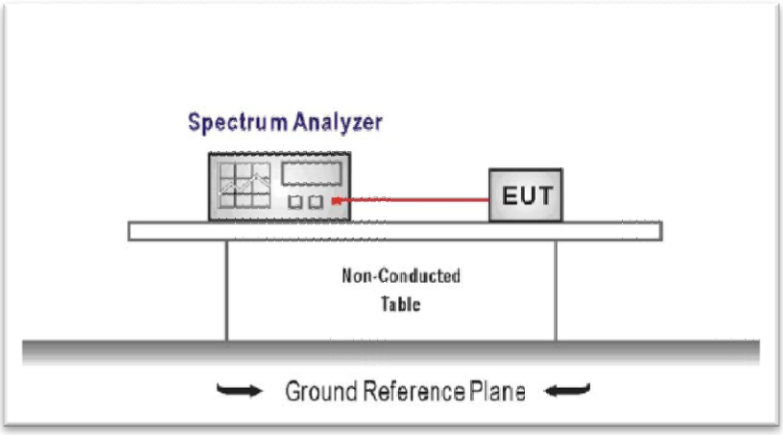
Type	Channel	Output power (dBm)	Limit (dBm)	Result
BT-BLE	00	-6.10	30.00	Pass
	19	-5.81		
	39	-5.59		

5.4. Power Spectral Density

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e):
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input,
2. Configurethe spectrum analyzer as shown below:
   Center frequency=DTS channel center frequency
   Span =1.5 times the DTS bandwidth
   RBW = 3 kHz ≤ RBW ≤ 100 kHz, VBW ≥ 3 × RBW
   Sweep time = auto couple
   Detector = peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Use the peak marker function to determine the maximum amplitude level within the RBW.
5. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST MODE:

Please refer to the clause 3.3

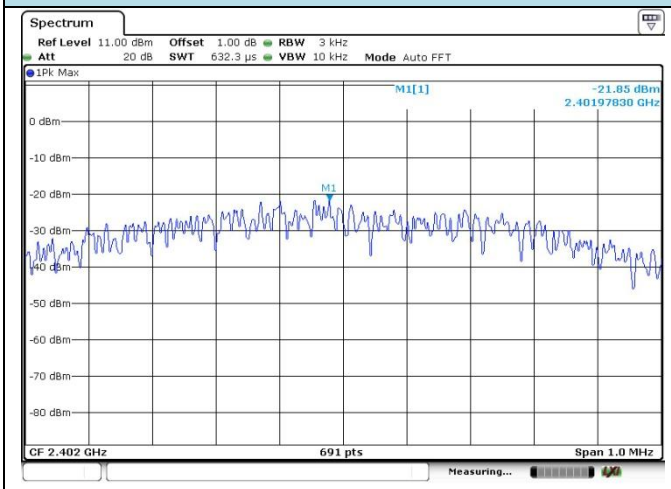
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

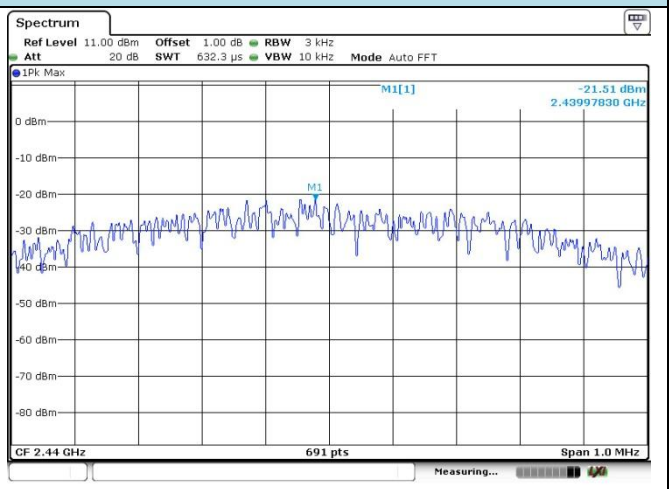
Type	Channel	Power SpectralDensity(dBm/3KHz)	Limit (dBm/3KHz)	Result
BT-BLE	00	-21.85	8.00	Pass
	19	-21.51		
	39	-21.35		

Test plot as follows:

