

Prüfbericht-Nr.: <i>Test Report No.:</i>	17046043 001	Auftrags-Nr.: <i>Order No.:</i>	164024661	Seite 1 von 38 <i>Page 1 of 38</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	15.11.2014	
Auftraggeber: <i>Client:</i>	TGI Technology Pte Ltd. 140 Paya Lebar Road, #06-25 AZ Building, Singapore 409015			
Prüfgegenstand: <i>Test item:</i>	Bluetooth Speaker			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	EUPHO			
Auftrags-Inhalt: <i>Order content:</i>	FCC Certification and Verification			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart C Section 15.107 CFR47 FCC Part 15: Subpart C Section 15.109			
Wareneingangsdatum: <i>Date of receipt:</i>	10.12.2014			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000137758-001 to 003			
Prüfzeitraum: <i>Testing period:</i>	11.12.2014 - 31.12.2014			
Ort der Prüfung: <i>Place of testing:</i>	Shenzhen Accurate Technology Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by: <i>Owen Tian</i>		kontrolliert von / reviewed by: <i>Winnie Hou</i>		
10.03.2015	Owen Tian / Senior Project Manager	13.03.2015	Winnie Hou / Technical Certifier	
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>	
<p>* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</p> <p>Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>				
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</p> <p><i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				

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TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Passed

5.1.2 PEAK OUTPUT POWER

RESULT: Passed

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Passed

5.1.4 -6dB BANDWIDTH

RESULT: Passed

5.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100kHz BANDWIDTH

RESULT: Passed

5.1.6 SPURIOUS EMISSION

RESULT: Passed

5.1.7 20dB BANDWIDTH

RESULT: Passed

5.1.8 FREQUENCY SEPARATION

RESULT: Passed

5.1.9 NUMBER OF HOPPING FREQUENCY

RESULT: Passed

5.1.10 TIME OF OCCUPANCY

RESULT: Passed

5.1.11 CONDUCTED EMISSIONS

RESULT: Passed

5.1.12 RADIATED EMISSION

RESULT: Passed

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix 1: Test Result

2. Test Sites

2.1 Test Facilities

Shenzhen Accurate Technology Co., Ltd.

F1, Bldg. A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park Nanshan District, Shenzhen 518057, P.R. China

FCC Registration No.: 752051

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Spurious emission and Radiated emission				
Signal Generator	Rohde&Schwarz	SMT03	100059	2015-01-11
Voltage Probe	Rohde&Schwarz	URV5-Z2	100012	2015-01-11
Voltage Probe	Rohde&Schwarz	URV5-Z2	100013	2015-01-11
Field Probe	ETS	HI-6005	121578	2015-01-11
Power Amplifier	AR	250W1000A	335304	2015-01-11
Power Amplifier	MILMEGA	AS0860-75/45	1040084	2015-01-11
Power Meter	Rohde & Schwarz	NRVD	100041	2015-01-11
Broadband antenna	CHASE	CBL6111C	2576	N/A
Horn Antenna	AR	AT4002A	305754	N/A
Radio Test Suite				
Receiver	Rohde & Schwarz	ESCS30	100307	2015-01-11
Conducted Emission				
Test Receiver	Rohde & Schwarz	ESCS30	100307	2015-01-11
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	2015-01-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	2015-01-11
50 ⁻ Coaxial Switch	Anritsu Corp	MP59B	6200283933	2015-01-11

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2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements are $\pm 3\text{dB}$.

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Shenzhen Accurate Technology Co., Ltd. test facility located at F1, Bldg. A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park Nanshan District, Shenzhen 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Bluetooth Speaker with Bluetooth 4.0 dual mode.
For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Rating of EUT

Kind of Equipment:	Bluetooth Speaker
Type Designation:	EUPHO
FCC ID	2AD2MEUPHO

Table 3: Technical Specification of Bluetooth (BDR & EDR)

Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Bluetooth Core Version	4.0 Dual mode
Channel separation	1MHz
Extreme Temperature Range	-10°C to +55°C
Operation Voltage	DC3.7V via lithium Battery
Modulation	GFSK, 8DPSK, π/4DQPSK
Antenna Type	Internal Antenna, Non-User Replaceable
Antenna Gain	0dBi
RF Output Power	0.007W (8.47dBm)

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Table 4: RF channel and frequency of Bluetooth (BDR & EDR mode)

RF Channel	Frequency (MHz)						
0	2402.00	20	2422.00	40	2442.00	60	2462.00
1	2403.00	21	2423.00	41	2443.00	61	2463.00
2	2404.00	22	2424.00	42	2444.00	62	2464.00
3	2405.00	23	2425.00	43	2445.00	63	2465.00
4	2406.00	24	2426.00	44	2446.00	64	2466.00
5	2407.00	25	2427.00	45	2447.00	65	2467.00
6	2408.00	26	2428.00	46	2448.00	66	2468.00
7	2409.00	27	2429.00	47	2449.00	67	2469.00
8	2410.00	28	2430.00	48	2450.00	68	2470.00
9	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	78	2480.00
19	2421.00	39	2441.00	59	2461.00		

Table 5: Technical Specification of Bluetooth (low energy)

Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Bluetooth Core Version	4.0 Dual mode
Channel separation	2MHz
Extreme Temperature Range	-10°C to +55°C
Operation Voltage	DC3.7V via lithium Battery
Modulation	GFSK
Antenna Type	Internal Antenna, Non-User Replaceable
Antenna Gain	0dBi
RF Output Power	0.001W (-0.1dBm)

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Table 6: RF channel and frequency of Bluetooth low energy

RF Channel	Frequency (MHz)						
0	2402.00	10	2422.00	20	2442.00	30	2462.00
1	2404.00	11	2424.00	21	2444.00	31	2464.00
2	2406.00	12	2426.00	22	2446.00	32	2466.00
3	2408.00	13	2428.00	23	2448.00	33	2468.00
4	2410.00	14	2430.00	24	2450.00	34	2470.00
5	2412.00	15	2432.00	25	2452.00	35	2472.00
6	2414.00	16	2434.00	26	2454.00	36	2474.00
7	2416.00	17	2436.00	27	2456.00	37	2476.00
8	2418.00	18	2438.00	28	2458.00	38	2478.00
9	2420.00	19	2440.00	29	2460.00	39	2480.00

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Traditional Bluetooth
 - 1. Transmitting on low channel
 - 2. Transmitting on middle channel
 - 3. Transmitting on high channel
- B. On, Bluetooth low energy
 - 1. Transmitting on low channel
 - 2. Transmitting on middle channel
 - 3. Transmitting on high channel
- C. Play through Analog in
- D. Charge & Play through USB
- E. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- | | |
|---|---|
| <ul style="list-style-type: none"> - Bill of Material - PCB Layout - Photo Document - Technical Description | <ul style="list-style-type: none"> - Circuit Diagram - Instruction Manual - Rating Label |
|---|---|

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.4: 2003.

4.3 Special Accessories and Auxiliary Equipment

The EUT was tested with following accessories:

Description	Manufacturer	Type	S/N
iPod	APPLE	A1238	8K039T1Y9ZU
iphone4s	APPLE	MD235ZP	C8PJLWZNNDTC0
Notebook	Lenovo	4290-RT8	R9-FW93G
Printer	HP	laserjet	CNFG030424

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

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4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

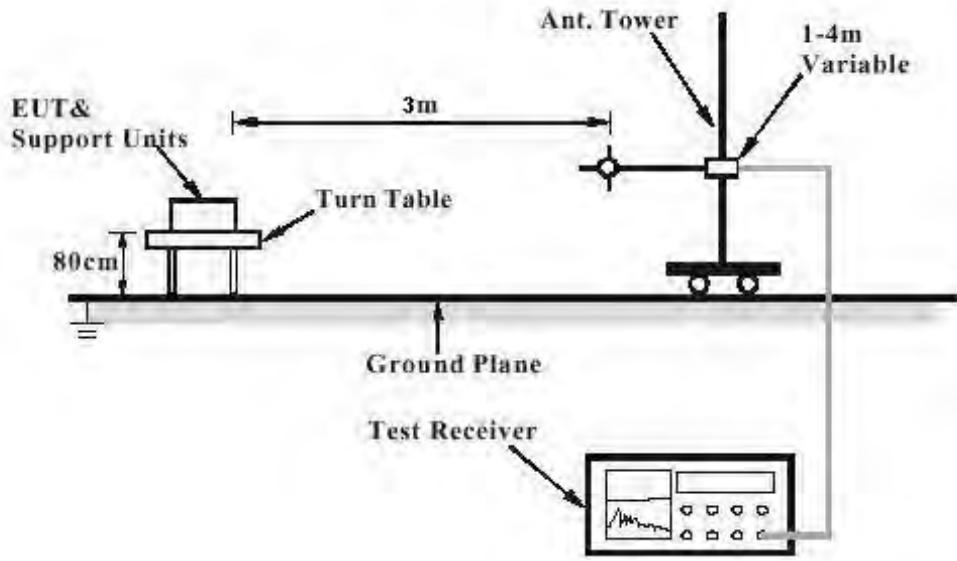
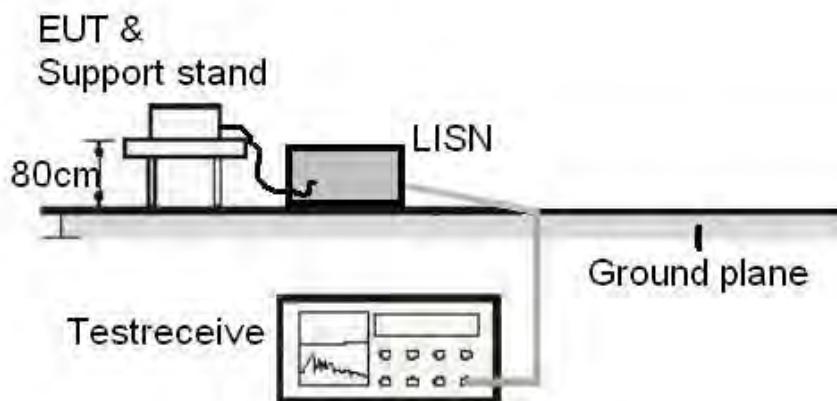


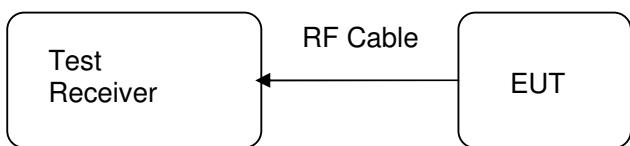
Diagram of Measurement Equipment Configuration for Mains Conduction Measurement



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Diagram of Measurement Equipment Configuration for Conducted Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Passed**

Test date	:	2014-12-11
Test standard	:	FCC Part 15.247(b)(4) and Part 15.203
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT photo for details.

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5.1.2 Peak Output Power

RESULT:

Passed

Test date	:	2014-12-11
Test standard	:	FCC Part 15.247(b)(3)
Basic standard	:	ANSI C63.4: 2003
Limit	:	1 Watt
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Table 7: Test result of Peak Output Power, BR

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	
Low Channel	2402	6.14	0.004	1
Middle Channel	2440	8.16	0.007	1
High Channel	2480	8.47	0.007	1

Table 8: Test result of Peak Output Power, EDR

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	
Low Channel	2402	2.51	0.002	1
Middle Channel	2440	7.24	0.005	1
High Channel	2480	7.61	0.006	1

Table 9: Test result of Peak Output Power, low energy

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	
Low Channel	2402	-3.83	0.0004	1
Middle Channel	2440	-0.10	0.001	1
High Channel	2480	-0.93	0.0008	1

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5.1.3 Conducted Power Spectral Density

RESULT:**Passed**

Test date : 2014-12-11
Test standard : FCC Part 15.247(e)
Basic standard : ANSI C63.4: 2003
Limit : 8dBm/3kHz
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 25°C
Relative humidity : 55%
Atmospheric pressure : 101 kPa

Table 10: Test result of Power Spectral Density, low energy

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2402	-20.10	8
Middle Channel	2440	-16.17	8
High Channel	2480	-16.90	8

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5.1.4 -6dB Bandwidth

RESULT:**Passed**

Date of testing : 2014-12-11
Test standard : FCC Part 15.247(a)(2)
Basic standard : ANSI C63.4: 2003
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 25°C
Relative humidity : 55%
Atmospheric pressure : 101 kPa

Table 11: Test result of 6dB Bandwidth, low energy

Channel	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	654	500	Pass
Mid Channel	2440	648	500	Pass
High Channel	2480	648	500	Pass

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5.1.5 Conducted spurious emissions measured in 100kHz Bandwidth

RESULT:

Passed

Date of testing	:	2014-12-11
Test standard	:	FCC part 15.247(d)
Basic standard	:	ANSI C63.4: 2003
Limit	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shield room

Test setup

Test Channel	:	Low/ High
Operation mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

All emissions are more than 20dB below fundamental, details refer to following test plot, and compliance is achieved as well.

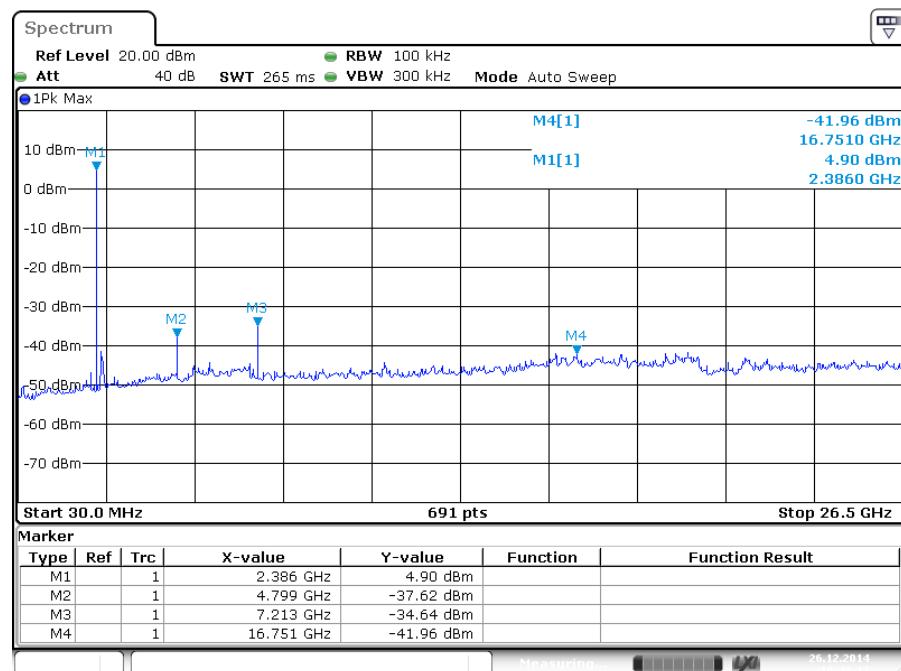
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Test Plot of 100kHz Bandwidth of Frequency Band Edge

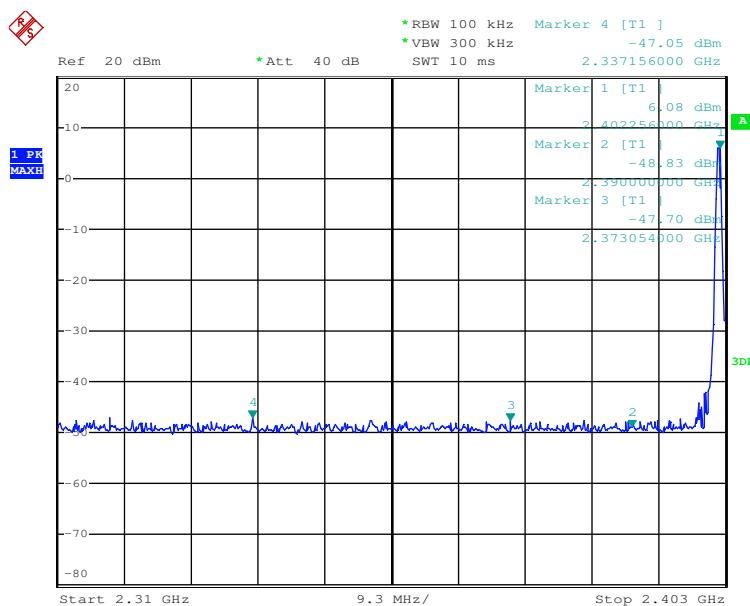
BDR mode

Low Channel



Date: 26.DEC.2014 10:43:17

Low Channel, Band Edge

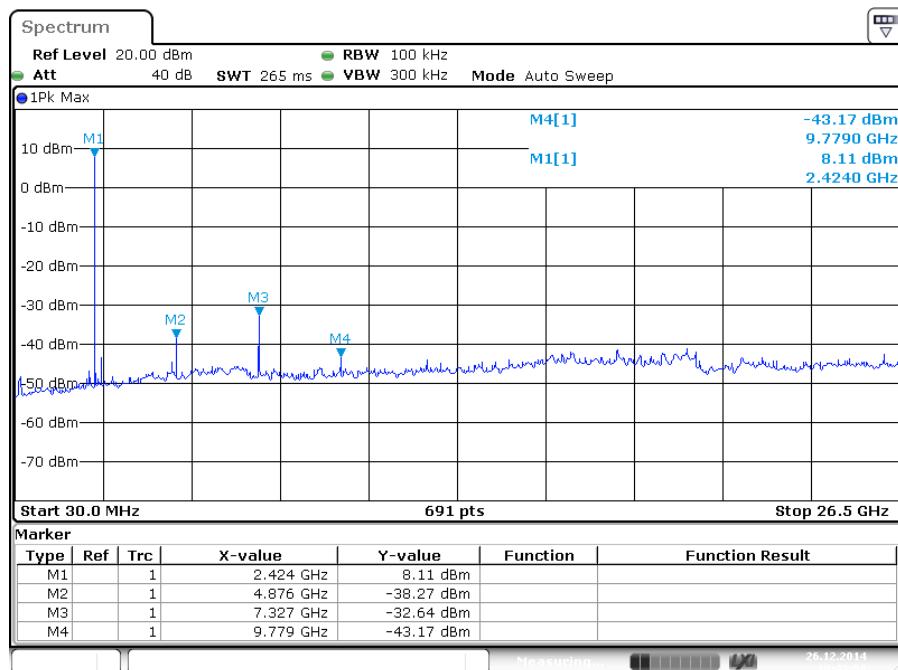


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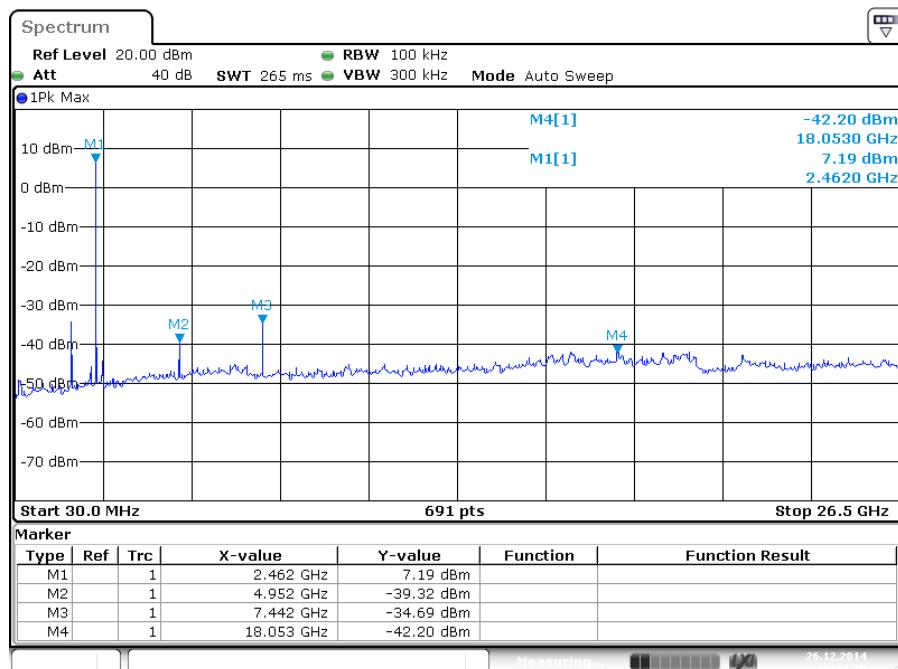
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Middle Channel



