

# Global United Technology Services Co., Ltd.

Report No.: GTS201912000226F03

## FCC Report (Bluetooth)

Quantum Creations LLC. Applicant:

15705 NW 13th Ave, Miami Gardens, Miami Beach, Florida **Address of Applicant:** 

33169. United States

Manufacturer/Factory: MeLE Technologies (Shenzhen) Co., Ltd

Address of No.28 Cuijing Road, Pingshan District, Shenzhen (518118) P.R.

Manufacturer/Factory: China

**Equipment Under Test (EUT)** 

Access Plus **Product Name:** 

A-1063-AAP-1, A-1063-AAP-2, A-1063-AAP-3, A-1063-AAP-4, Model No.:

> A-1063-AAP-5, A-1063-AAP-6, A-1063-AAP-7, A-1063-AAP-8, A-1063-AAP-9, A-1063-AAP-10, A-1063-AAP-11, A-1063-AAP-12, A-1063-AAP-13, A-1063-AAP-14, A-1063-AAP-15, A-1063-

AAP

AZULLE Trade Mark:

2AFJI20161063 FCC ID:

FCC CFR Title 47 Part 15 Subpart C Section 15.247 **Applicable standards:** 

Date of sample receipt: December 19, 2019

Date of Test: December 19-27, 2019

Date of report issued: December 27, 2019

PASS \* Test Result:

In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo **Laboratory Manager** 

This 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.



## 2 Version

Report No.	Version No.	Date	Description
GTS201608000121E03	00	September 07, 2016	Original
GTS201912000226F03	01	December 27, 2019	Change DDR, address of manufacturer/factory, product name and model number

Prepared By:	Jeger Chen	Date:	December 27, 2019	
	Project Engineer			
Check By:	Paviawar	Date:	December 27, 2019	



## 3 Contents

		Page
1	1 COVER PAGE	1
2	2 VERSION	2
3	3 CONTENTS	3
4	4 TEST SUMMARY	4
5	5 GENERAL INFORMATION	5
6	5.1       GENERAL DESCRIPTION OF EUT         5.2       TEST MODE         5.3       DESCRIPTION OF SUPPORT UNITS         5.4       TEST FACILITY         5.5       TEST LOCATION         5.6       ADDITIONAL INSTRUCTIONS         6       TEST INSTRUMENTS LIST	
7	7 TEST RESULTS AND MEASUREMENT DATA	10
	7.1 ANTENNA REQUIREMENT 7.2 CONDUCTED EMISSIONS 7.3 SPURIOUS EMISSION	
8	8 TEST SETUP PHOTO	19
9	9 EUT CONSTRUCTIONAL DETAILS	19



## 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
Radiated 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

201
Access Plus
A-1063-AAP-1, A-1063-AAP-2, A-1063-AAP-3, A-1063-AAP-4, A-1063-AAP-5, A-1063-AAP-6, A-1063-AAP-7, A-1063-AAP-8, A-1063-AAP-9, A-1063-AAP-10, A-1063-AAP-11, A-1063-AAP-12, A-1063-AAP-13, A-1063-AAP-14, A-1063-AAP-15, A-1063-AAP
GTS201912000226-1
N/A
Engineer sample
N/A
N/A
2402MHz~2480MHz
79
1MHz
GFSK, π/4-DQPSK, 8-DPSK
FPCB Antenna
0.5dBi
SWITCHING ADAPTOR
Model No.: FJ-SW0503000N
Input: AC 100-240V, 50/60Hz, 0.6A Max
Output: DC 5V, 3000mA



Operation	Frequency eacl	h of channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
0	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

#### 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	2441MHz
The Highest channel	2480MHz



#### 5.2 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.

#### 5.3 Description of Support Units

None.

#### 5.4 Test Facility

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

#### • FCC —Registration No.: 381383

Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383.

#### • IC —Registration No.: 9079A

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

#### • NVLAP (LAB CODE:600179-0)

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

#### 5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480 Fax: 0755-27798960

#### 5.6 Additional Instructions

#### **EUT Fixed Frequency Settings:**

Special test software was pre-built-in by manufacturer							
Mode Channel Frequency (MHz) Level Set							
GFSK, π/4-DQPSK, 8-DPSK	CH1						
	CH40	TX level : defualt					
	CH79 2480						



## 6 Test Instruments list

Radi	iated Emission:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020



Cond	ducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

RF Co	RF Conducted Test:									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)				
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 26 2019	June. 25 2020				
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020				
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 26 2019	June. 25 2020				
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 26 2019	June. 25 2020				
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 26 2019	June. 25 2020				
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 26 2019	June. 25 2020				
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 26 2019	June. 25 2020				
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 26 2019	June. 25 2020				

General used equipment:										
Item	Test Equipment Manufacturer		Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)				
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020				
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020				



#### 7 Test results and Measurement Data

#### 7.1 Antenna requirement

**Standard requirement:** FCC Part15 C Section 15.203 /247(c)

#### 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(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.

#### E.U.T Antenna:

The antenna is FPCB antenna, the best case gain of the antenna is 0.5dBi.Reference to the appendix II for details.