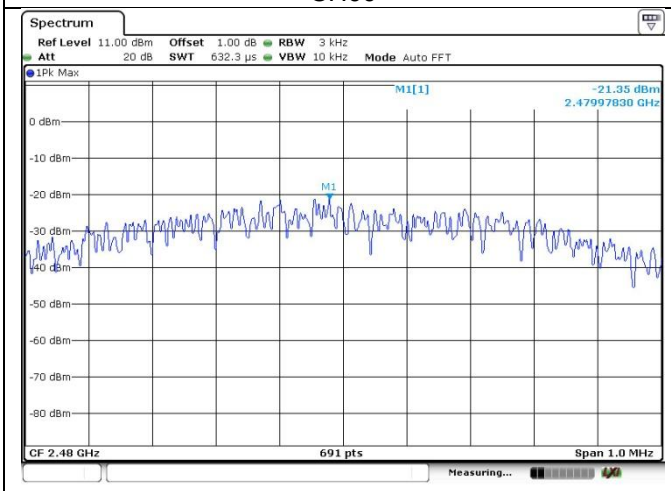
BT-BLE



CH00



CH19



CH39

No Plot

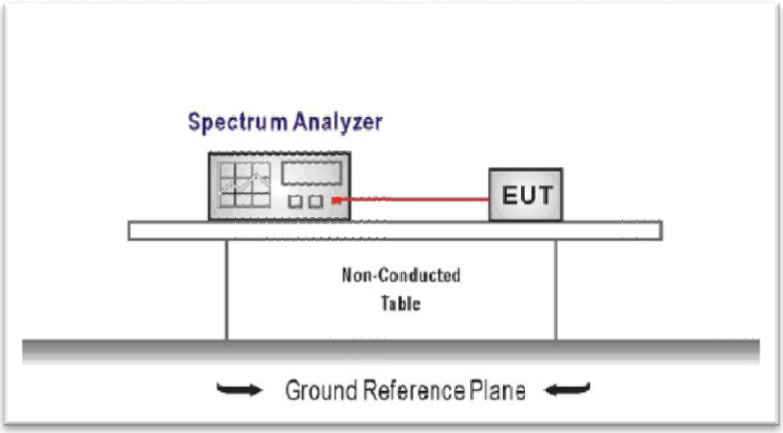
-

5.5. 6dB bandwidthand

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2):
For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output andthe spectrum analyzer).
   Center Frequency =DTS channel center frequency
   Span=2 x DTS bandwidth
   RBW = 100 kHz, VBW ≥ 3 × RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission, andrecord the pertinent measurements.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

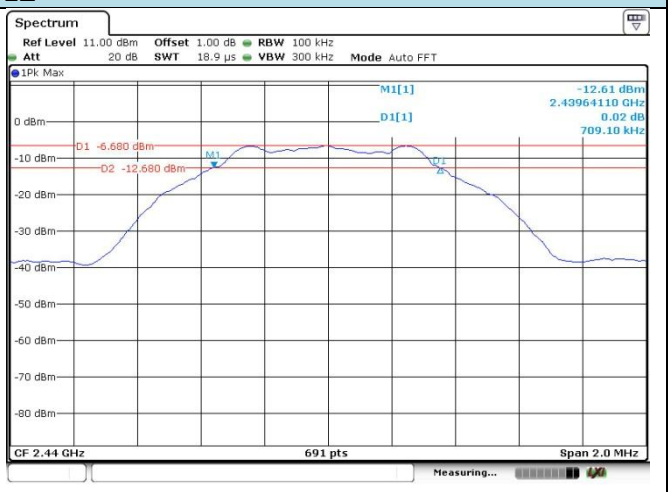
☒ **Passed** ☐ **Not Applicable**

Type	Channel	6dB Bandwidth (KHz)	Limit (KHz)	Result
BT-BLE	00	712.00	⩾500	Pass
	19	709.10		
	39	712.00		