Date: 26.DEC.2014 10:43:58

High Channel



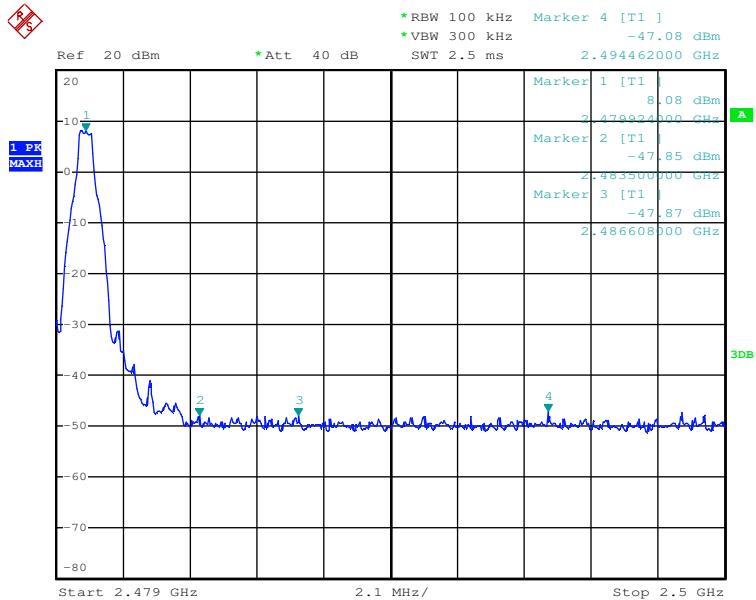
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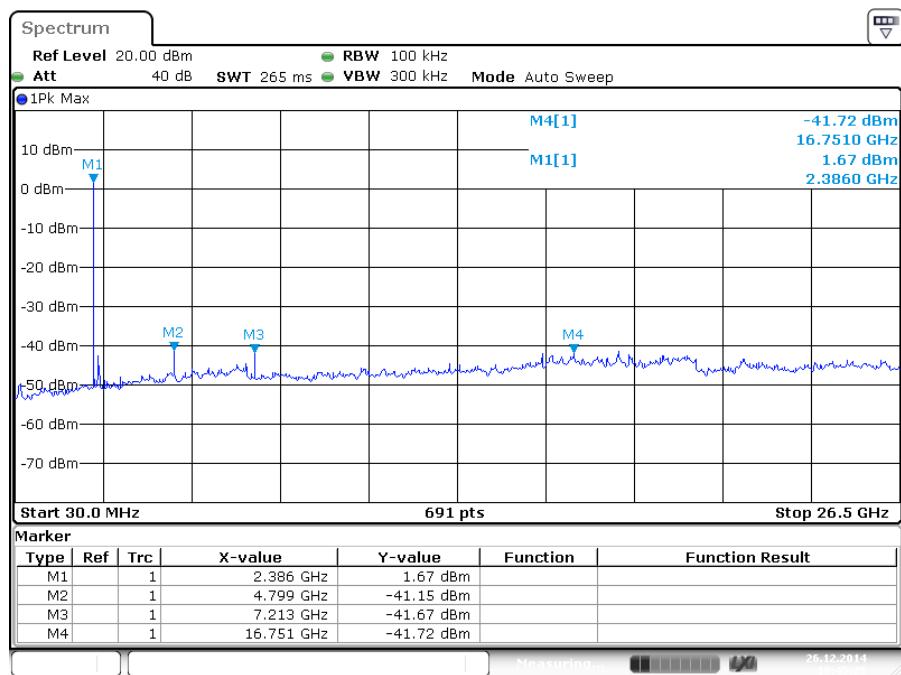
High Channel, Band Edge



Date: 11.DEC.2014 14:00:28

EDR mode

Low Channel



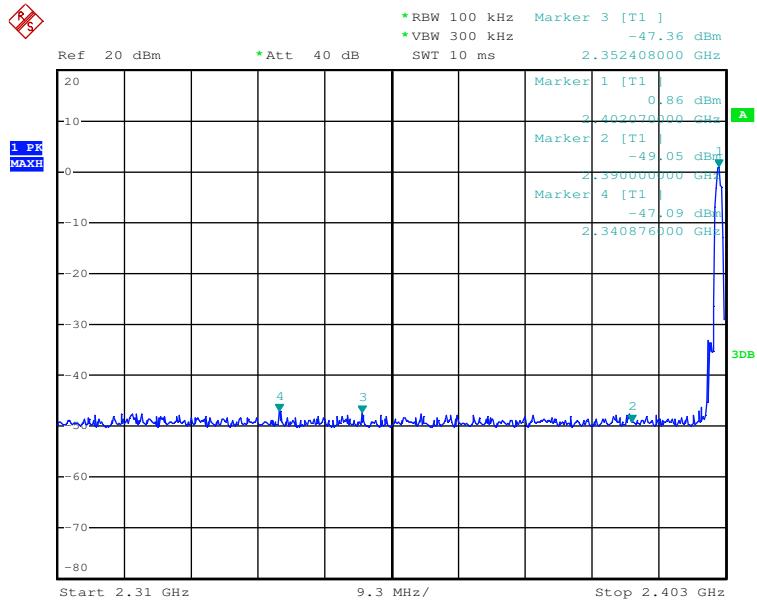
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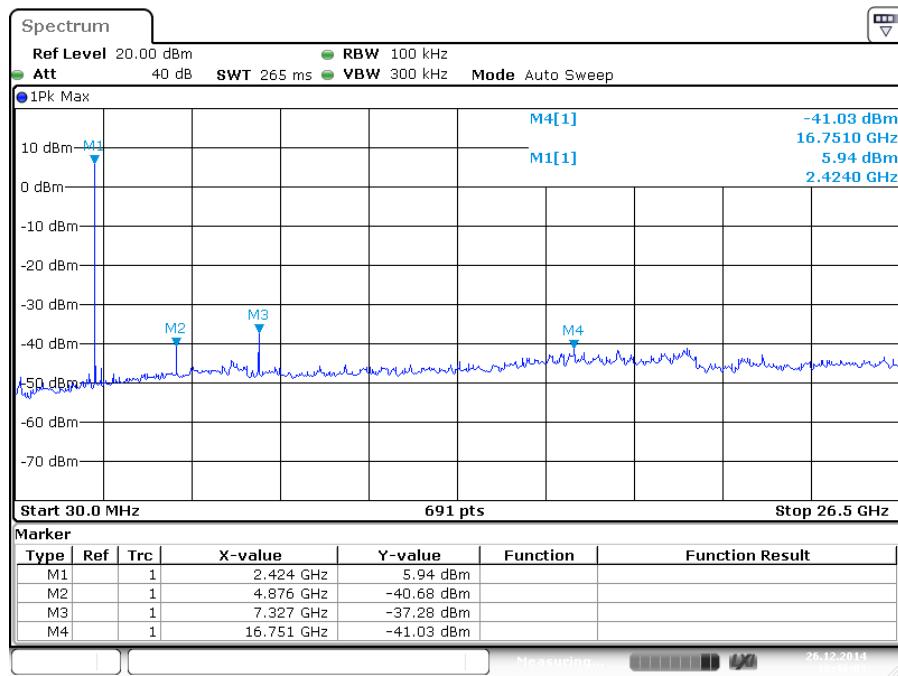
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Low Channel, Band Edge



Date: 11.DEC.2014 14:02:43

Middle Channel



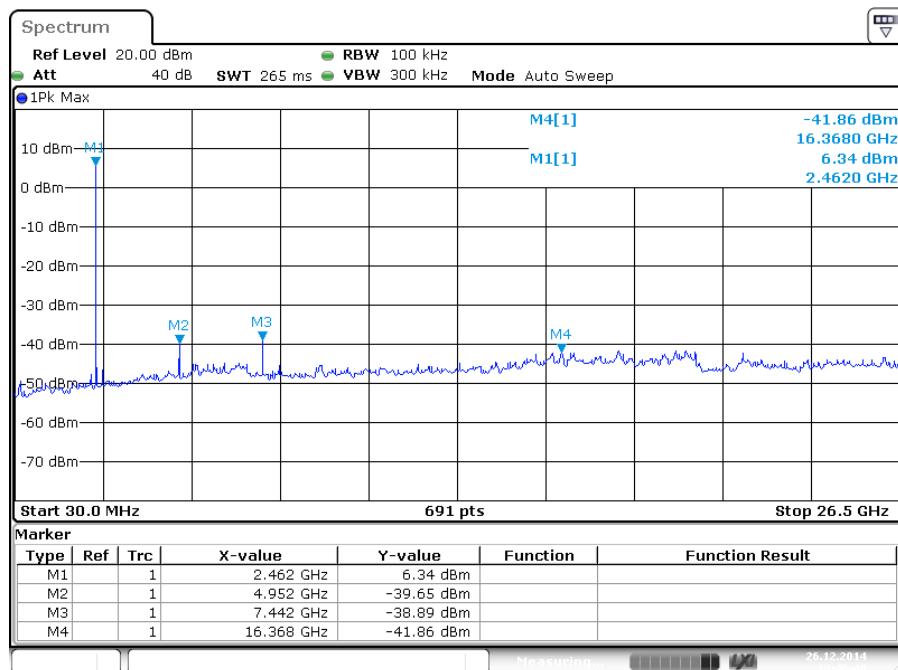
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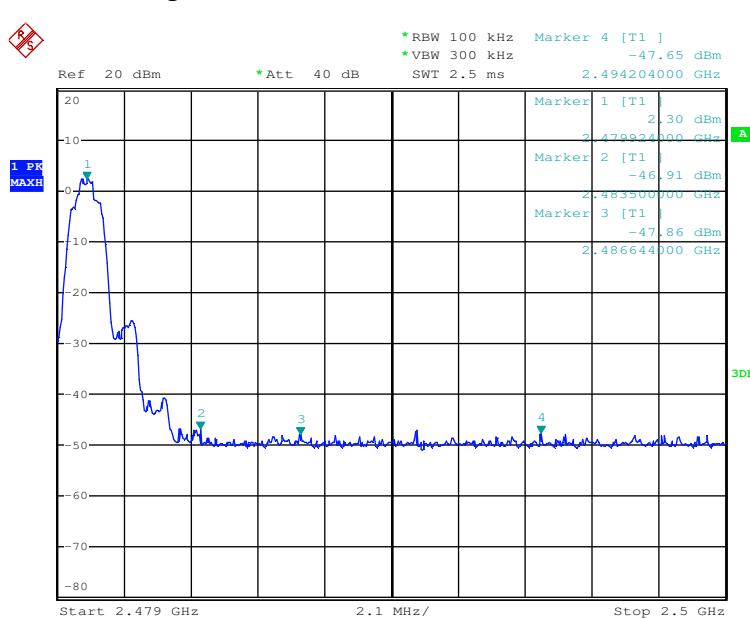
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High Channel



High Channel, Band Edge



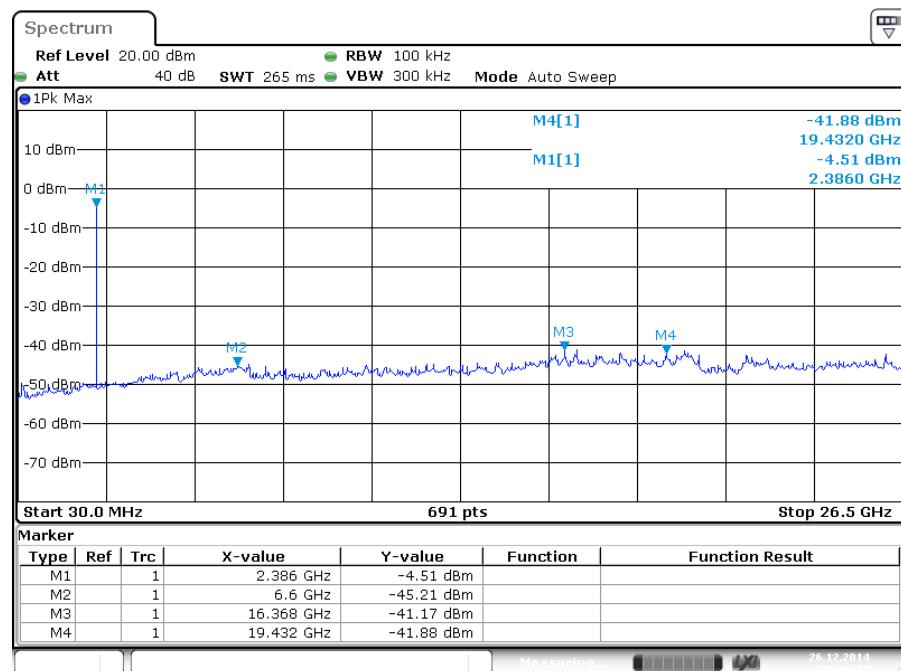
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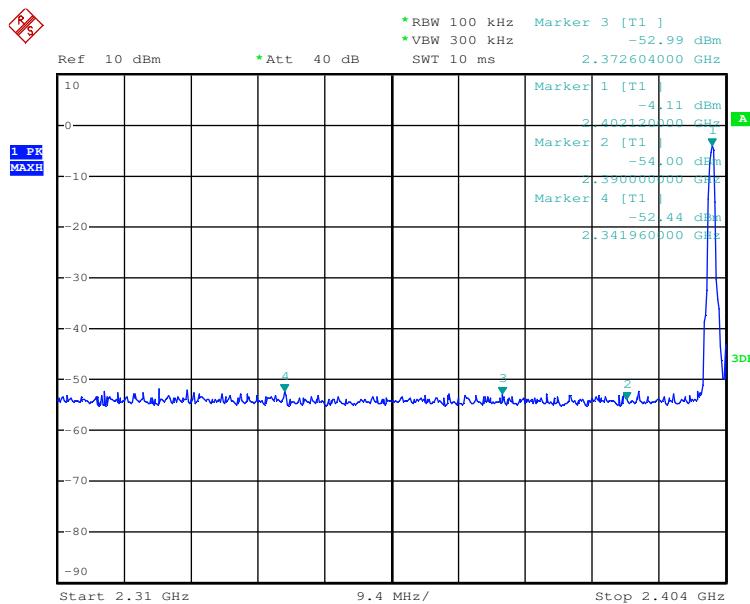
Low energy

Low Channel



Date: 26.DEC.2014 10:48:15

Low Channel, Band Edge

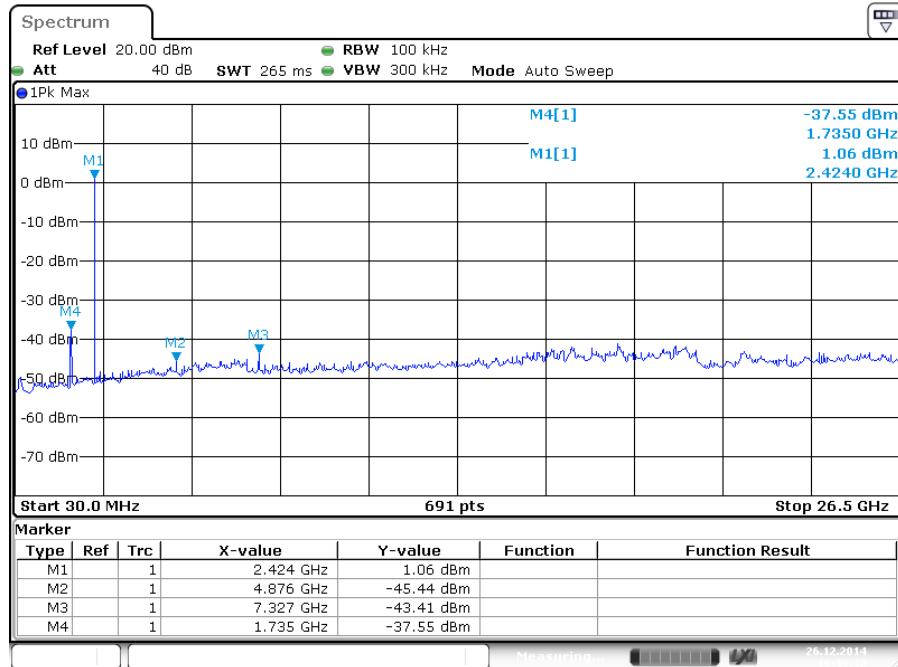


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Prüfbericht - Nr.: 17046043 001
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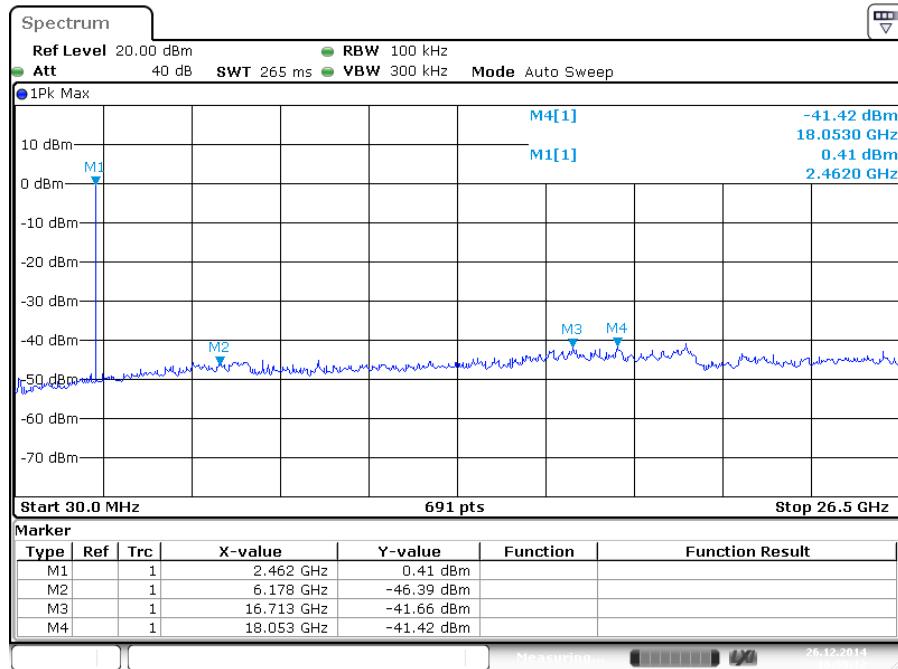
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Middle Channel



Date: 26.DEC.2014 10:49:32

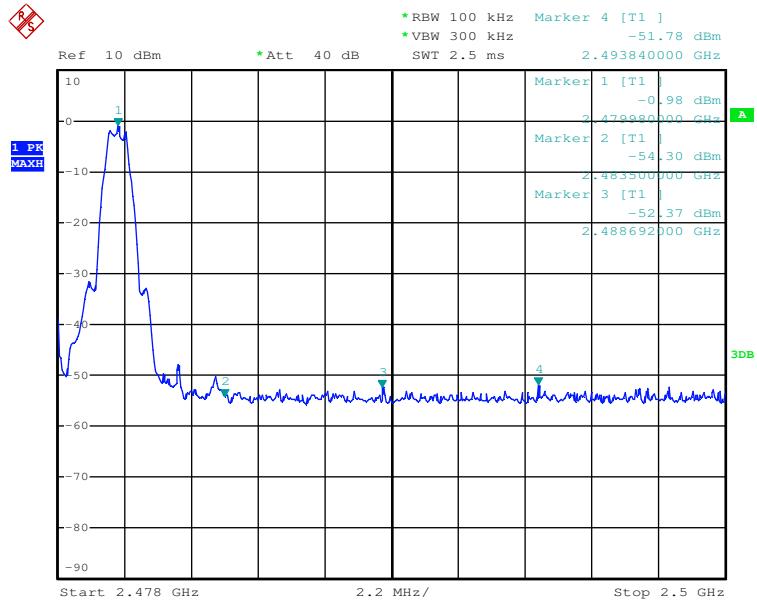
High Channel



Date: 26.DEC.2014 10:50:13

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High Channel, Band Edge



Date: 11.DEC.2014 16:11:56

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5.1.6 Spurious Emission

RESULT:

Passed

Date of testing	:	2014-12-12 to 2014-12-31
Test standard	:	FCC part 15.247(d) FCC Part 15.205
Basic standard	:	ANSI C63.4: 2003
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Remark:

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test setup photos.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For details refer to Appendix 1.

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*Test Report No.*Seite 27 von 38
Page 27 of 38**5.1.7 20dB Bandwidth****RESULT:****Passed**

Date of testing	:	2014-12-11
Test standard	:	FCC Part 15.247(a)(1)
Basic standard	:	ANSI C63.4: 2003
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Table 12: Test result of 20dB Bandwidth, BDR mode

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	930	500	Pass
Mid Channel	2440	930	500	Pass
High Channel	2480	930	500	Pass

Table 13: Test result of 20dB Bandwidth, EDR mode

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	1140	500	Pass
Mid Channel	2440	1140	500	Pass
High Channel	2480	1140	500	Pass

5.1.8 Frequency Separation

RESULT:**Passed**

Date of testing	:	2014-12-11
Test standard	:	FCC part 15.247(a)(1)
Basic standard	:	ANSI C63.4: 2003
Limit	:	≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Table 14: Test result of Frequency Separation

Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
Low Channel	2402	1	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
Adjacency Channel	2403			
Mid Channel	2441	1	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
Adjacency Channel	2442			
High Channel	2480	1	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
Adjacency Channel	2479			

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5.1.9 Number of hopping frequency

RESULT:**Passed**

Date of testing	:	2014-12-11
Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.4: 2003
Limits	:	≥ 15 non-overlapping channels
Kind of test site	:	Shield room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Table 15: Test result of Number of hopping frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2400 to 2483.5 MHz	79	≥15	Pass

5.1.10 Time of Occupancy

RESULT:

Passed

Date of testing	:	2014-12-11
Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.4: 2003
Limits	:	0.4s
Kind of test site	:	Shield room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Table 16: Test result of Time of Occupancy, BDR mode

Channel	Data Mode	Pulse width (ms)	Measured Dwell time (s)	Limit (s)	Result
Low Channel	DH1	0.45	0.144	0.4	Pass
	DH3	1.73	0.277	0.4	Pass
	DH5	3.0	0.32	0.4	Pass
Mid Channel	DH1	0.45	0.144	0.4	Pass
	DH3	1.73	0.277	0.4	Pass
	DH5	3.0	0.32	0.4	Pass
High Channel	DH1	0.45	0.144	0.4	Pass
	DH3	1.73	0.277	0.4	Pass
	DH5	3.0	0.32	0.4	Pass

Table 17: Test result of Time of Occupancy, EDR mode

Channel	Data Mode	Pulse width (ms)	Measured Dwell time (s)	Limit (s)	Result
Low Channel	DH1	0.46	0.147	0.4	Pass
	DH3	1.76	0.282	0.4	Pass
	DH5	3.03	0.323	0.4	Pass
Mid Channel	DH1	0.46	0.147	0.4	Pass
	DH3	1.74	0.278	0.4	Pass
	DH5	3.03	0.320	0.4	Pass
High Channel	DH1	0.47	0.150	0.4	Pass
	DH3	1.74	0.278	0.4	Pass
	DH5	3.0	0.320	0.4	Pass

Note:

Dwell time = Pulse width x (Hopping rate / Number of channels) x Period

Period = 0.4 (seconds/ channel) x 79 (channel) = 31.6 seconds

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5.1.11 Conducted emissions

RESULT:

Passed

Date of testing	:	2014-12-29
Test standard	:	FCC Part 15.207(a)
Basic standard	:	ANSI C63.4: 2003
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a)
Kind of test site	:	Shield room

Test setup

Input Voltage	:	AC 120V, 60Hz via AC input of Notebook
Operation Mode	:	D
Earthing	:	Not connected
Ambient temperature	:	25°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

For details refer to Appendix 1.