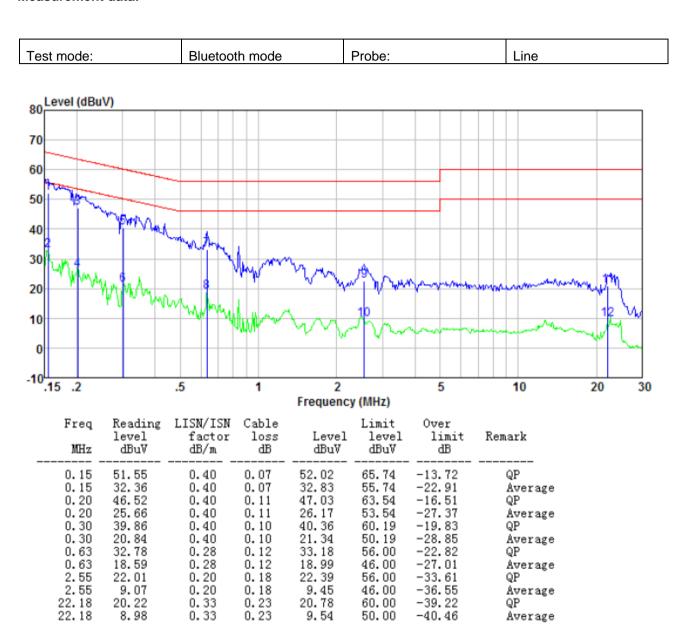


### 7.2 Conducted Emissions

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:	Frequency range (MHz)  Limit (dBuV)								
	· ·		, Qu	asi-peak		erage			
		).15-0.5	- 6	66 to 56*		to 46*			
		0.5-5		56	46				
	* Decrease	5-30 s with the log	arithm of the	frequency	,	50			
Test setup:	Decreases	Reference		irequeriey.					
Test procedure:	Remark E.U.T Equipment Under Test LISN Line Impedence Stabilization Network Test table height=0.8m  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 500hm/50uH coupling impedance for the measuring equipment.  2. The peripheral devices are also connected to the main power through a								
	<ul> <li>LISN that provides a 50ohm/50uH coupling impedance with 50oh termination. (Please refer to the block diagram of the test setup a photographs).</li> <li>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 cha according to ANSI C63.10:2013 on conducted measurement.</li> </ul>								
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar			
Test Instruments:	· · · · · · · · · · · · · · · · · · ·	ction 6.0 for d			1	I			
Test mode:	Refer to section 5.2 for details								
Test voltage:	AC120V 60Hz								
Test results:	Pass								



#### Measurement data:





Test mode:	e: Bluetooth mode Probe:			Neutral	Neutral		
80 Level (dBuV) 70 60 40	.t						
20		MAN YOU	AN MANAGE	and the same		and the second	
-10.15 .2 .5	5 1	2 Frequenc	y (MHz)	5	10	20 30	
Freq Reading L level MHz dBuV	ISN/ISN Cable factor loss dB/m dB	Level dBuV	Limit level dBuV	Over limit dB	Remark		
0. 15 54. 27 0. 15 32. 37 0. 17 53. 82 0. 17 35. 32 0. 37 39. 33 0. 37 29. 48 0. 63 33. 96 0. 63 22. 26 0. 84 30. 92 0. 84 17. 92 1. 33 29. 43 1. 33 17. 21	0.40 0.07 0.40 0.07 0.40 0.09 0.40 0.09 0.37 0.10 0.37 0.10 0.28 0.12 0.28 0.12 0.23 0.14 0.23 0.14 0.20 0.16	54. 74 32. 84 54. 31 35. 81 39. 80 29. 95 34. 36 22. 66 31. 29 18. 29 29. 79 17. 57	65. 82 55. 82 64. 99 54. 99 58. 61 48. 61 56. 00 46. 00 46. 00 56. 00 46. 00	-11.08 -22.98 -10.68 -19.18 -18.81 -18.66 -21.64 -23.34 -24.71 -27.71 -27.71 -26.21 -28.43	QP Average		