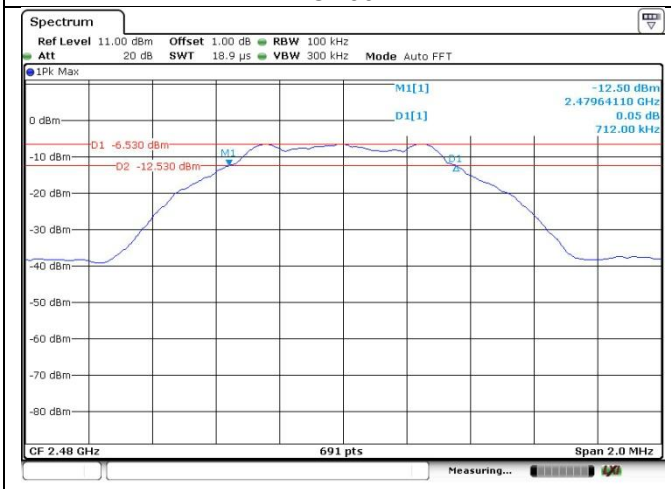
Test plot as follows:

BT-BLE

CH00



CH19



CH39

No Plot

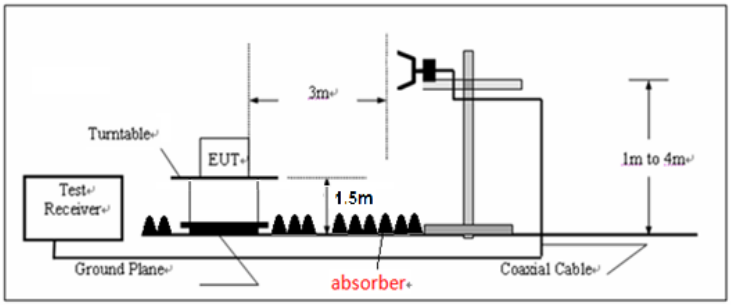
-

5.6. Restricted band

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1) The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2) The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated360 degrees to determine the position of the maximum emission level.
3) The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4) The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5) The receiver set as follow:
   RBW=1MHz, VBW=3MHz Peak detector for Peak value
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:
Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:
1) Final level= Read level + Antenna Factor+ Cable Loss- Preamp Factor

BT-BLE						CH00			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2384.38	45.48	27.53	6.81	37.24	42.58	74.00	-31.42	Vertical	Peak
2384.36	44.55	27.53	6.81	37.24	41.65	74.00	-32.35	Horizontal	Peak
2384.69	35.37	27.53	6.81	37.24	32.47	54.00	-21.53	Vertical	Average
2384.38	34.98	27.53	6.81	37.24	32.08	54.00	-21.92	Horizontal	Average

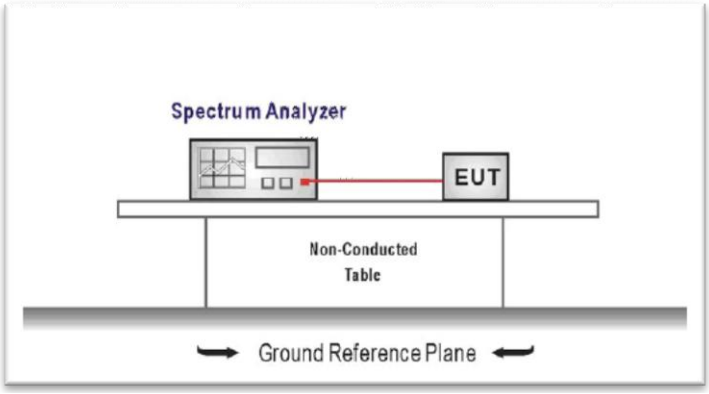
BT-BLE						CH39			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2487.52	50.63	27.85	6.96	37.92	47.52	74.00	-26.48	Vertical	Peak
2486.85	49.48	27.85	6.96	37.92	46.37	74.00	-27.63	Horizontal	Peak
2486.43	39.96	27.85	6.96	37.92	36.85	54.00	-17.15	Vertical	Average
2487.57	40.05	27.85	6.96	37.92	36.94	54.00	-17.06	Horizontal	Average

5.7. Band edge and Spurious Emissions (conducted)

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section15.247 (d):
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 CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Establish a reference level by using the following procedure
   Center frequency=DTS channel center frequency
   The span = 1.5 times the DTS bandwidth.
   RBW = 100 kHz, VBW ≥ 3 x RBW
   Detector = peak, Sweep time = auto couple, Trace mode = max hold
   Allow trace to fully stabilize
   Use the peak marker function to determine the maximum PSD level