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Test Report No.

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5.1.12 Radiated Emission

RESULT:

Passed

Date of testing	:	2014-12-25 to 2014-12-29
Test standard	:	FCC Part 15 Per Section 15.209(a)
Frequency range	:	30 - 6000MHz
Classification	:	Class B
Test procedure	:	ANSI C63.4: 2003
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Input Voltage	:	AC 120V, 60Hz via AC input of Notebook
Operation mode	:	C, D
Earthing	:	Not connected
Ambient temperature	:	Refer to Appendix 1
Relative humidity	:	Refer to Appendix 1
Atmospheric pressure	:	Refer to Appendix 1

Test data refer to Appendix 1.

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Test Report No.

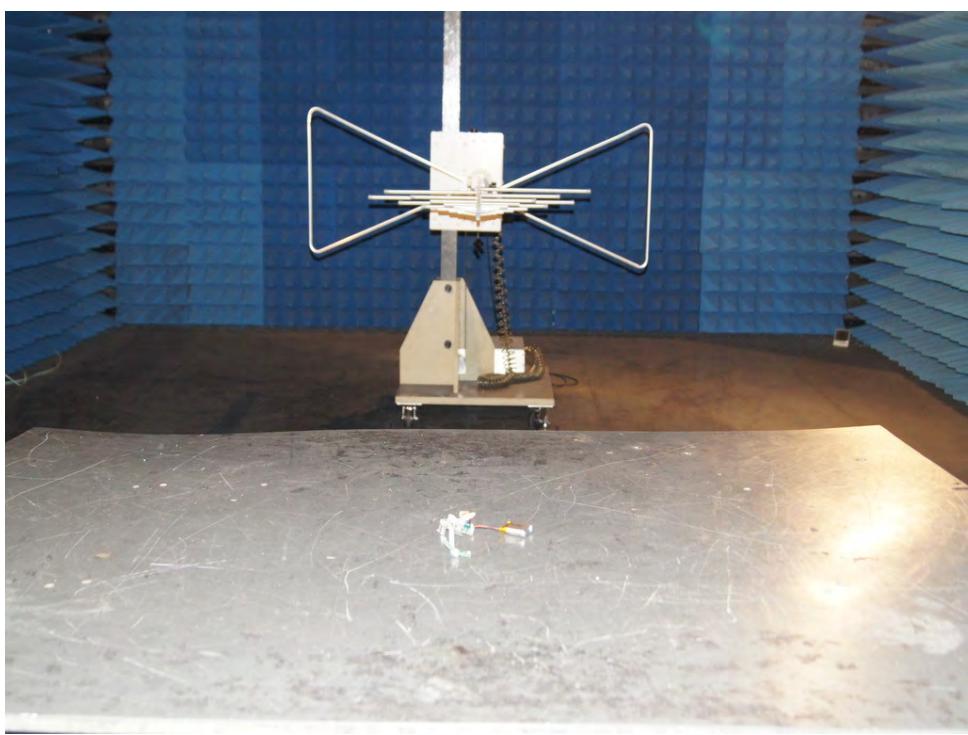
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6. Photographs of the Test Set-Up

Photograph 1: Set-up for Spurious Emissions (9kHz-30MHz)



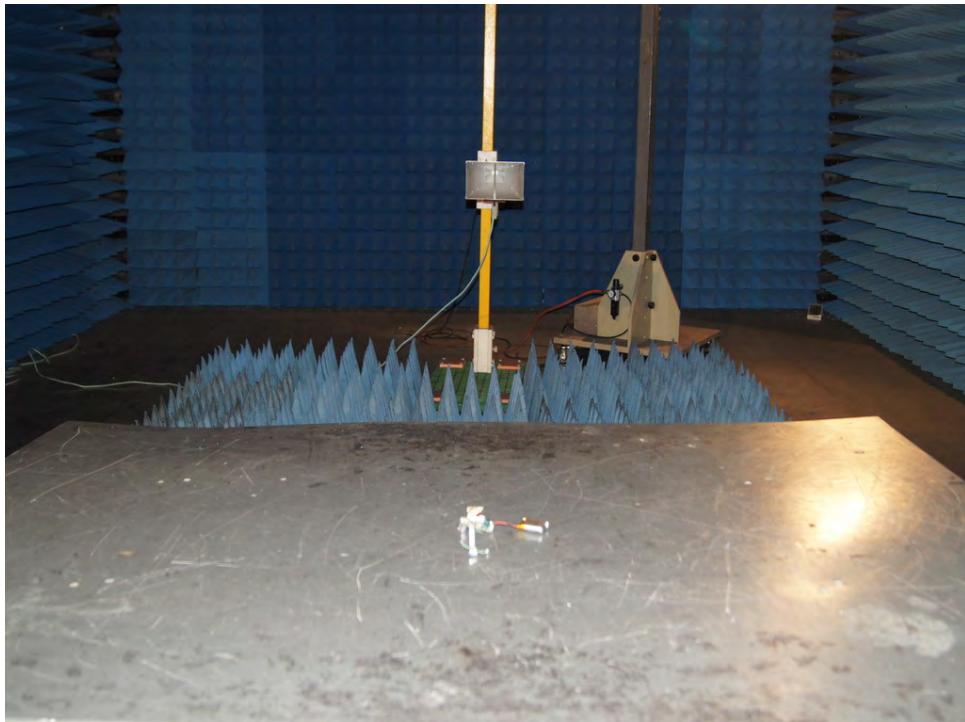
Photograph 2: Set-up for Spurious Emissions (30MHz-1GHz)



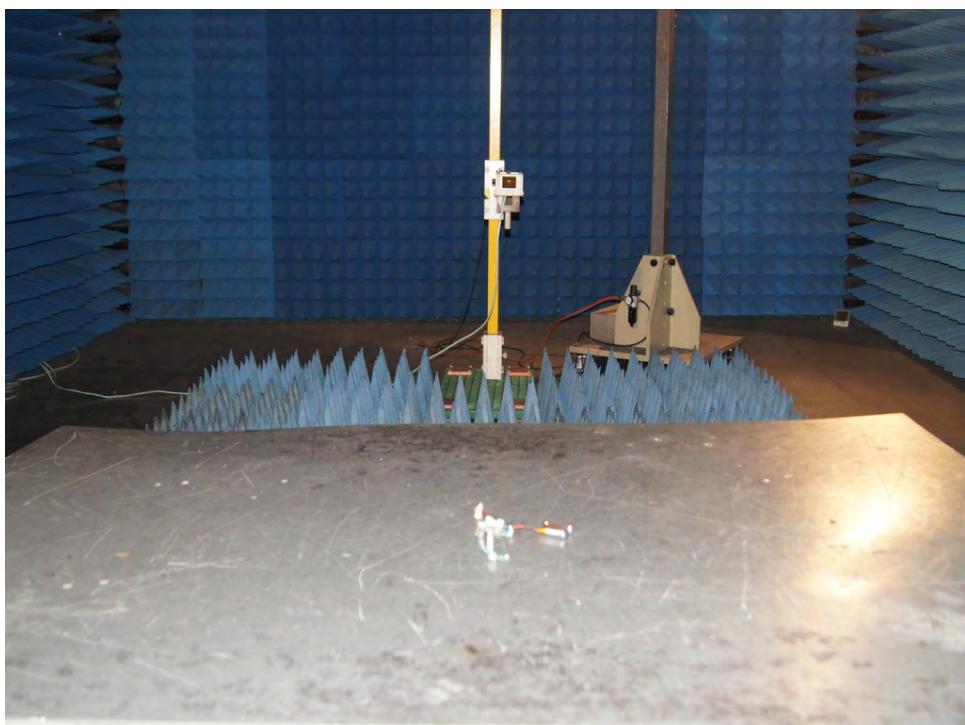
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Photograph 3: Set-up for Spurious Emissions (1GHz-18GHz)



Photograph 4: Set-up for Spurious Emissions (18GHz-26GHz)



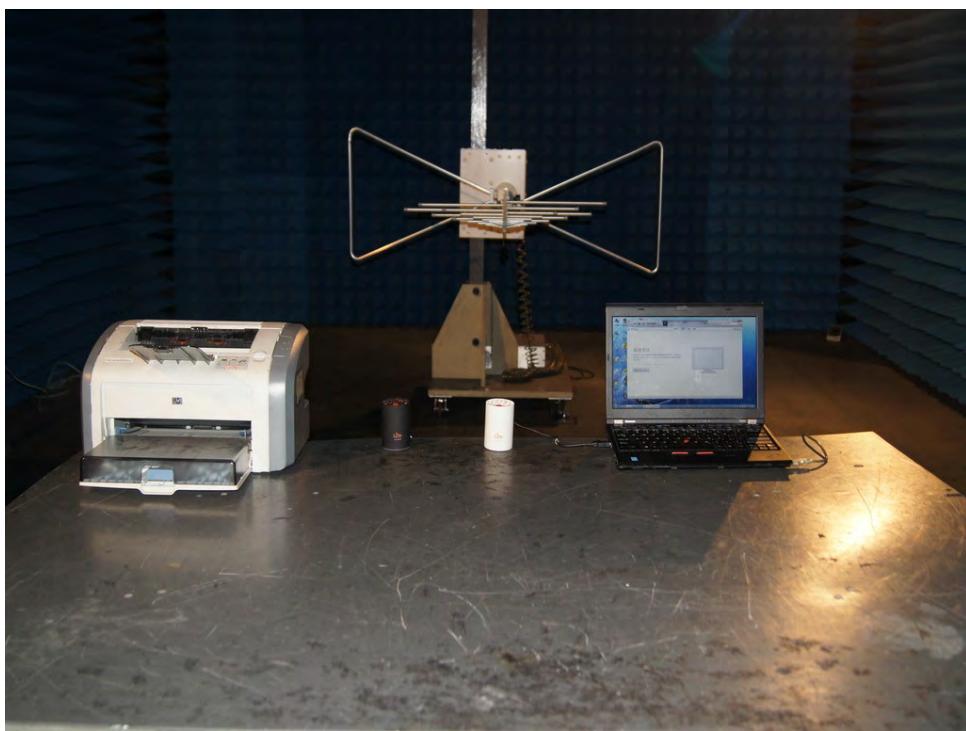
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Photograph 5: Set-up for Conducted Emissions



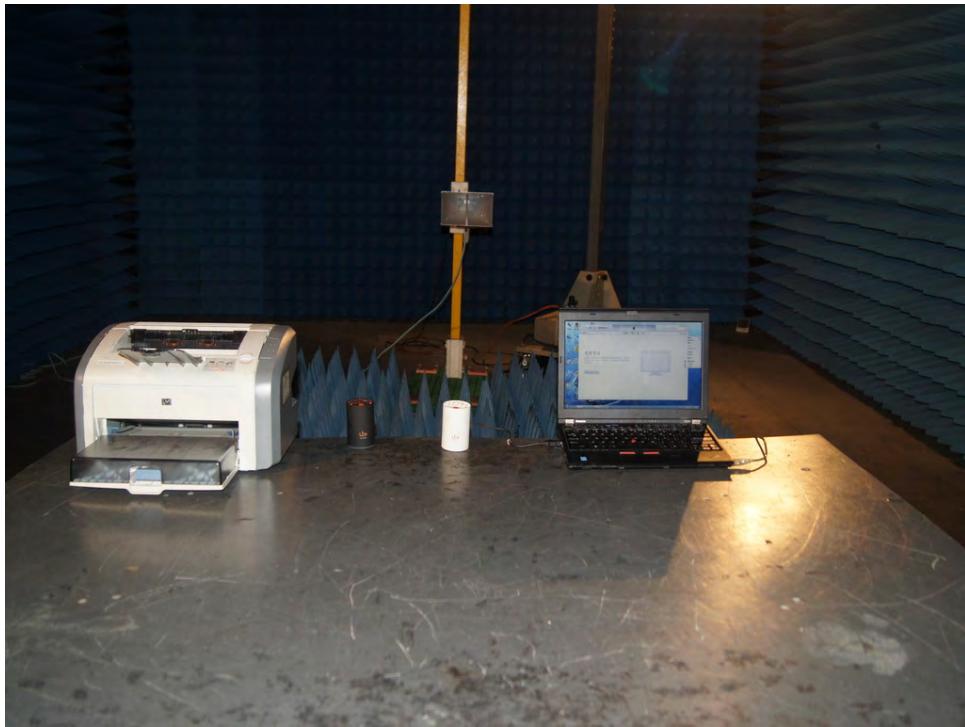
Photograph 6: Set-up for Radiated Emissions, below 1GHz



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Photograph 7: Set-up for Radiated Emissions, above 1GHz



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Figure 1: Test figure of spurious emissions, mode A.1, Horizontal polarity (9kHz – 30MHz)

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2402MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: X
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

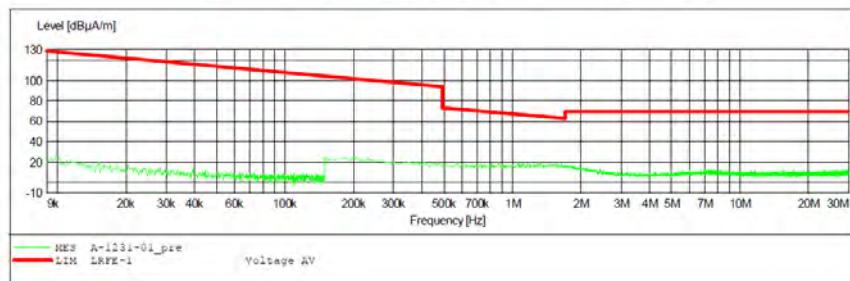


Figure 2: Test figure of spurious emissions, mode A.1, Vertical polarity (9kHz – 30MHz)

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FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2402MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

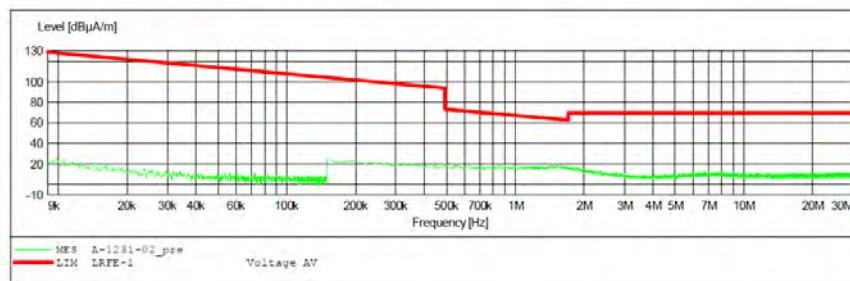


Figure 3: Test figure of spurious emissions, mode A.1, Horizontal polarity (30MHz – 1GHz)

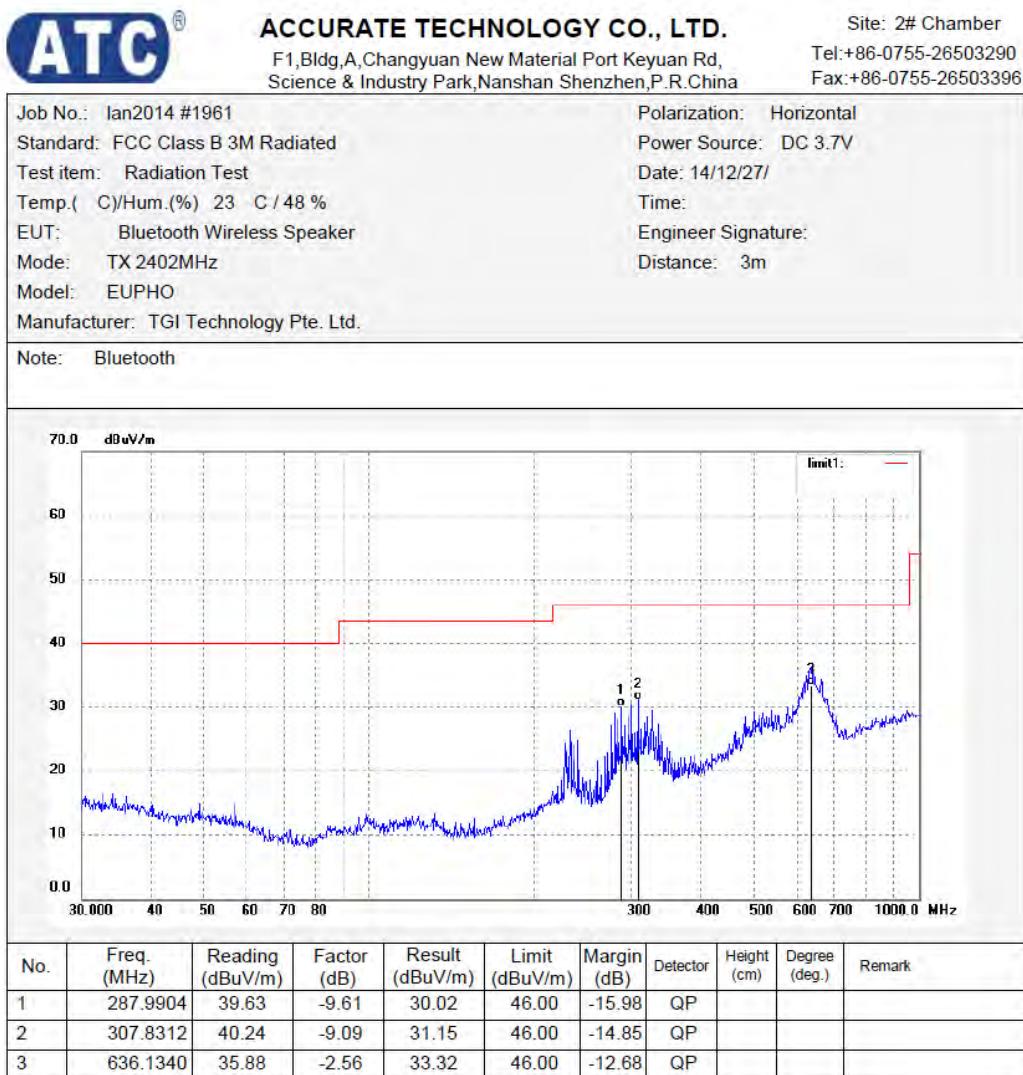


Figure 4: Test figure of spurious emissions, mode A.1, Vertical polarity (30MHz – 1GHz)

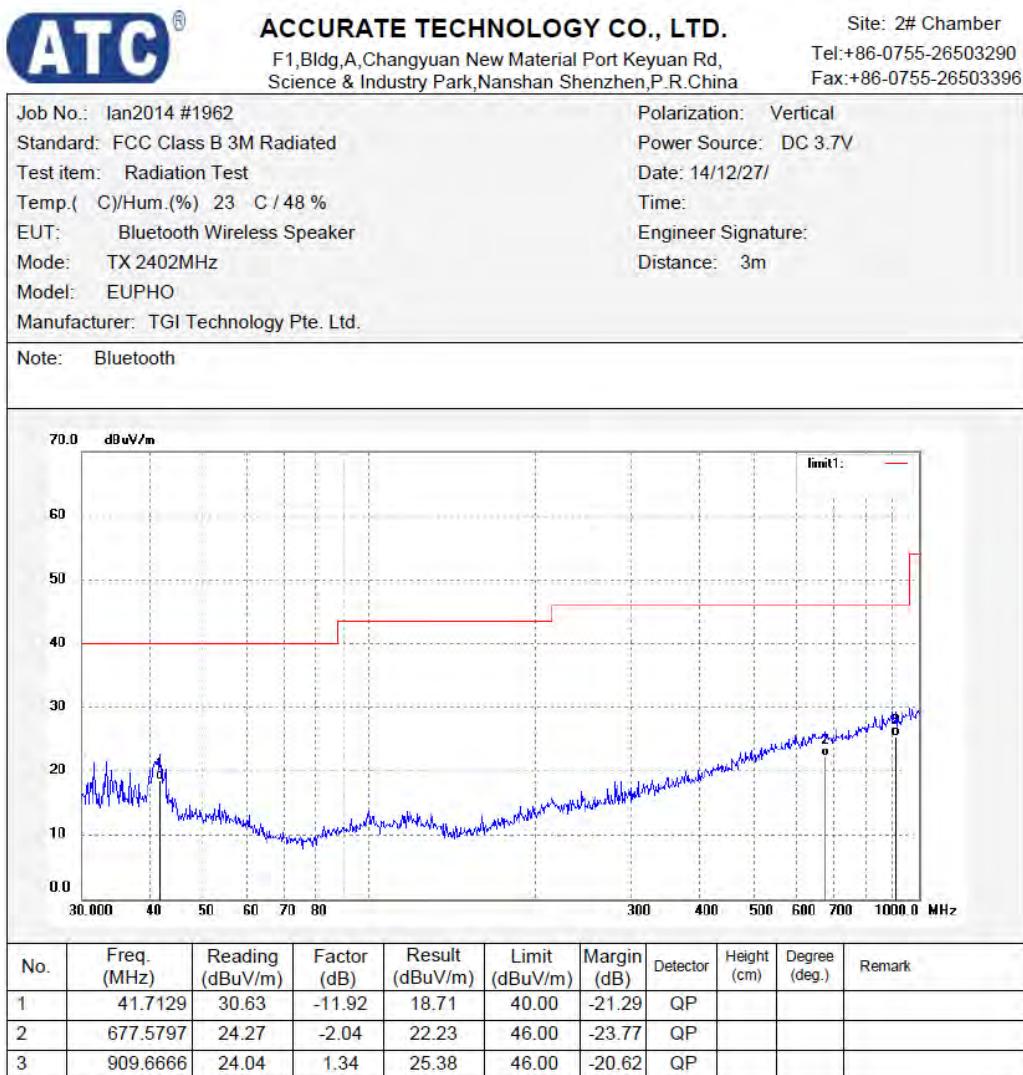


Figure 5: Test figure of spurious emissions, mode A.1, Horizontal polarity (1GHz –18GHz)