#### 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 + LISN Factor + Cable Loss

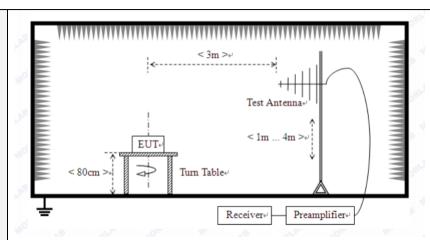


## 7.3 Spurious Emission

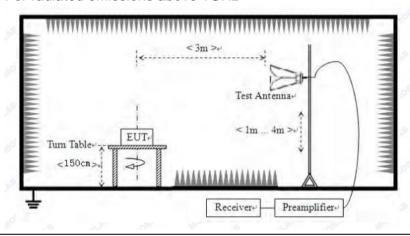
#### 7.3.1 Radiated Emission Method

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	Qı	uasi-peak 20		0Hz 600H		z Quasi-peak	
	150KHz-30MHz	Qι	ıasi-peak	9KF	Iz 30KH		z Quasi-peak	
	30MHz-1GHz	Qı	ıasi-peak 120K		(Hz 300KH		z Quasi-peak	
	Above 1GHz		Peak	1MHz		3MHz	Peak	
	Above 1G112		Peak	1MHz		10Hz	Average	
Limit:	Frequency		Limit (u\	//m)	V	'alue	Measurement Distance	
	0.009MHz-0.490M	lHz	2400/F(k	(Hz)		QP	300m	
	0.490MHz-1.705M	lHz	24000/F(	KHz)		QP	30m	
	1.705MHz-30MH	lz	30			QP	30m	
	30MHz-88MHz		100		QP			
	88MHz-216MHz	<u>z</u>	150			QP		
	216MHz-960MH	Z	200		QP		3m	
	960MHz-1GHz		500	500 Av		QP	<b></b>	
	Above 1GHz	Hz ⊢——				erage		
			5000		Peak			
Test setup:	For radiated emiss	*****	< 3m >√	******	****	z 		
	Test Antenna Receiver Preamplifier 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.
- 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 environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar							
Test Instruments:	Refer to section 6.0 for details							
Test mode:	Refer to section 5.2 for details							
Test voltage:	AC120V 60Hz							
Test results:	Pass							

#### Measurement data:

#### Remark:

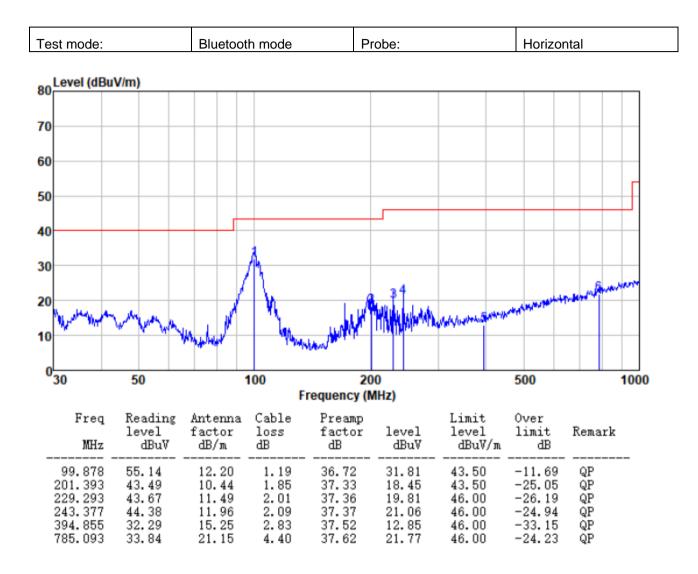
- 1. During the test, pre-scan the GFSK,  $\pi$ /4-DQPSK, 8-DPSK modulation, and found the GFSK modulation which it is worse case.
- 2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

#### ■ 9kHz~30MHz

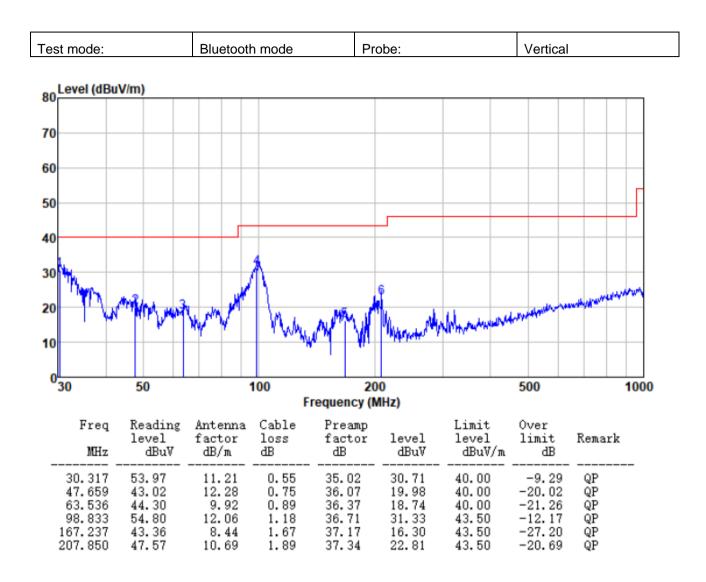
The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.



#### ■ Below 1GHz









## 8 Test Setup Photo

Reference to the appendix I for details.

9 EUT Constructional Details
Reference to the appendix II for details.

-----End-----