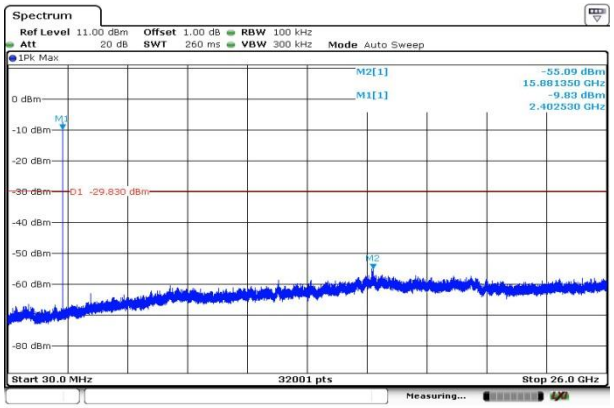
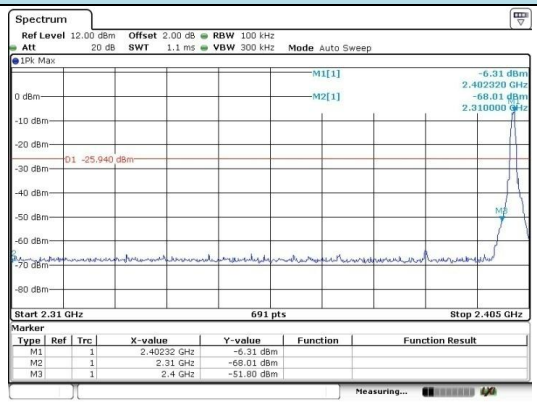
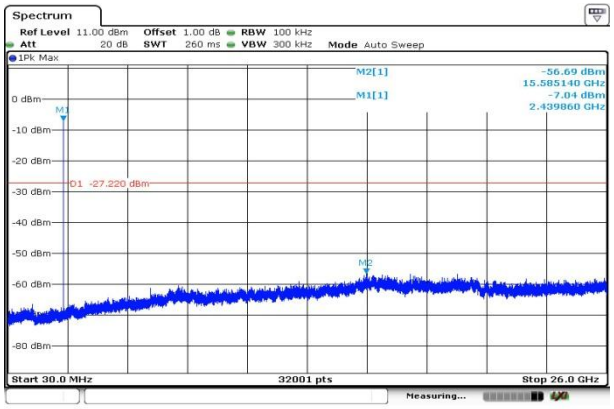
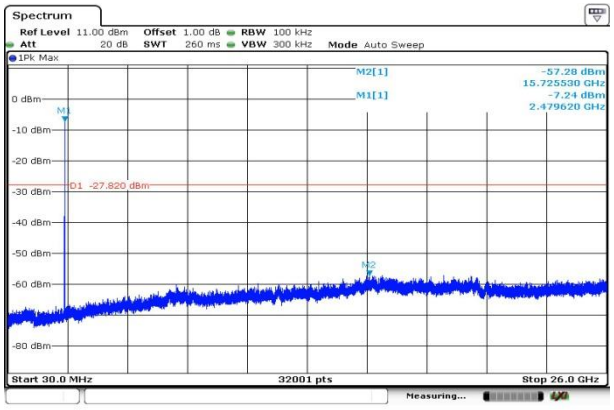
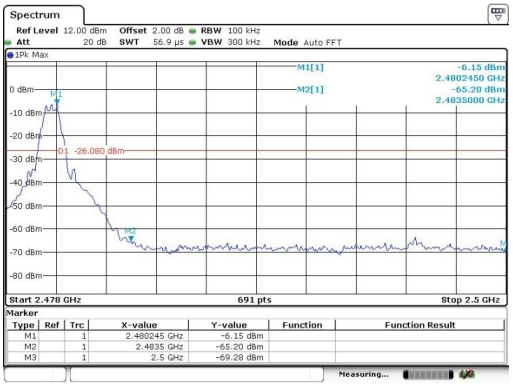
   Note: the channel found to contain the maximum PSD level can be used to establish the reference level.
3. Emission level measurement
   Set the center frequency and span to encompass frequency range to be measured
   RBW = 100 kHz, VBW ≥ 3 x RBW
   Detector = peak, Sweep time = auto couple, Trace mode = max hold
   Allow trace to fully stabilize
   Use the peak marker function to determine the maximum amplitude level.
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
5. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band excluding restricted frequency bands) are attenuated by at least the minimum requirements specified (at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz). Report the three highest emissions relative to the limit.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