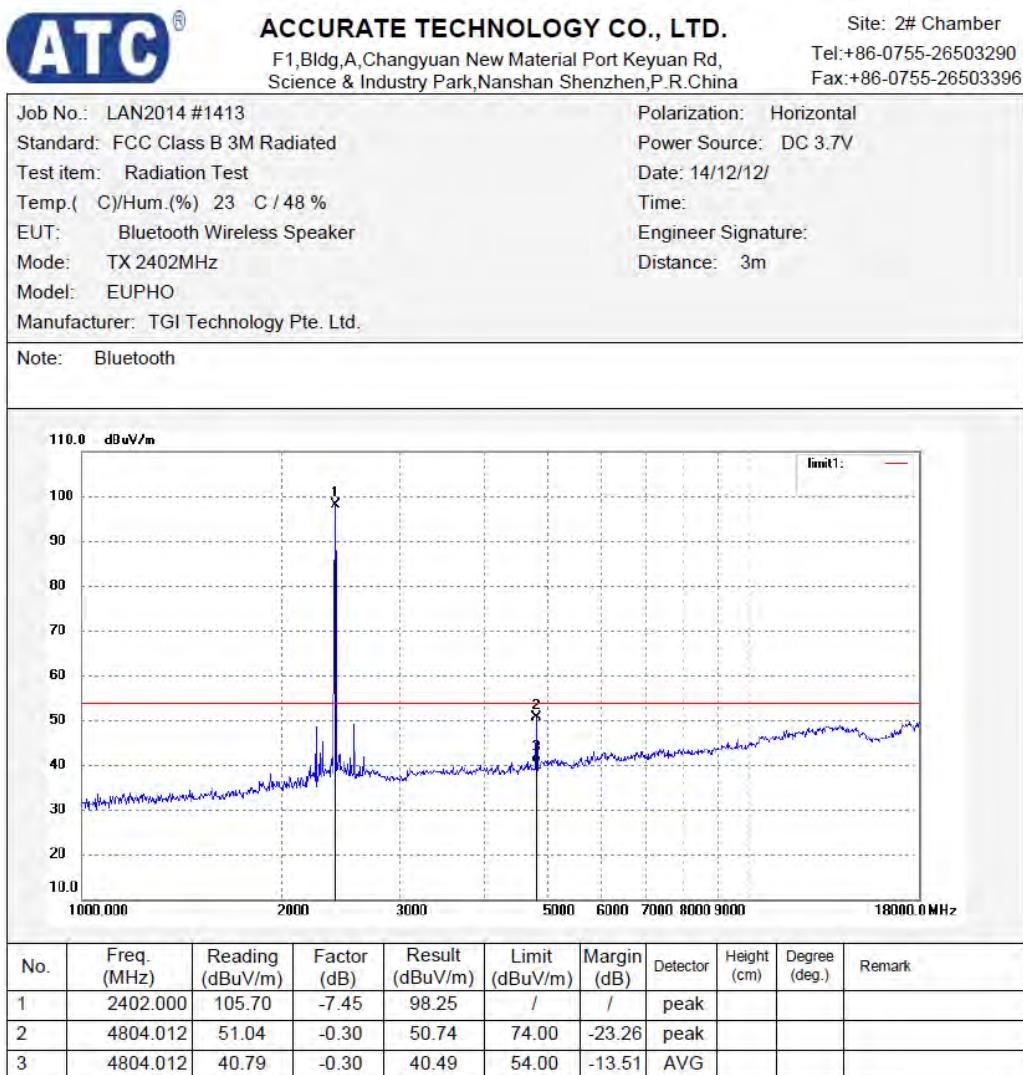


Figure 6: Test figure of spurious emissions, mode A.1, Vertical polarity (1GHz – 18GHz)



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

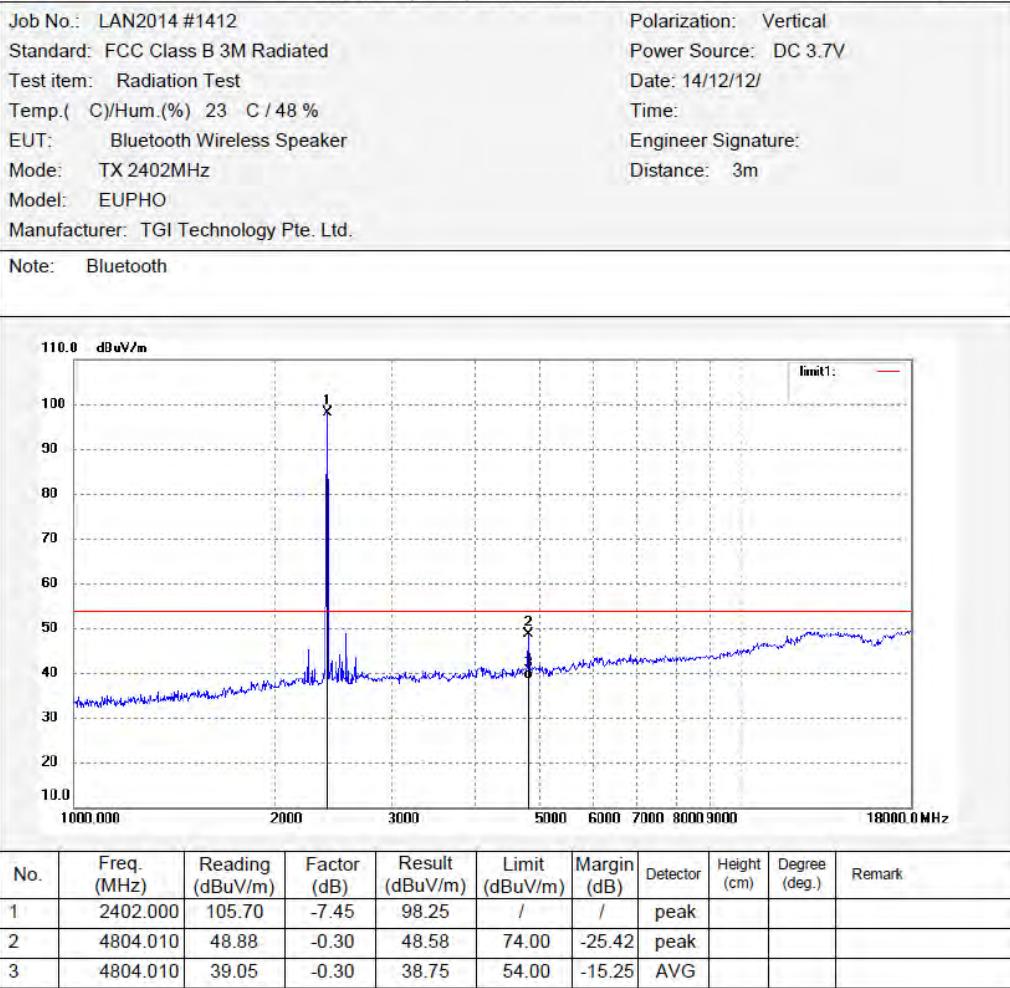


Figure 7: Test figure of spurious emissions, mode A.1, Horizontal polarity (18GHz –25GHz)

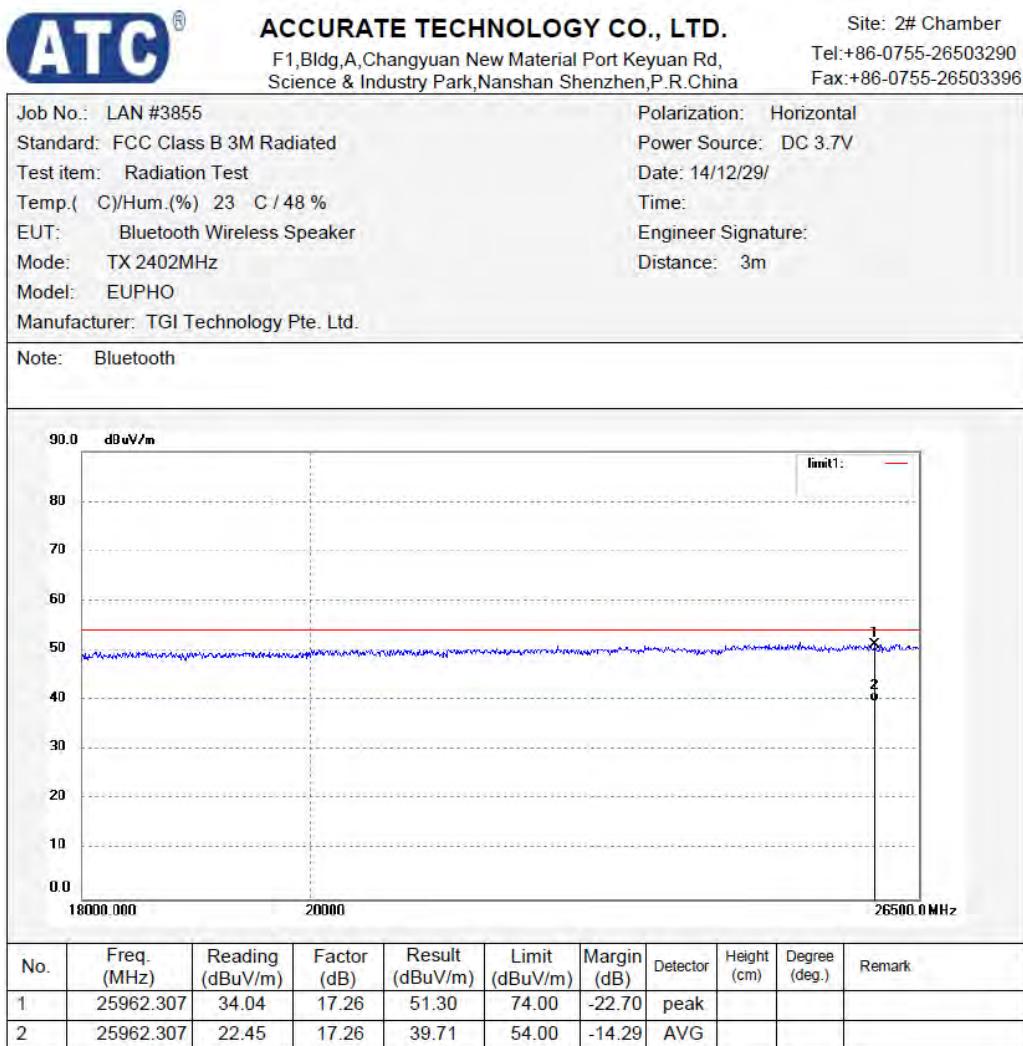


Figure 8: Test figure of spurious emissions, mode A.1, Vertical polarity (18GHz – 25GHz)

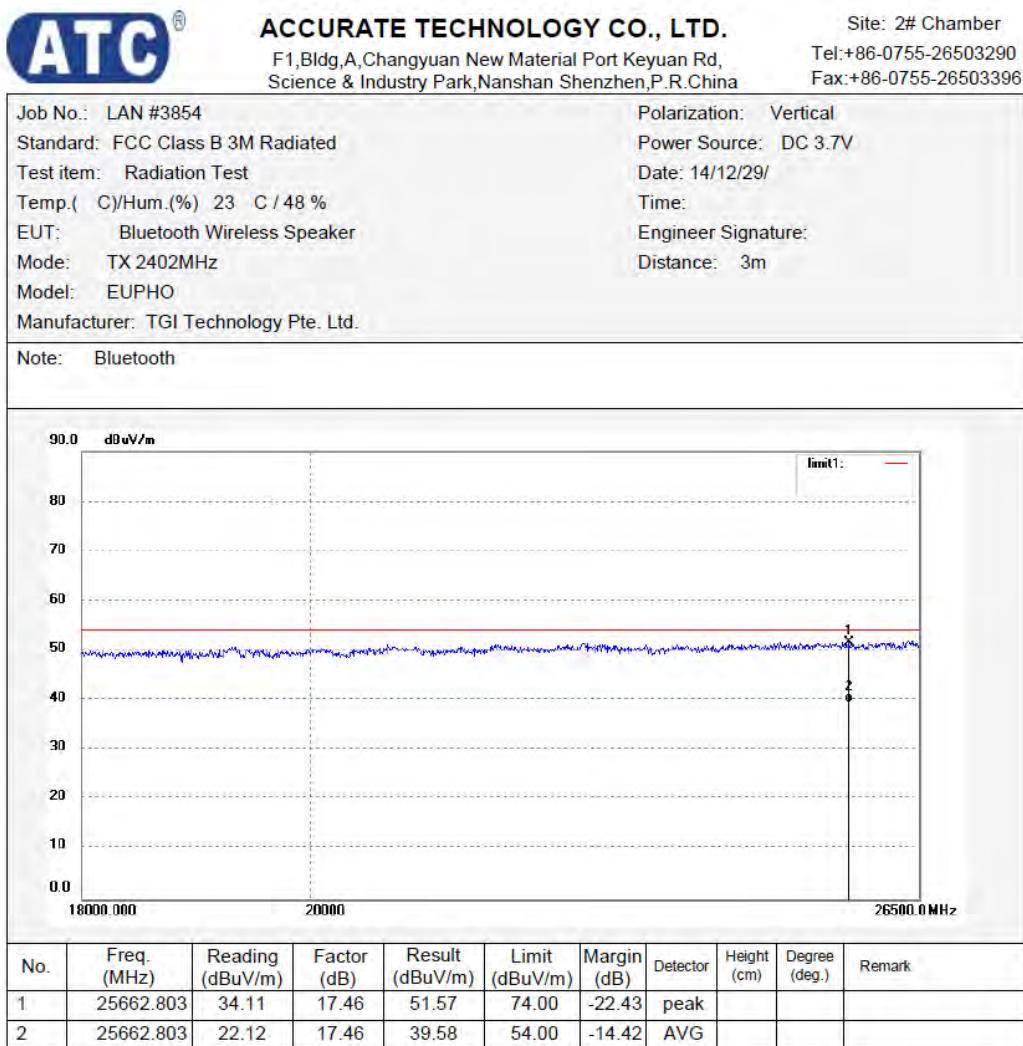


Figure 9: Test figure of spurious emissions, mode A.2, Horizontal polarity (9kHz – 30MHz)

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FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
 Manufacturer: TGI Technology Pte. Ltd.
 Operating Condition: TX 2441MHz
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: DC 3.7V
 Comment: X
 Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE_Fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step - Detector Meas. IF Transducer
 Frequency Width Time Bandw.
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz 1516M
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz 1516M

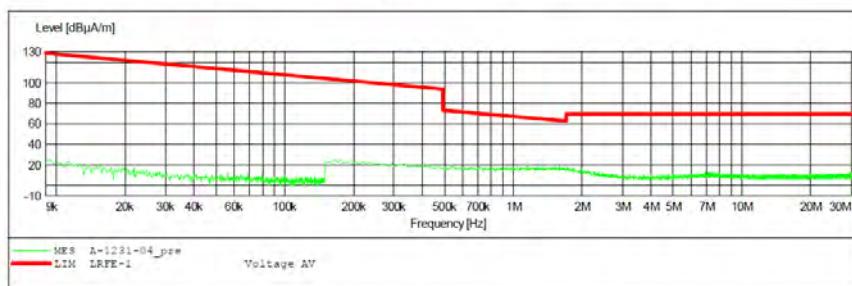


Figure 10: Test figure of spurious emissions, mode A.2, Vertical polarity (9kHz – 30MHz)

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
 Manufacturer: TGI Technology Pte. Ltd.
 Operating Condition: TX 2441MHz
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: DC 3.7V
 Comment: Y
 Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE_Fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step - Detector Meas. IF Transducer
 Frequency Width Time Bandw.
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz 1516M
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz 1516M

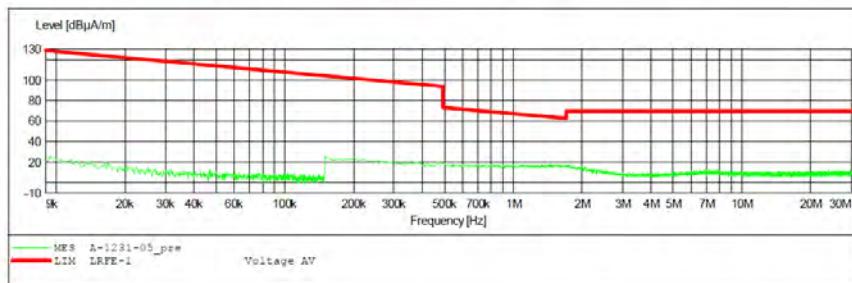


Figure 11: Test figure of spurious emissions, mode A.2, Horizontal polarity (30MHz – 1GHz)

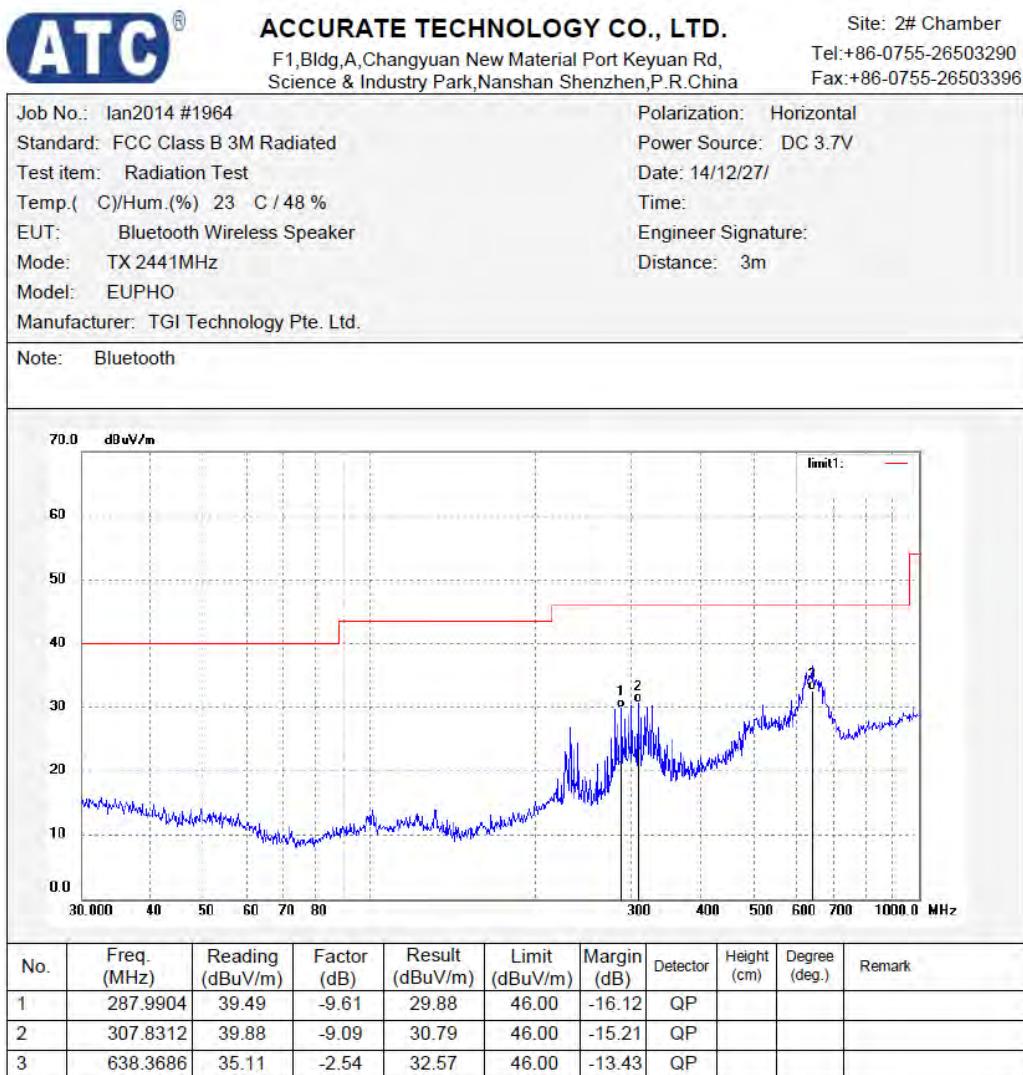


Figure 12: Test figure of spurious emissions, mode A.2, Vertical polarity (30MHz – 1GHz)