BT-BLE	
	
CH00-SE	CH00-Bandedge
	No Plot
CH19-SE	-
	
CH39-SE	CH39-Bandedge

5.8. Spurious Emissions (radiated)

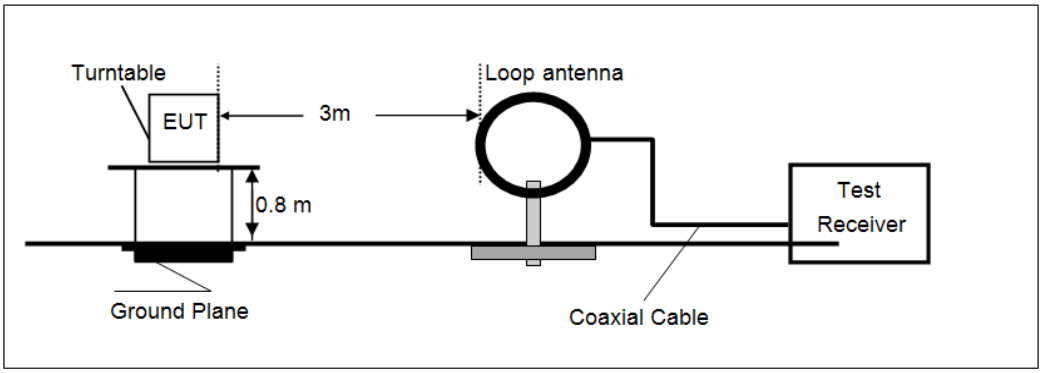
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

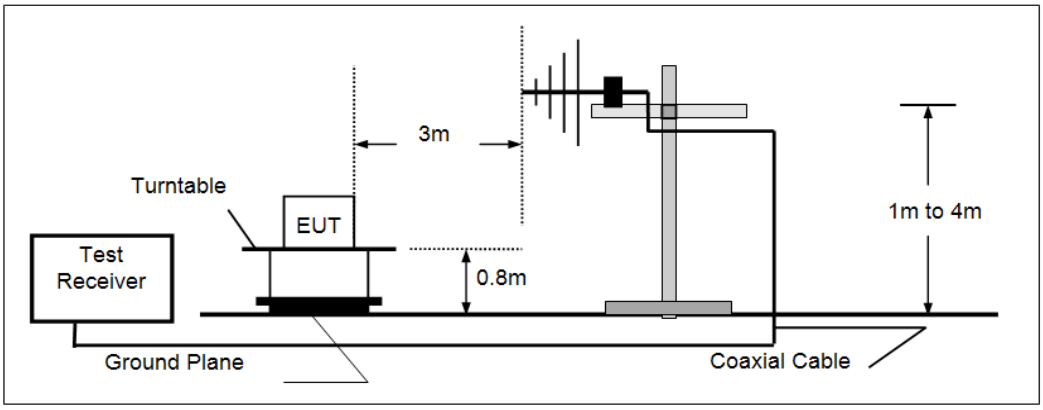
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