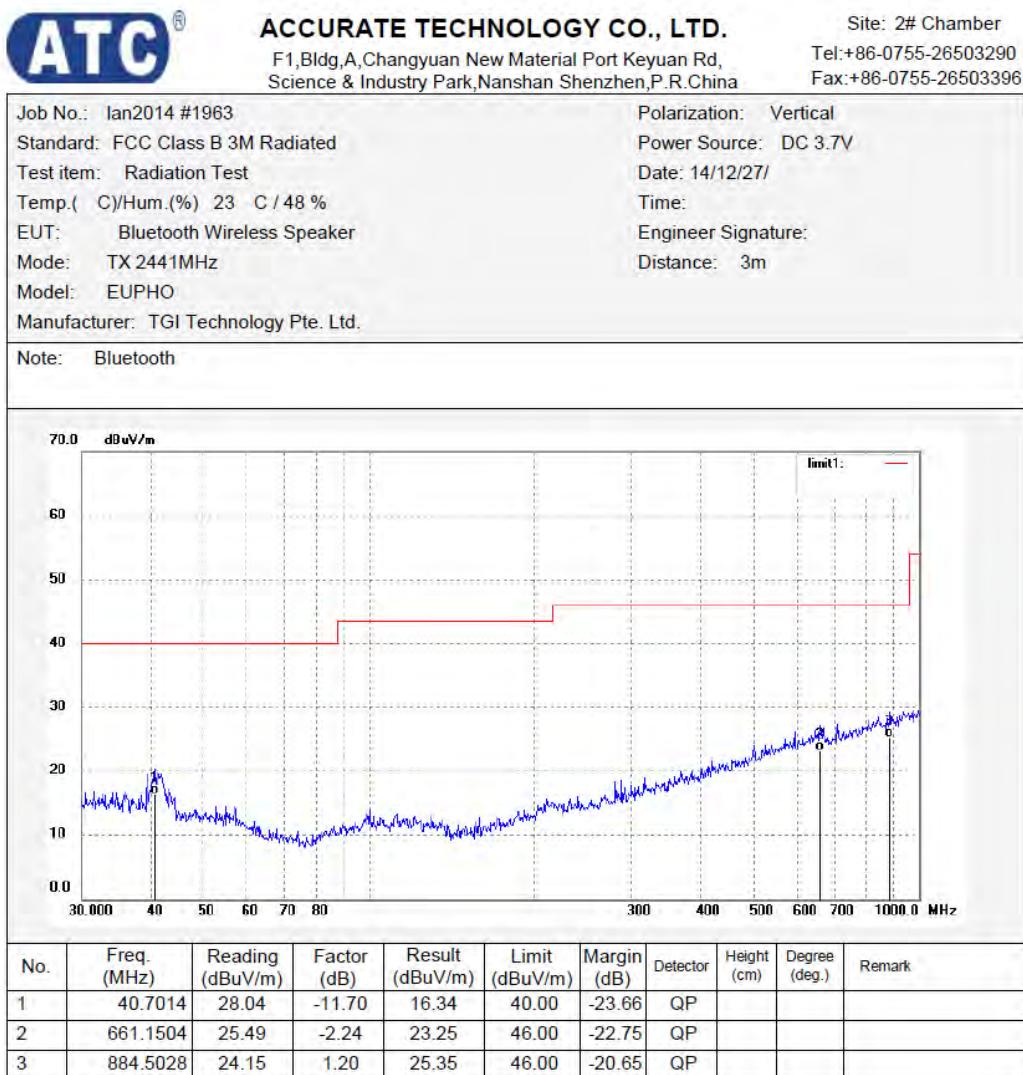


Figure 13: Test figure of spurious emissions, mode A.2, Horizontal polarity (1GHz – 18GHz)

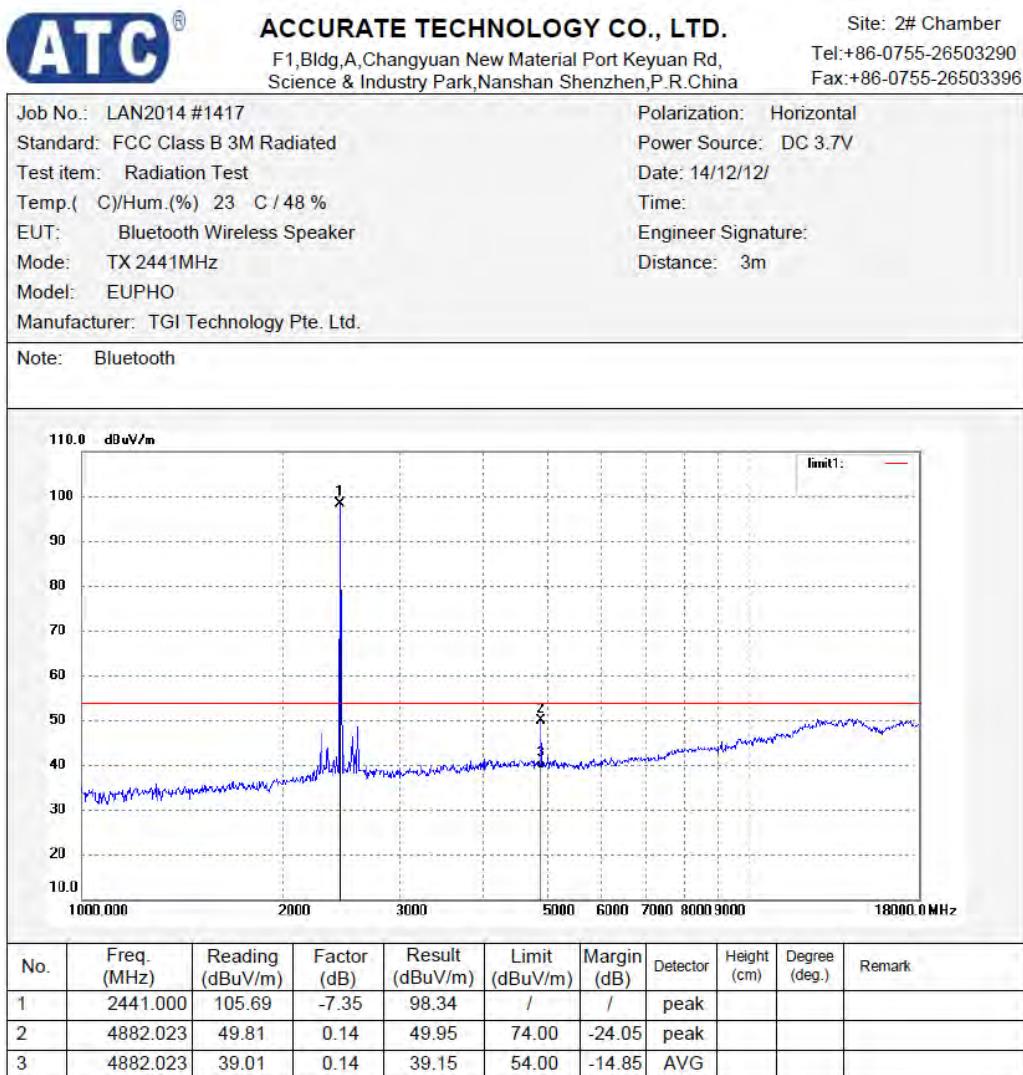


Figure 14: Test figure of spurious emissions, mode A.2, Vertical polarity (1GHz – 18GHz)

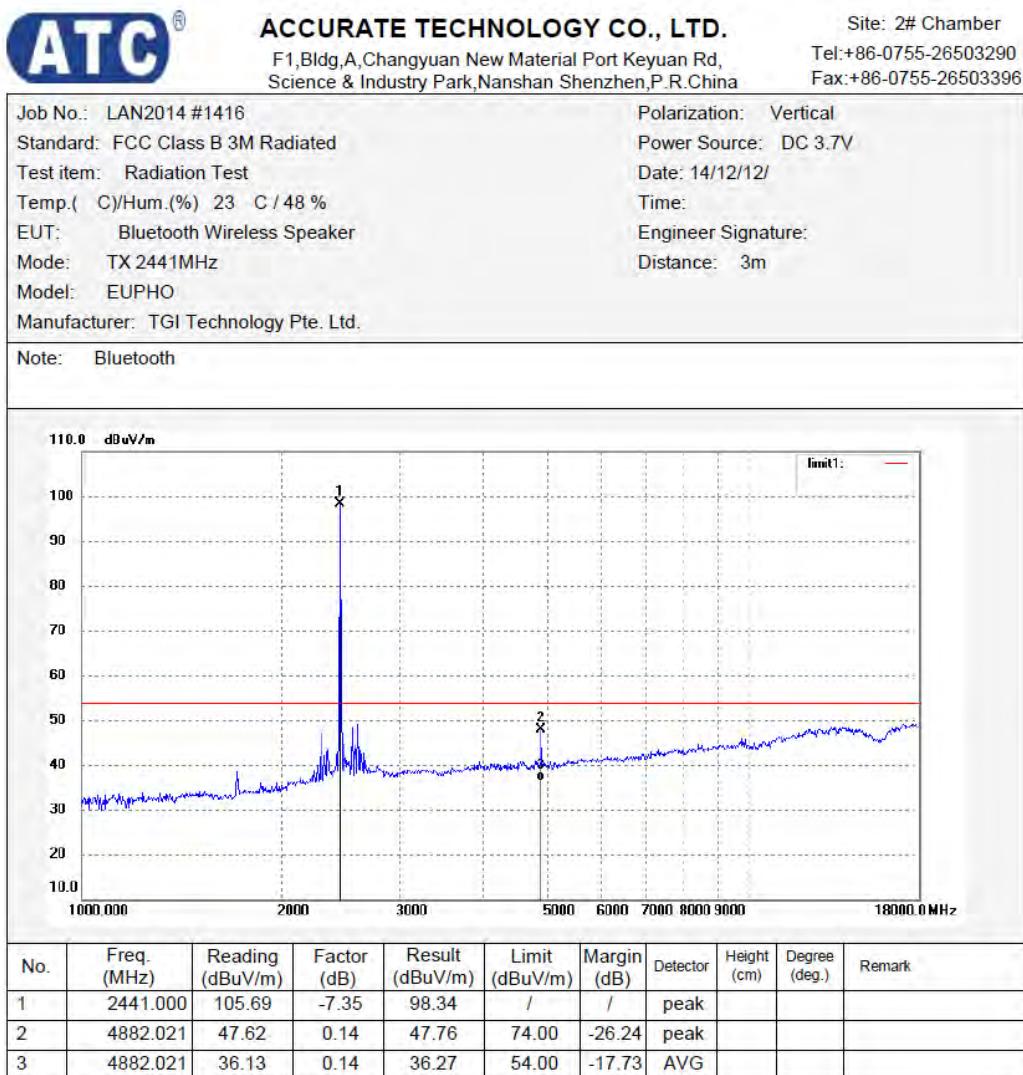


Figure 15: Test figure of spurious emissions, mode A.2, Horizontal polarity (18GHz – 25GHz)

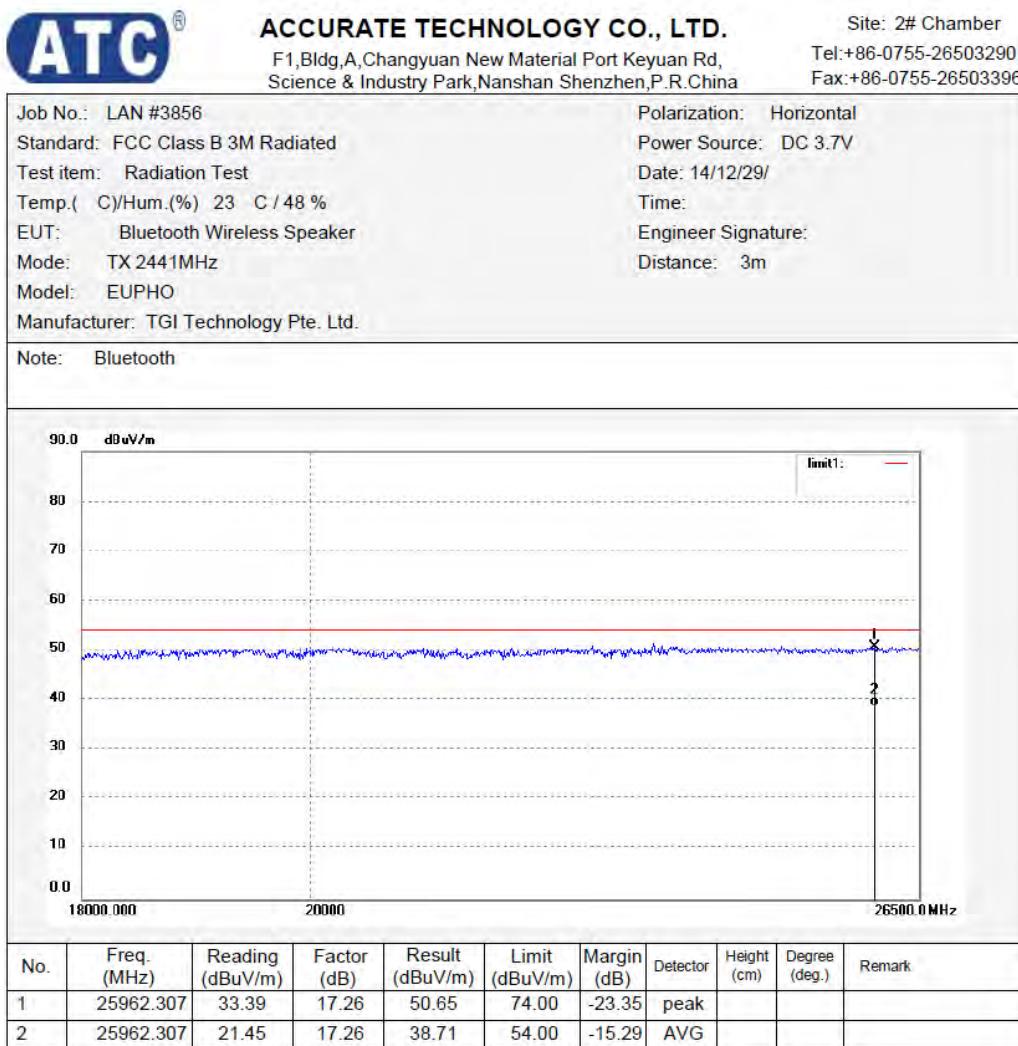


Figure 16: Test figure of spurious emissions, mode A.2, Vertical polarity (18GHz – 25GHz)

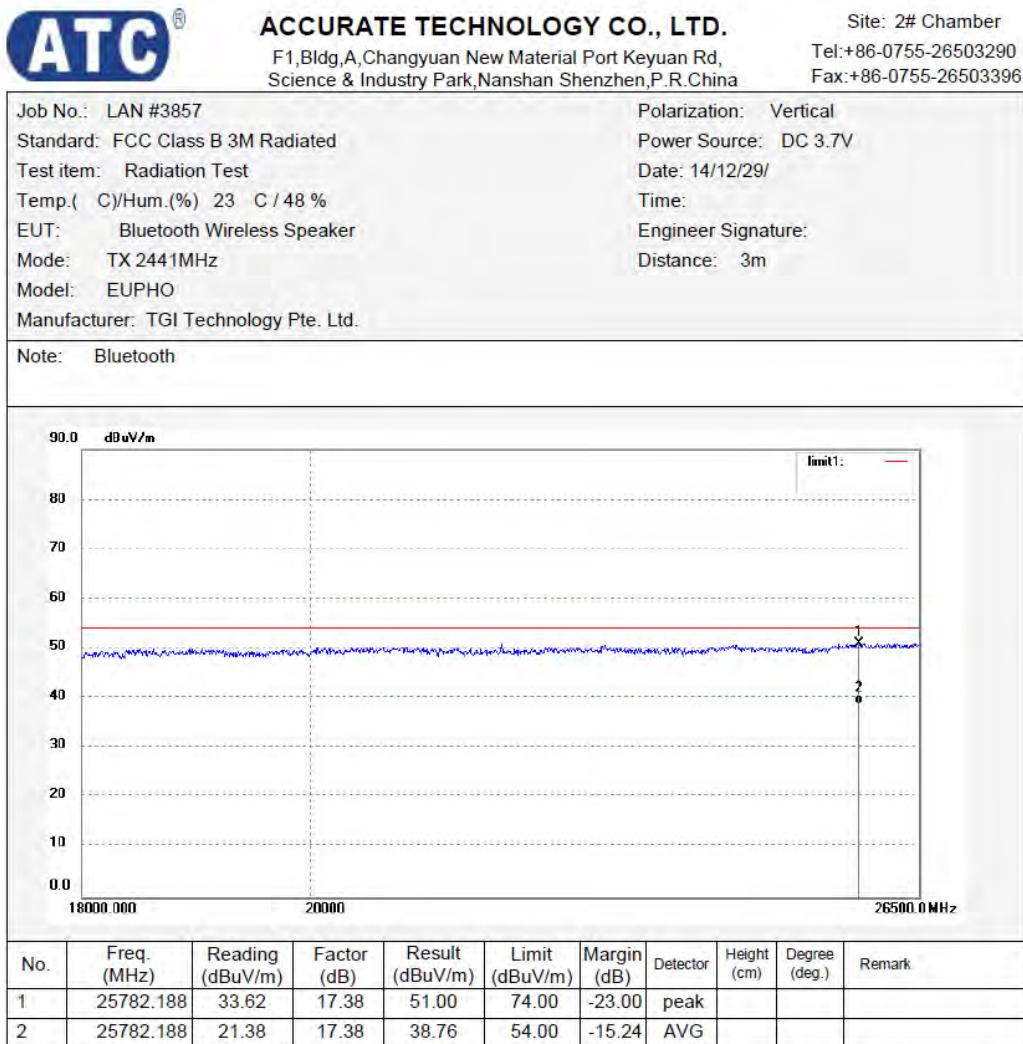


Figure 17: Test figure of spurious emissions, mode A.3, Horizontal polarity (9kHz – 30MHz)

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2480MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: X
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF Time	Transducer Bandw.
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

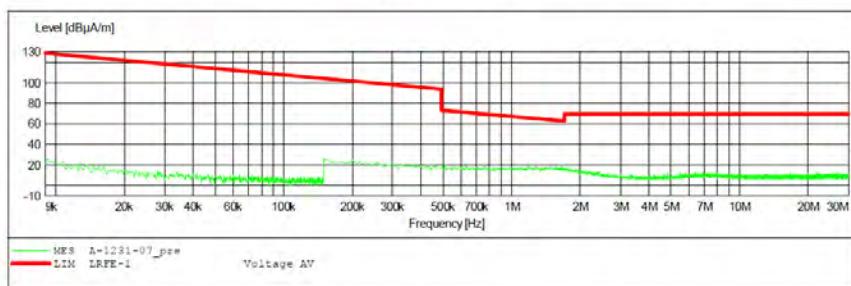


Figure 18: Test figure of spurious emissions, mode A.3, Vertical polarity (9kHz – 30MHz)

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2480MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF Time	Transducer Bandw.
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

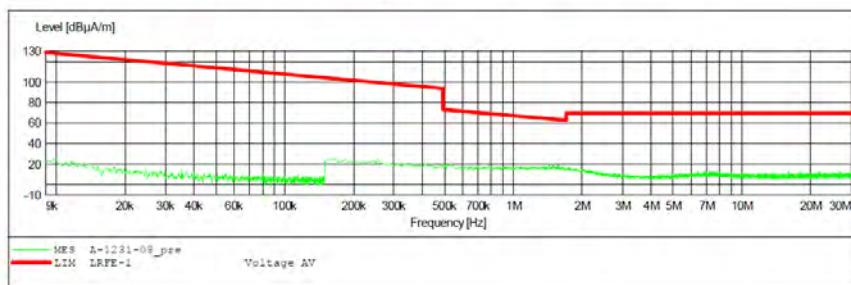


Figure 19: Test figure of spurious emissions, mode A.3, Horizontal polarity (30MHz – 1GHz)