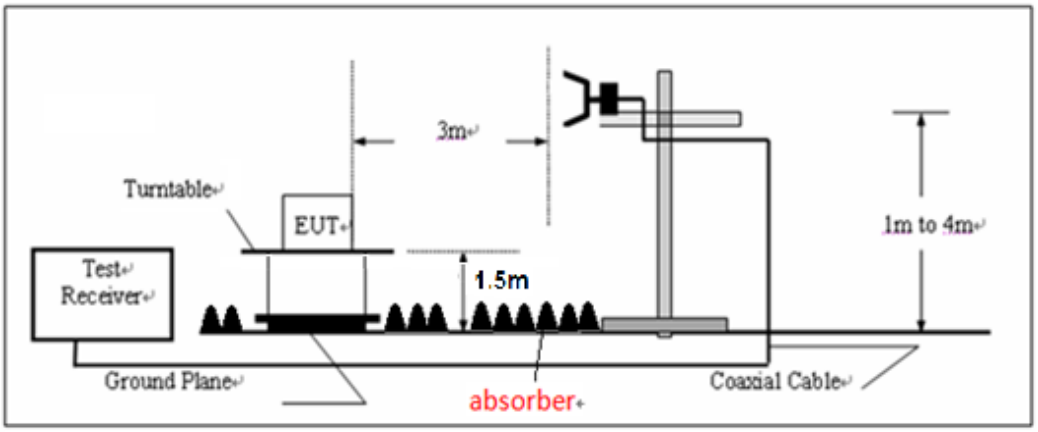
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8/1.5 meter above ground plane. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=QP, Trace=max hold; If the emission level of the EUT measured by the peak detectoris 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, theemission measurement will be repeated using the quasi-peak detector and reported.
   (3) Above 1GHz, RBW=1MHz, VBW=3MHz Peak detetor for Peak value
   RBW=1MHz, VBW=3MHz RMS detetor for Average value.

Remark: “floor-standing equipment” Where possible, the antenna(s) of the EUT shall be located at a height of 1.5 m above the floor, and the intentional radiator circuitry shall be located within the system at a height of at least 0.8 m above the floor.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

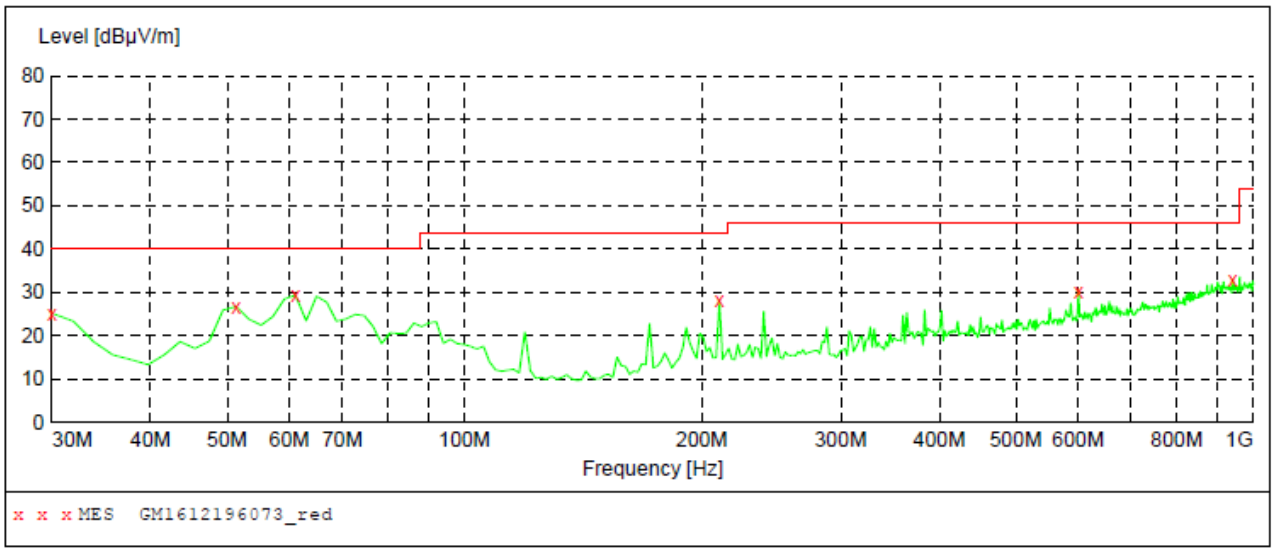
☒ **Passed** ☐ **Not Applicable**

Note:
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) The emission levels of other frequencies are very lower than the limit and not show in test report.

- **9kHz ~ 30MHz**
  The EUT was pre-scanned the frequency band (9KHz~30MHz), found the radiated level lower than the limit, so don’t show on the report.