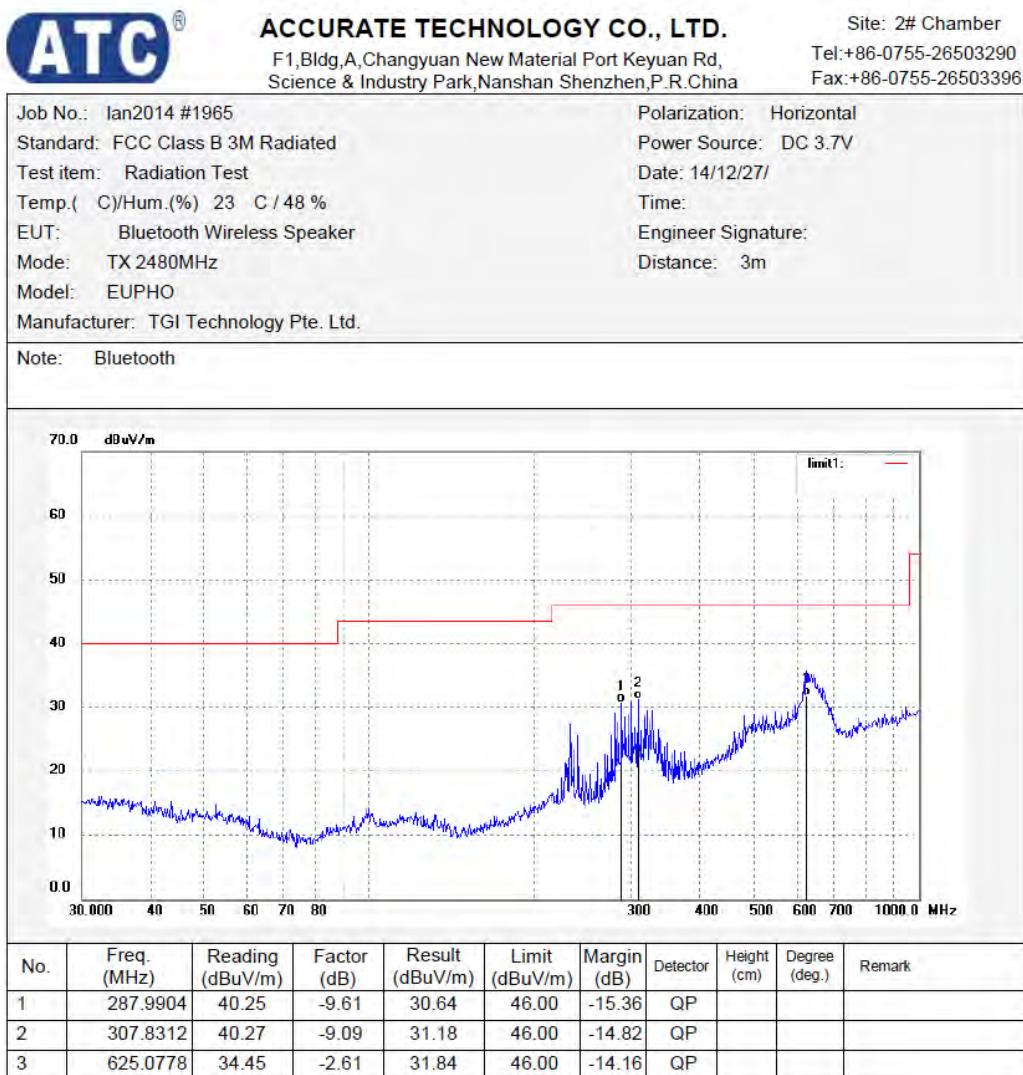


Figure 20: Test figure of spurious emissions, mode A.3, Vertical polarity (30MHz – 1GHz)

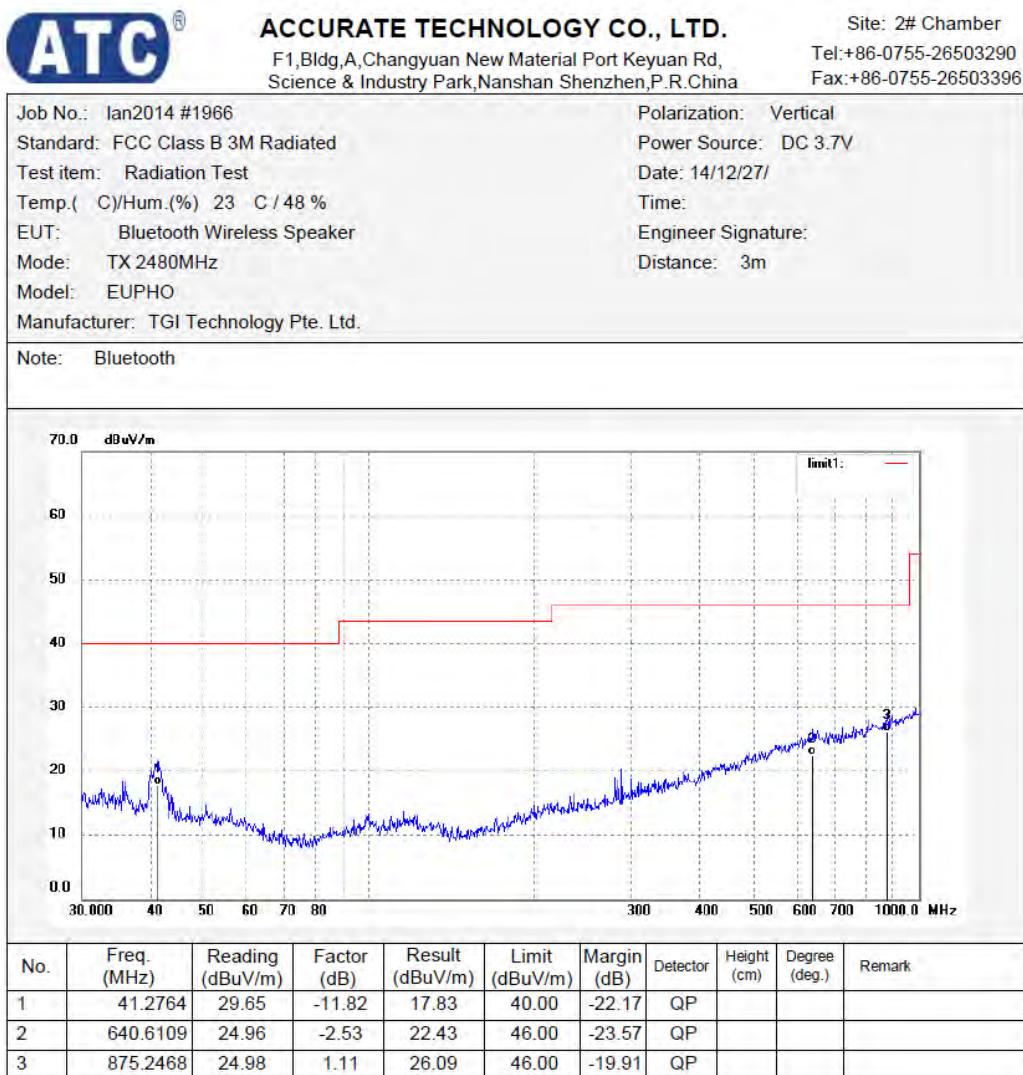


Figure 21: Test figure of spurious emissions, mode A.3, Horizontal polarity (1GHz –18GHz)

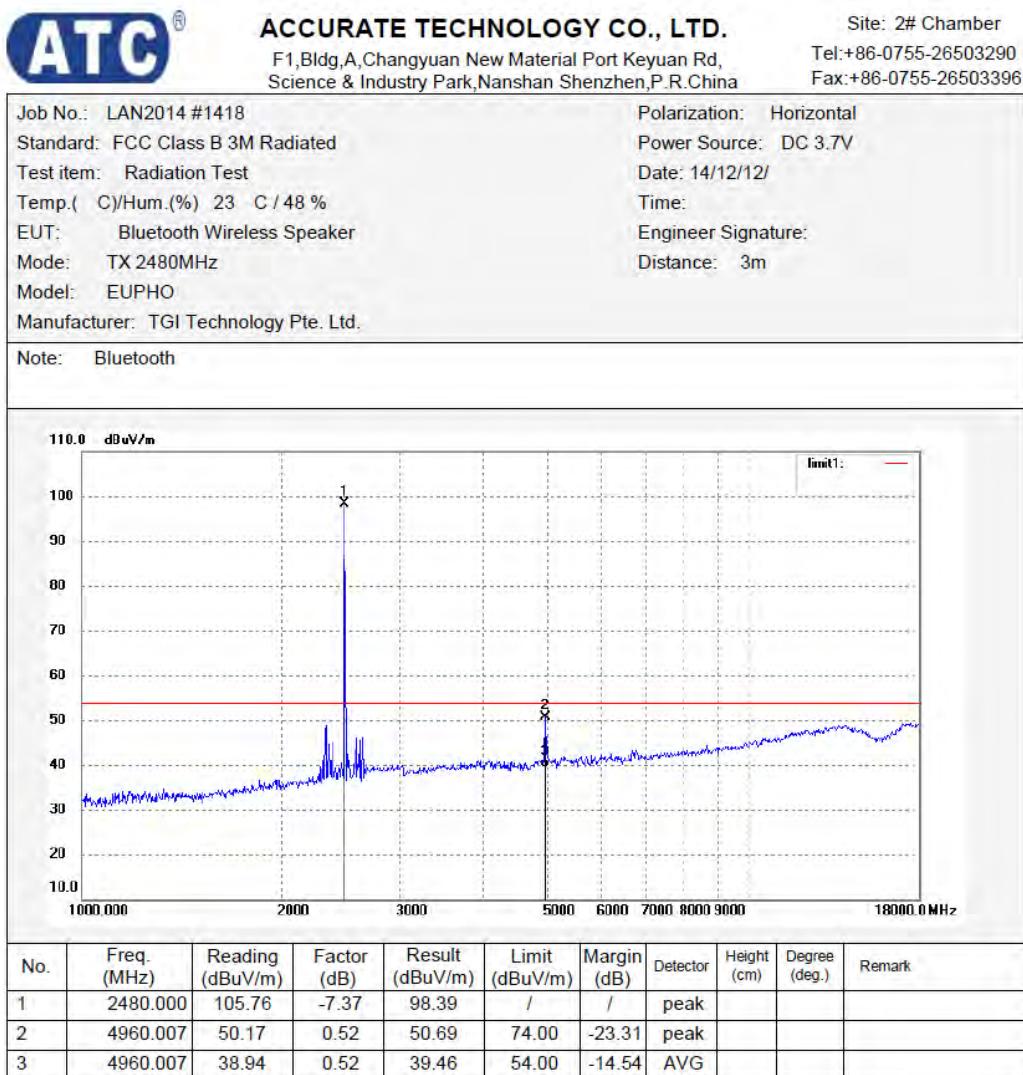


Figure 22: Test figure of spurious emissions, mode A.3, Vertical polarity (1GHz – 18GHz)

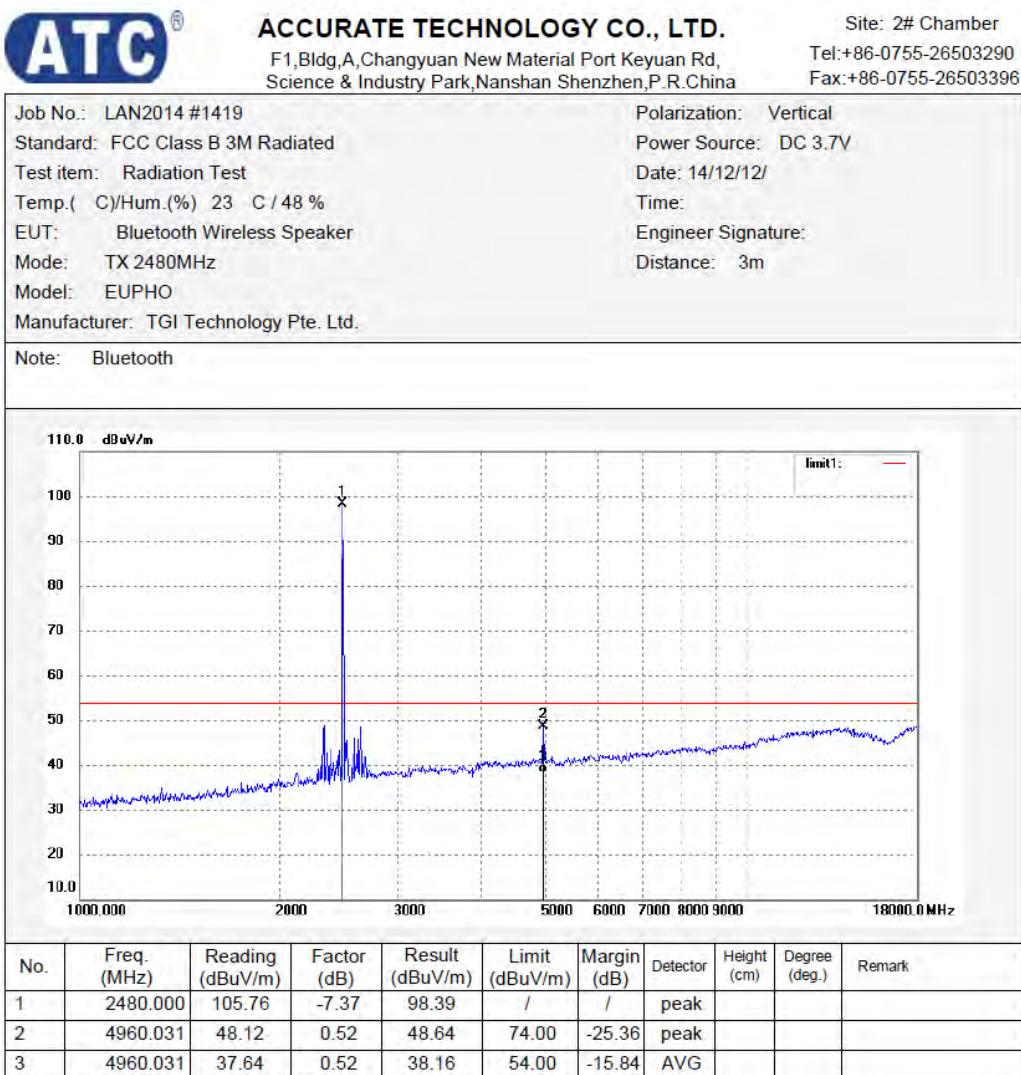


Figure 23: Test figure of spurious emissions, mode A.3, Horizontal polarity (18GHz –25GHz)

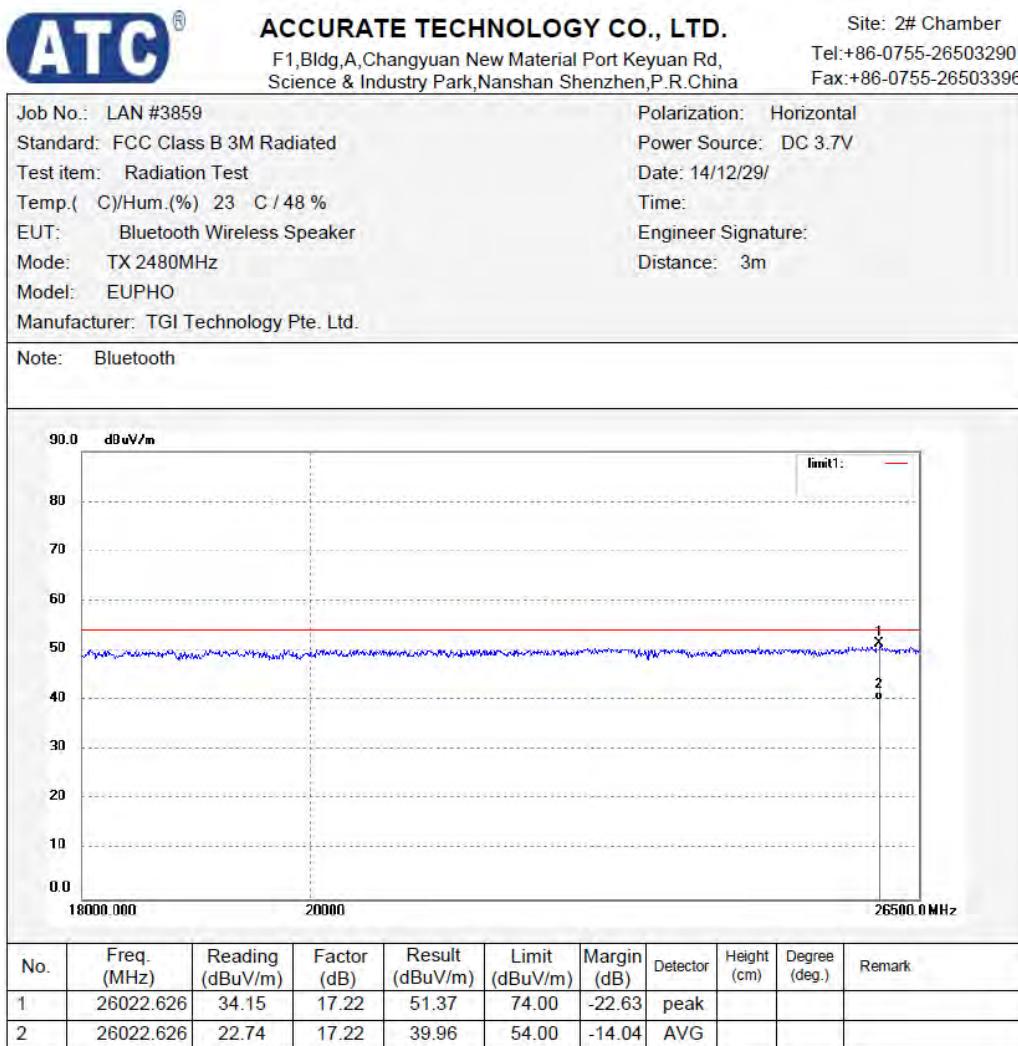


Figure 24: Test figure of spurious emissions, mode A.3, Vertical polarity (18GHz – 25GHz)

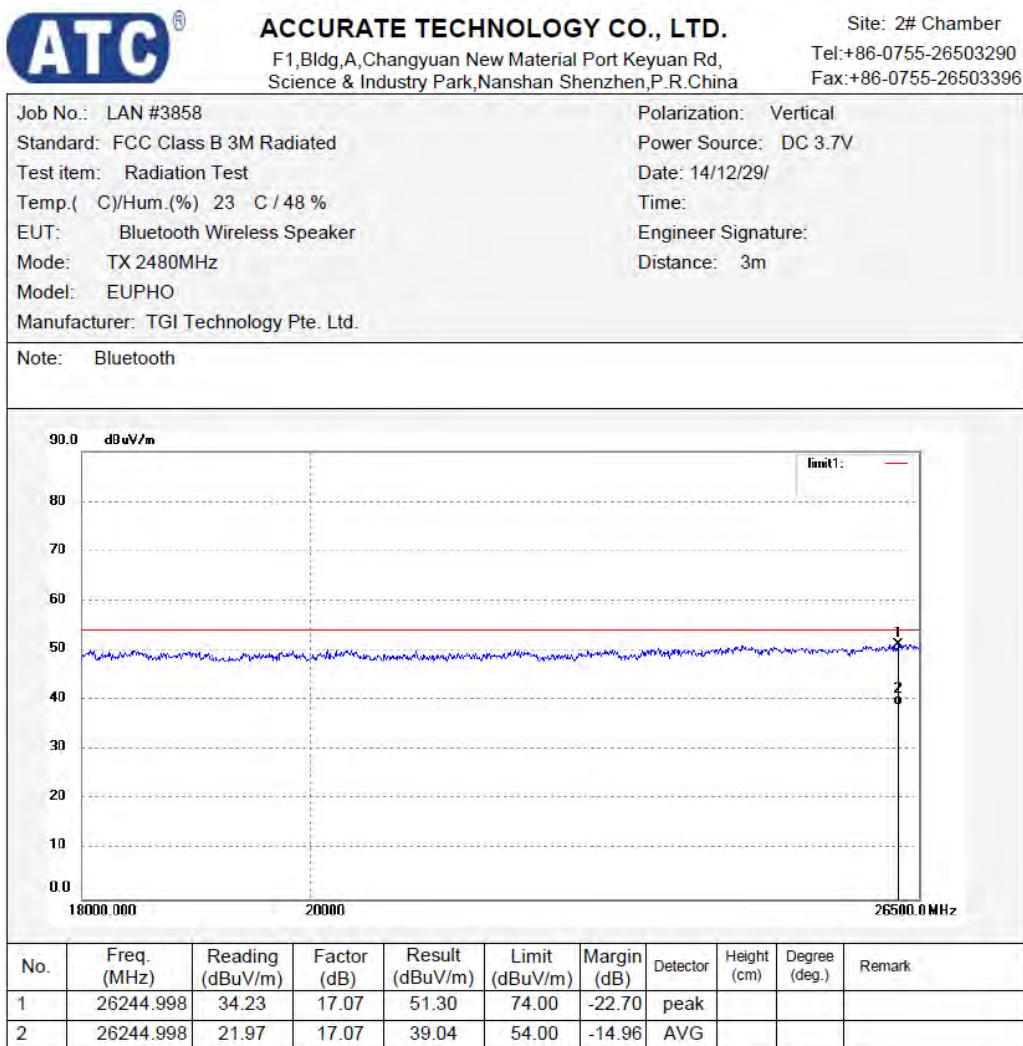


Figure 25: Test figure of spurious emissions, mode B.1, Horizontal polarity (9kHz – 30MHz)

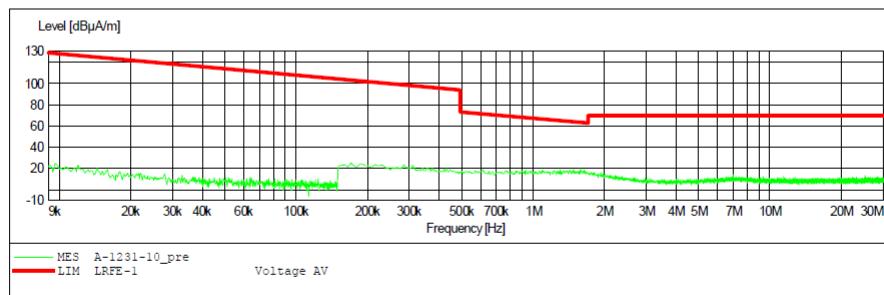
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2402MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: X
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