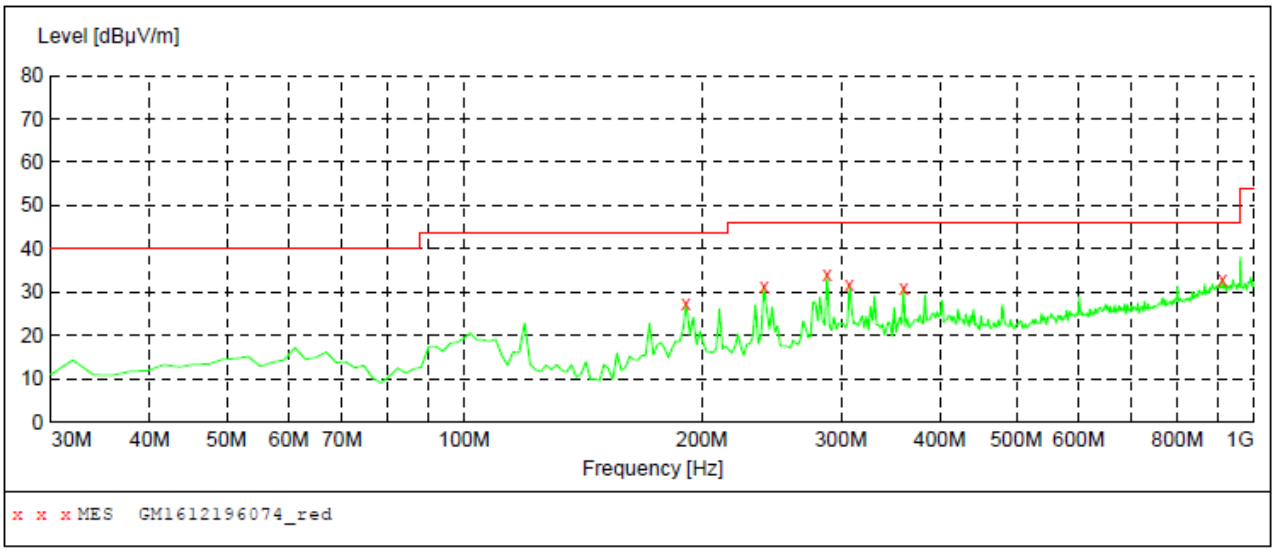
➢ **30MHz ~ 1GHz**

Polarization:	Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	25.10	-18.6	40.0	14.9	QP	100.0	153.00	VERTICAL
51.340000	26.70	-16.3	40.0	13.3	QP	100.0	50.00	VERTICAL
61.040000	29.30	-17.4	40.0	10.7	QP	100.0	78.00	VERTICAL
210.420000	28.10	-15.6	43.5	15.4	QP	100.0	78.00	VERTICAL
600.360000	30.30	-4.8	46.0	15.7	QP	100.0	205.00	VERTICAL
941.800000	33.00	1.5	46.0	13.0	QP	100.0	193.00	VERTICAL

Polarization:	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
191.020000	27.30	-17.0	43.5	16.2	QP	100.0	135.00	HORIZONTAL
239.520000	31.30	-14.6	46.0	14.7	QP	100.0	88.00	HORIZONTAL
288.020000	34.20	-13.3	46.0	11.8	QP	100.0	135.00	HORIZONTAL
307.420000	31.70	-12.8	46.0	14.3	QP	100.0	135.00	HORIZONTAL
359.800000	31.00	-11.5	46.0	15.0	QP	100.0	173.00	HORIZONTAL
912.700000	33.00	1.3	46.0	13.0	QP	100.0	259.00	HORIZONTAL

➢ **Above 1GHz**

BT-BLE					CH00				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1597.40	36.66	25.01	5.56	36.72	30.51	74.00	-43.49	Vertical	Peak
3120.06	36.13	28.55	7.62	38.21	34.09	74.00	-39.91	Vertical	
4809.50	45.34	31.09	9.55	36.93	49.05	74.00	-24.95	Vertical	
8615.13	32.73	37.38	12.91	34.50	48.52	74.00	-25.48	Vertical	
1597.40	39.15	25.01	5.56	36.72	33.00	74.00	-41.00	Horizontal	
4809.50	40.27	31.09	9.55	36.93	43.98	74.00	-30.02	Horizontal	
7921.00	31.72	36.63	12.68	34.74	46.29	74.00	-27.71	Horizontal	
9960.38	32.20	38.37	13.56	33.65	50.48	74.00	-23.52	Horizontal	

BT-BLE					CH19				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1685.12	36.86	25.27	5.74	36.90	30.97	74.00	-43.03	Vertical	Peak
4883.52	39.08	31.14	9.59	36.73	43.08	74.00	-30.92	Vertical	
6696.01	33.09	35.38	11.48	35.18	44.77	74.00	-29.23	Vertical	
8615.13	32.19	37.38	12.91	34.50	47.98	74.00	-26.02	Vertical	
1676.56	37.45	25.25	5.72	36.88	31.54	74.00	-42.46	Horizontal	
3795.66	36.29	29.18	8.50	38.23	35.74	74.00	-38.26	Horizontal	
4883.52	39.47	31.14	9.59	36.73	43.47	74.00	-30.53	Horizontal	
8637.08	32.61	37.41	12.93	34.48	48.47	74.00	-25.53	Horizontal	

BT-BLE					CH39				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1597.40	50.38	25.01	5.56	36.72	44.23	74.00	-29.77	Vertical	Peak
4034.78	35.07	29.60	8.81	38.03	35.45	74.00	-38.55	Vertical	
4958.68	45.01	31.18	9.64	36.52	49.31	74.00	-24.69	Vertical	
8571.38	32.05	37.31	12.88	34.48	47.76	74.00	-26.24	Vertical	
1487.51	36.43	24.69	5.25	36.57	29.80	74.00	-44.20	Horizontal	
1963.18	35.21	26.00	6.21	37.27	30.15	74.00	-43.85	Horizontal	
4958.68	36.53	31.18	9.64	36.52	40.83	74.00	-33.17	Horizontal	
9960.38	33.30	38.37	13.56	33.65	51.58	74.00	-22.42	Horizontal	

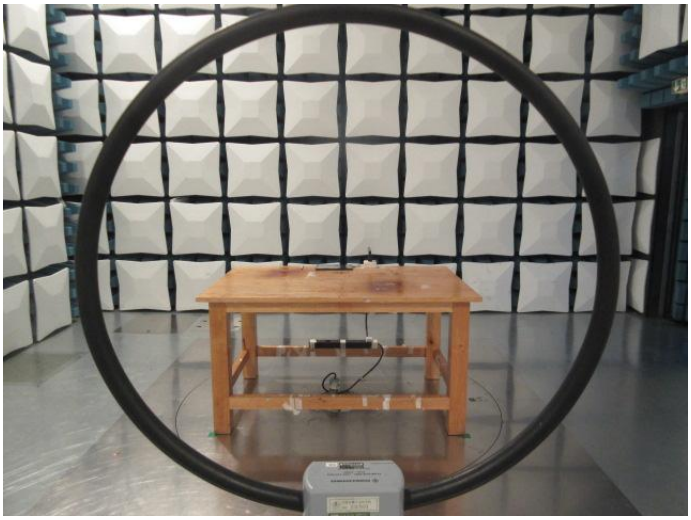
Remark:

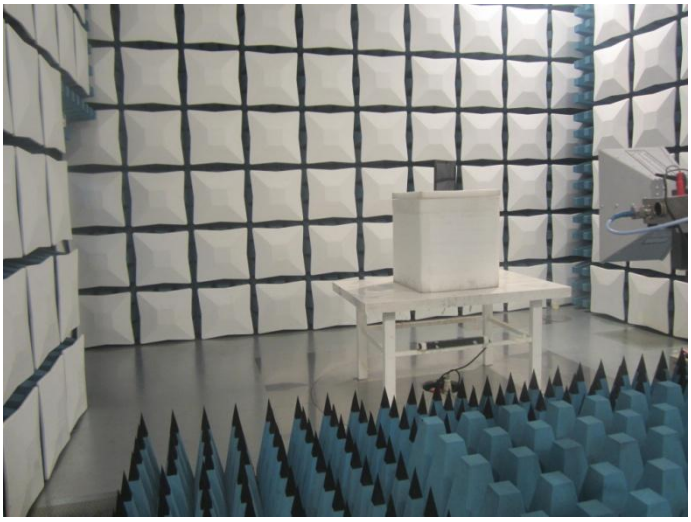
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

6. Test Setup Photos of the EUT

Conducted Emission(AC Mains)

Radiated Emission





7. External and Internal Photos of the EUT

Reference to Test Report No.: TRE1704011601.

.....End of Report.....