**Figure 26: Test figure of spurious emissions, mode B.1, Vertical polarity
(9kHz – 30MHz)**

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2402MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE_Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

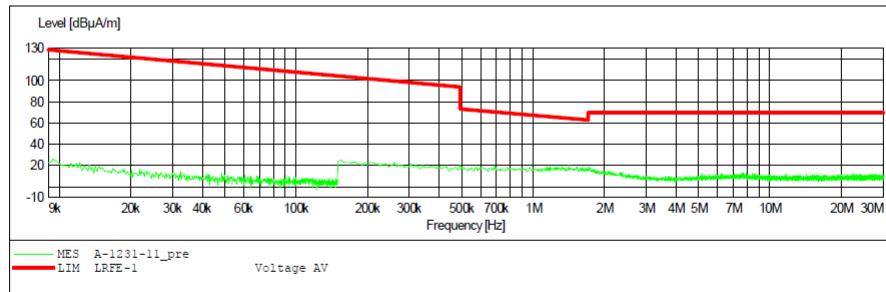


Figure 27: Test figure of spurious emissions, mode B.1, Horizontal polarity (30MHz – 1GHz)

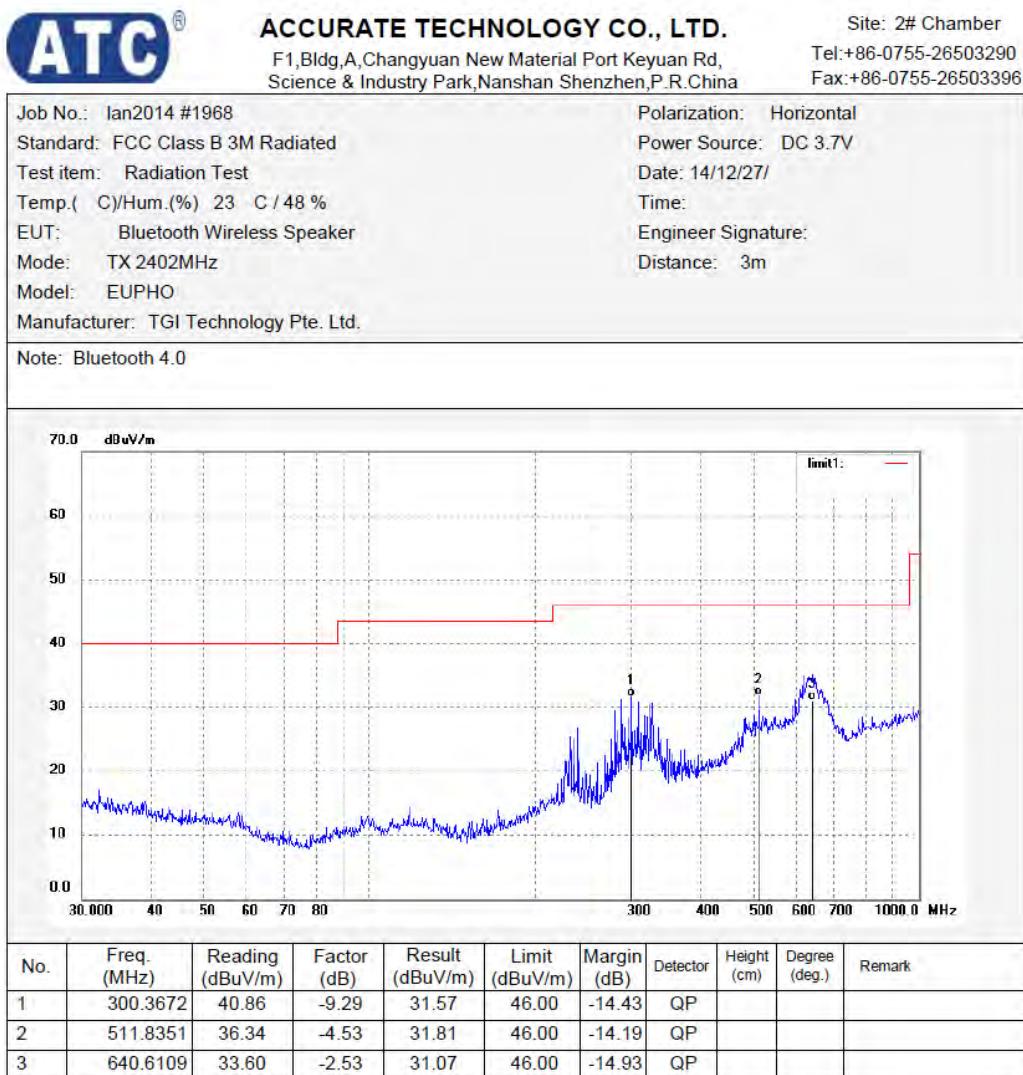


Figure 28: Test figure of spurious emissions, mode B.1, Vertical polarity (30MHz – 1GHz)

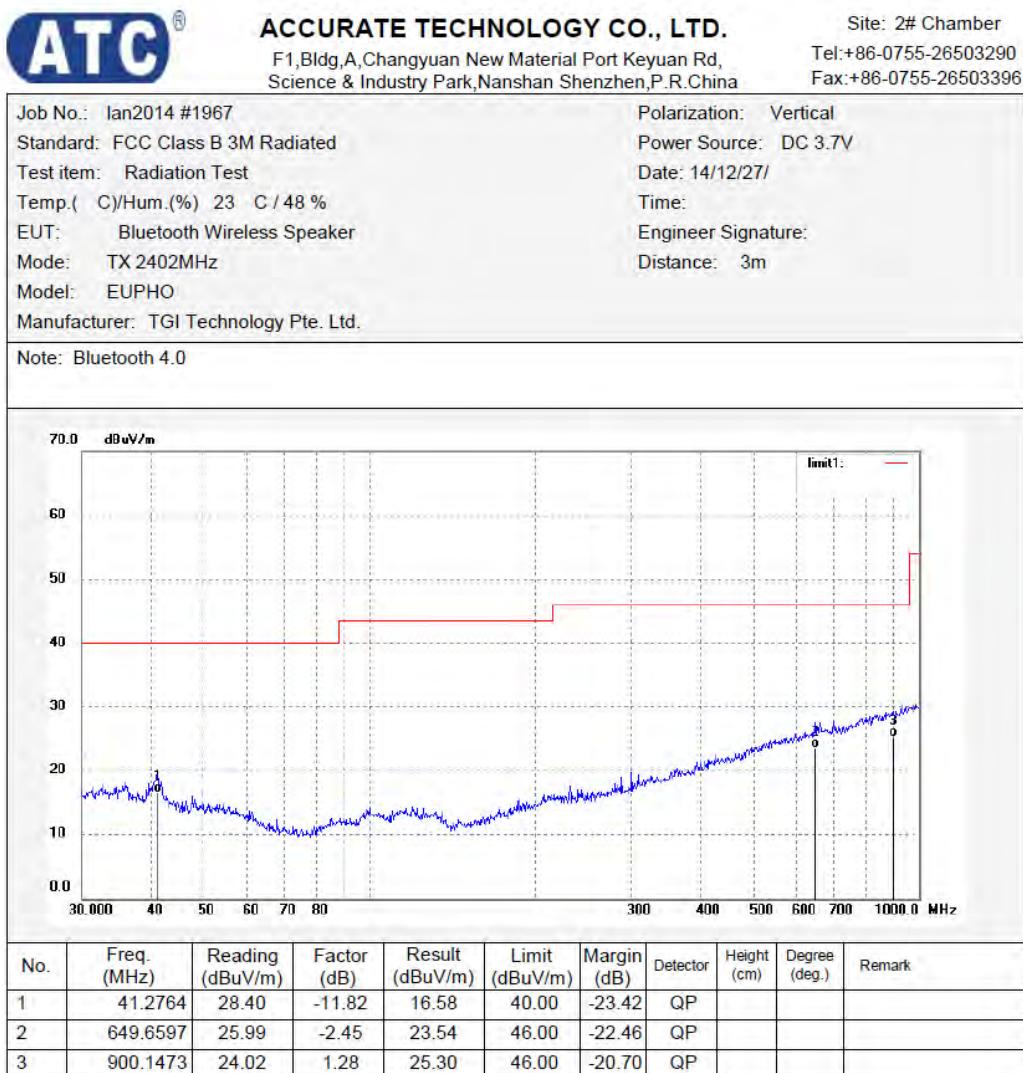


Figure 29: Test figure of spurious emissions, mode B.1, Horizontal polarity (1GHz –18GHz)

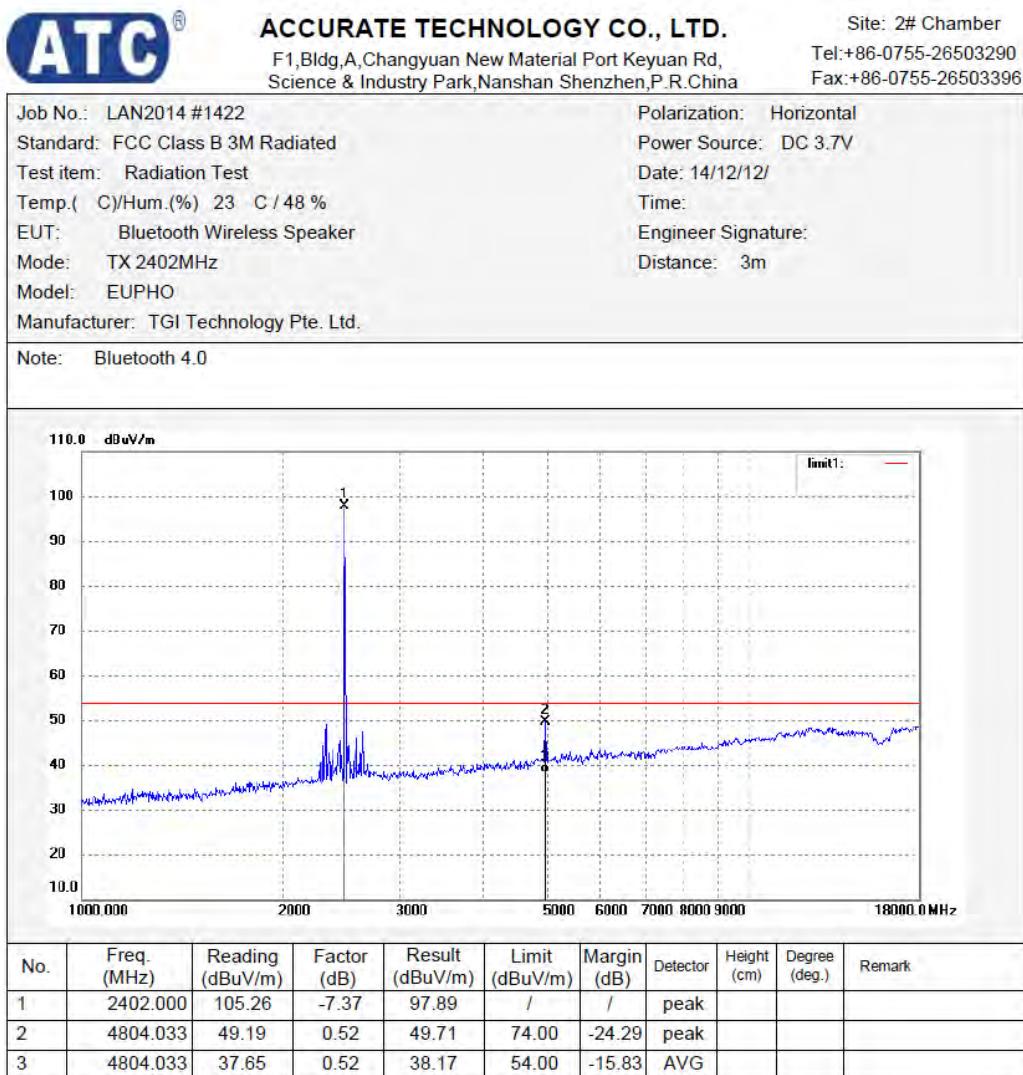


Figure 30: Test figure of spurious emissions, mode B.1, Vertical polarity (1GHz – 18GHz)

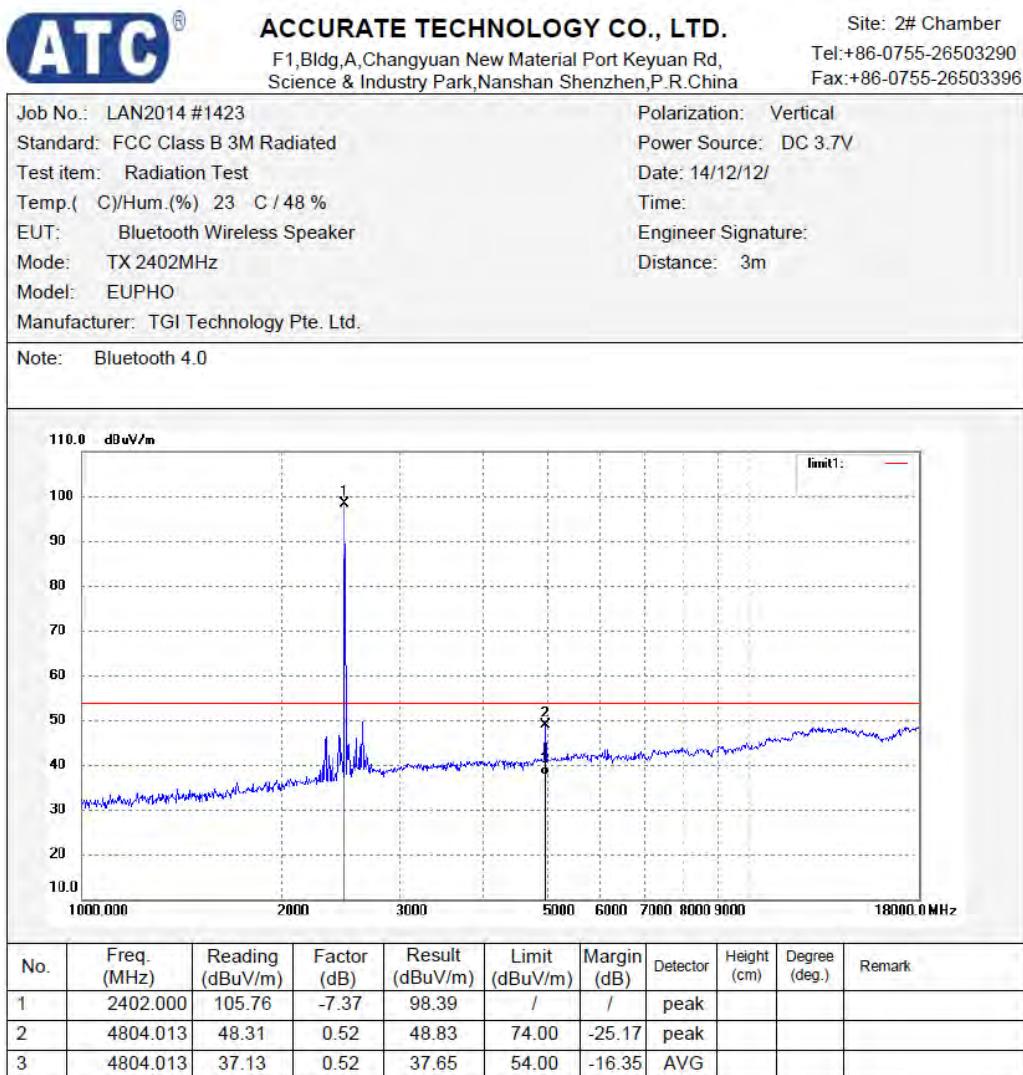


Figure 31: Test figure of spurious emissions, mode B.1, Horizontal polarity (18GHz –25GHz)

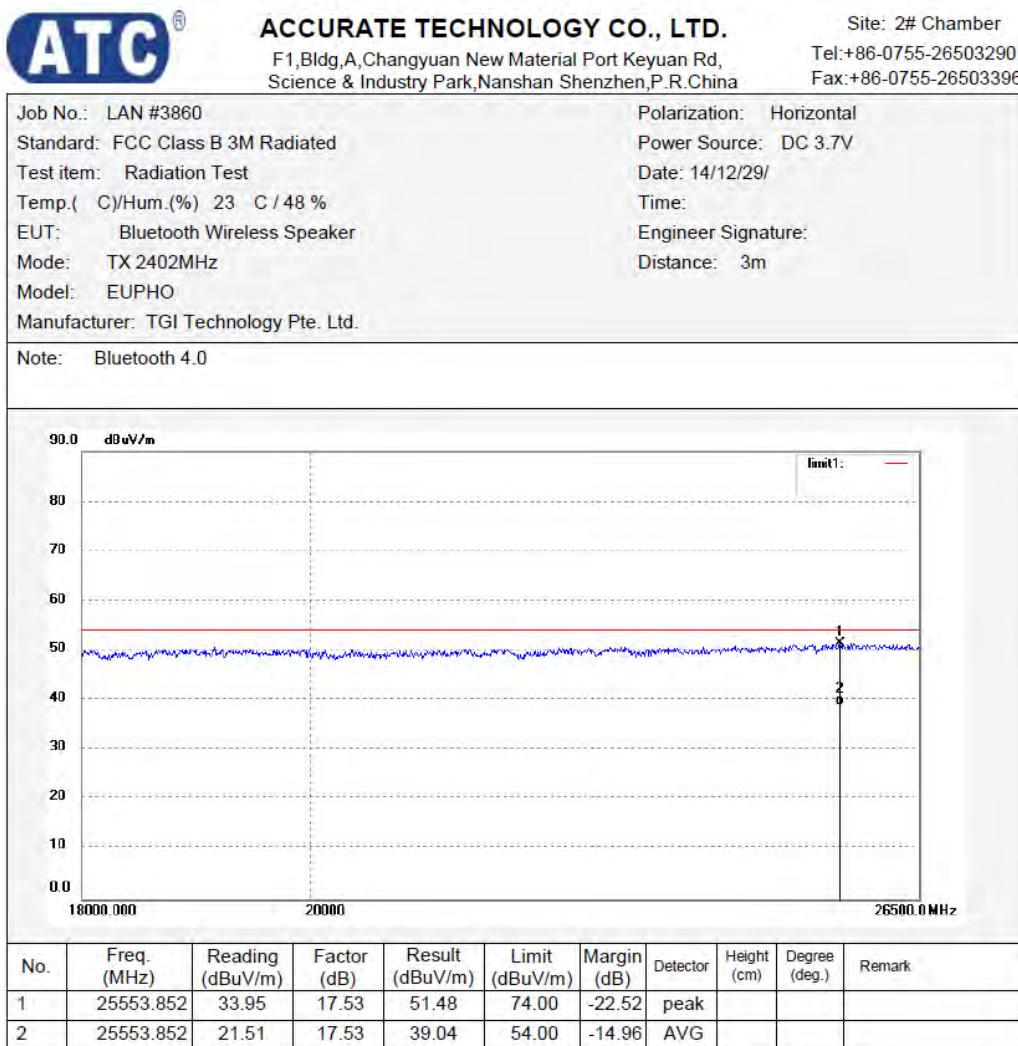


Figure 32: Test figure of spurious emissions, mode B.1, Vertical polarity (18GHz – 25GHz)

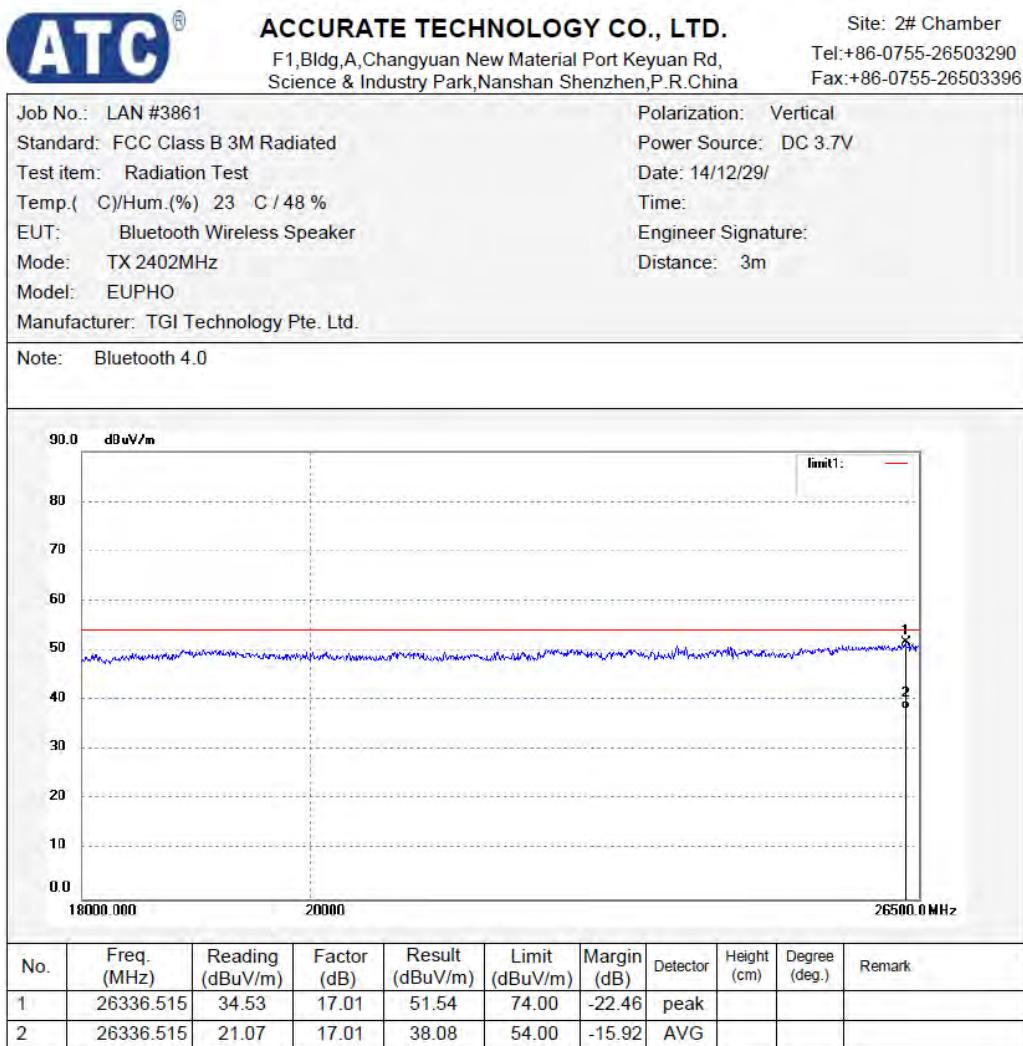


Figure 33: Test figure of spurious emissions, mode B.2, Horizontal polarity (9kHz – 30MHz)

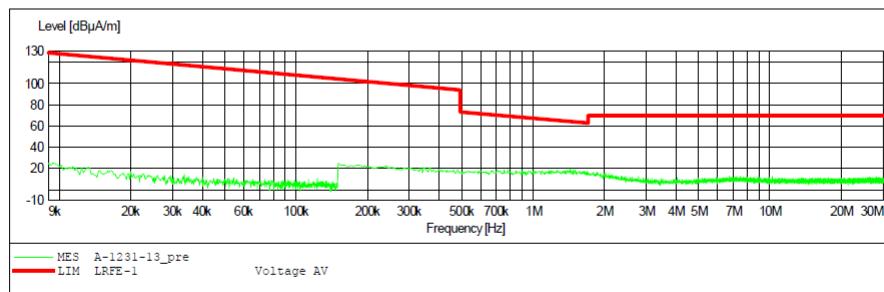
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2440MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: X
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start	Stop	Step	Detector	Meas.	IF	Transducer
			_SUB_STD_VTERM2 1.70			
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



**Figure 34: Test figure of spurious emissions, mode B.2, Vertical polarity
(9kHz – 30MHz)**

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2440MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE_Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

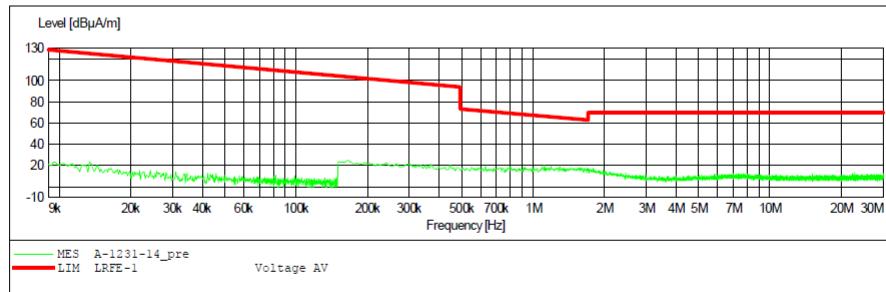


Figure 35: Test figure of spurious emissions, mode B.2, Horizontal polarity (30MHz – 1GHz)

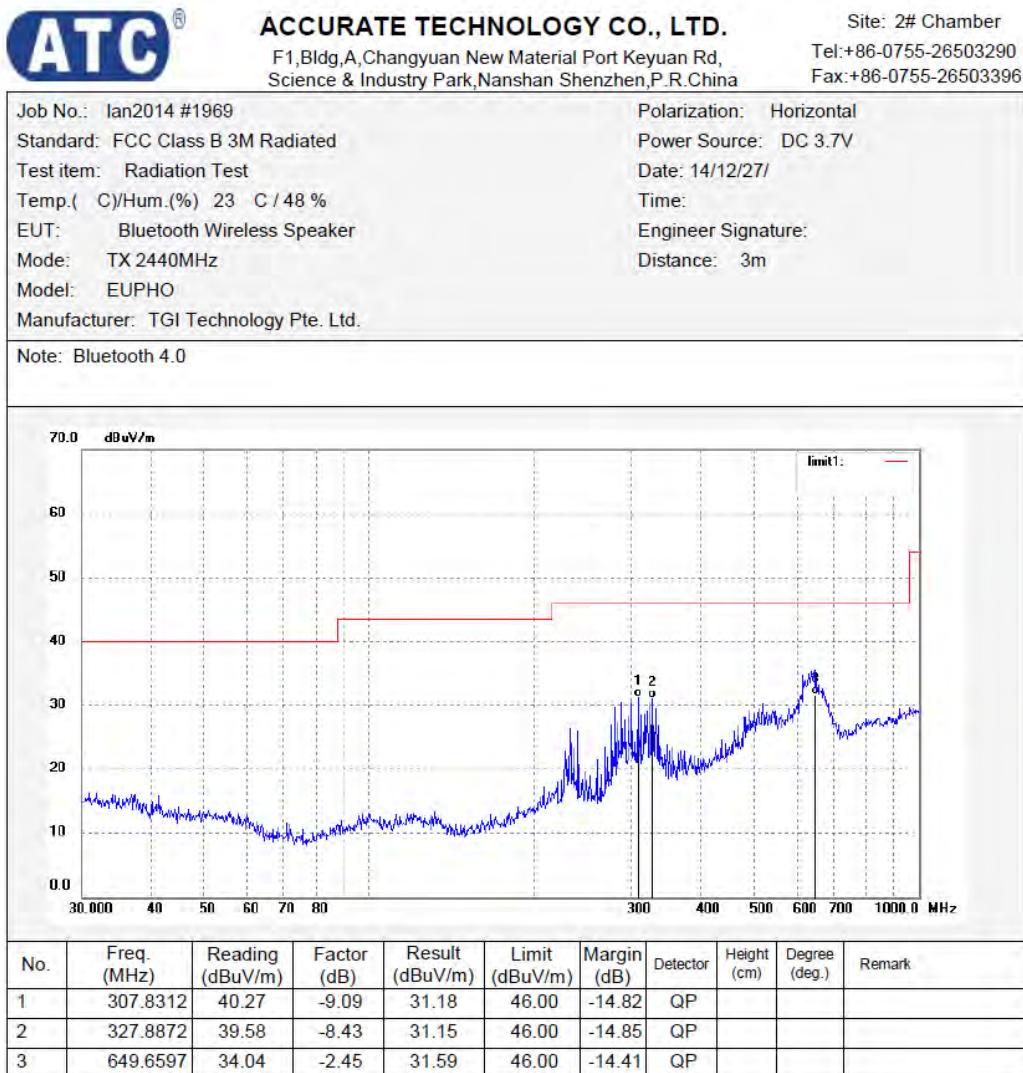


Figure 36: Test figure of spurious emissions, mode B.2, Vertical polarity (30MHz – 1GHz)

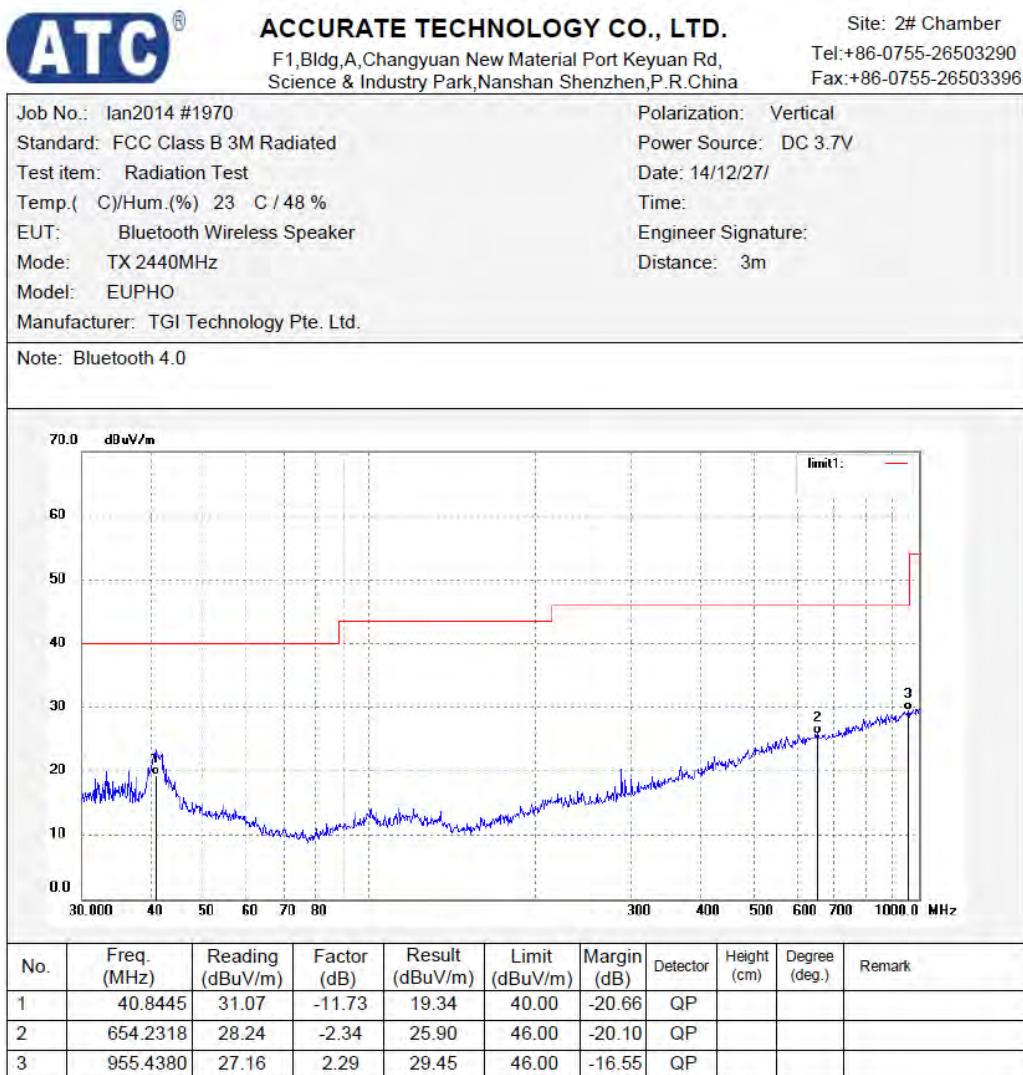


Figure 37: Test figure of spurious emissions, mode B.2, Horizontal polarity (1GHz – 18GHz)

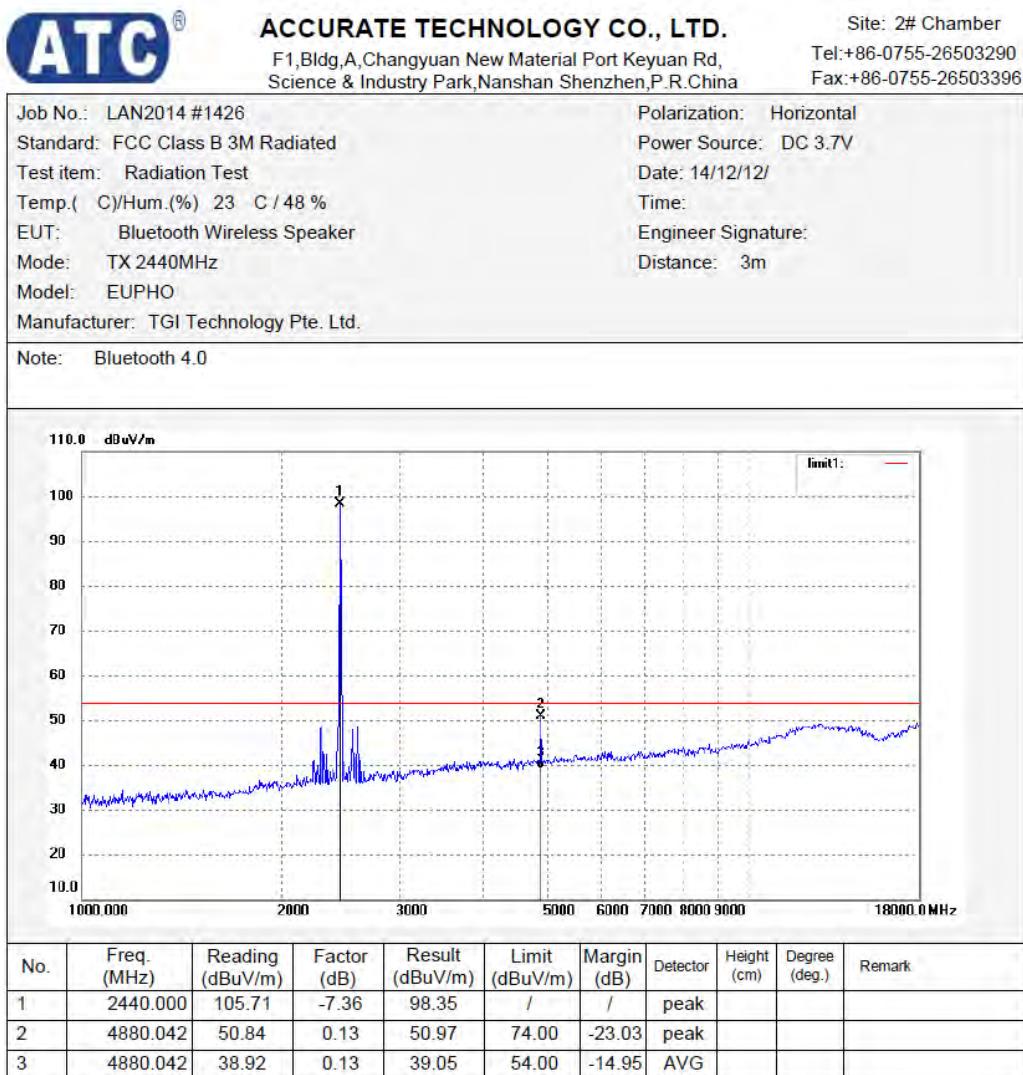


Figure 38: Test figure of spurious emissions, mode B.2, Vertical polarity (1GHz – 18GHz)

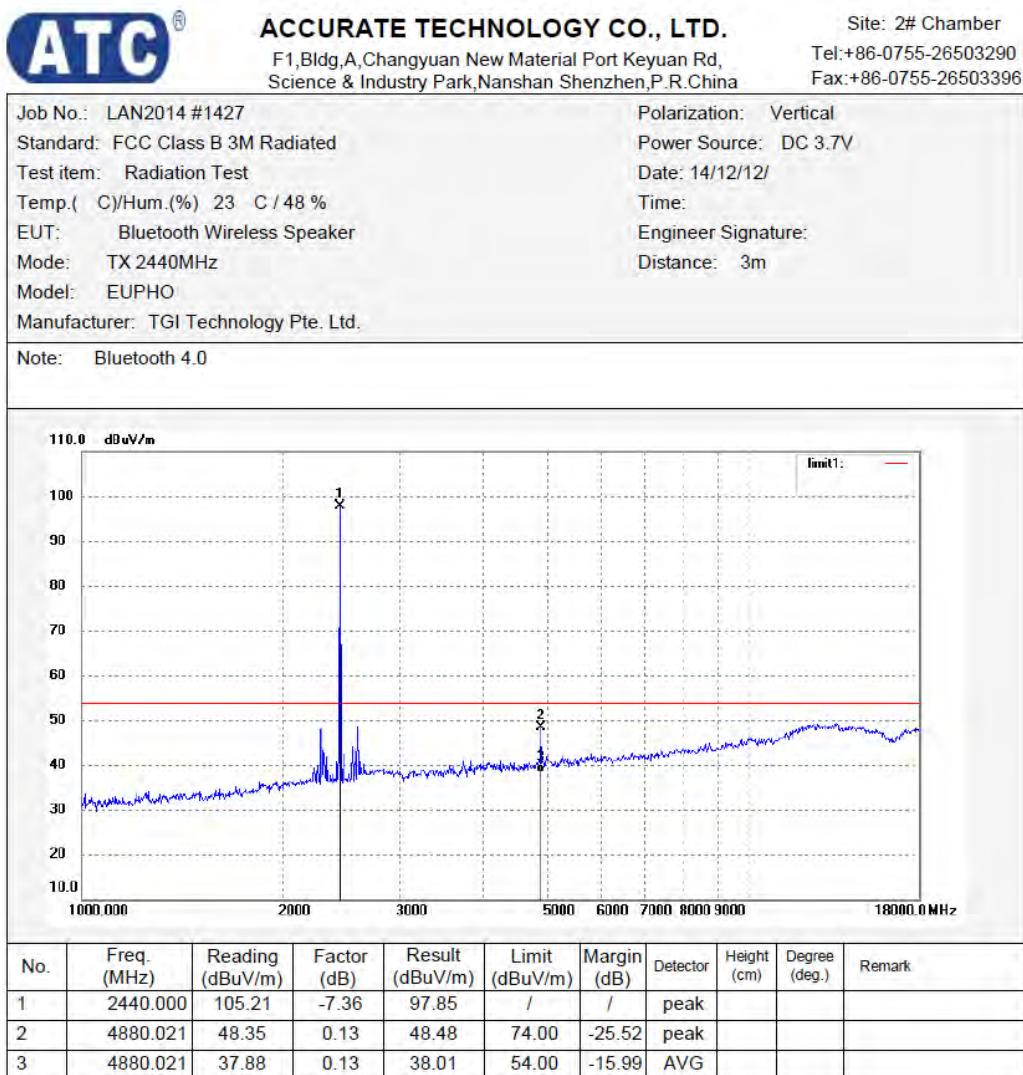


Figure 39: Test figure of spurious emissions, mode B.2, Horizontal polarity (18GHz – 25GHz)

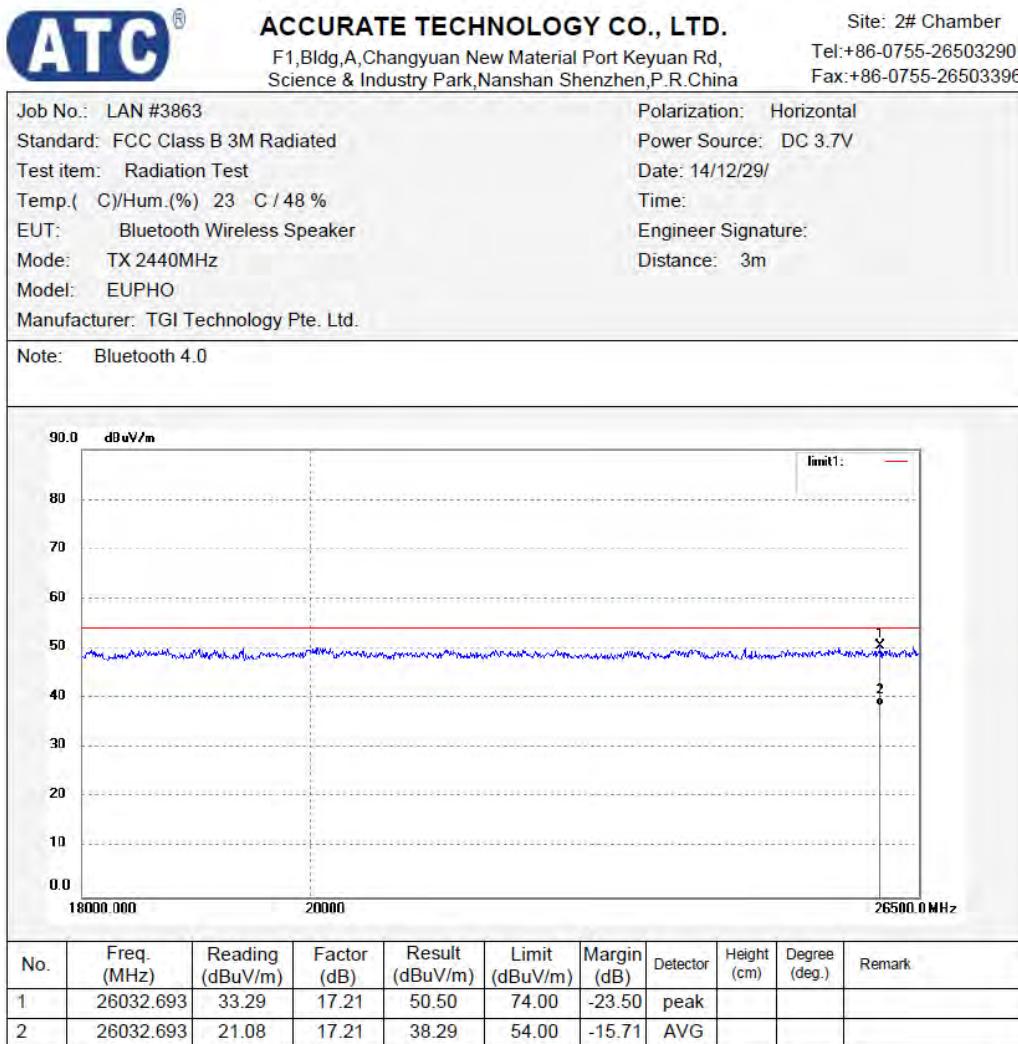


Figure 40: Test figure of spurious emissions, mode B.2, Vertical polarity (18GHz – 25GHz)

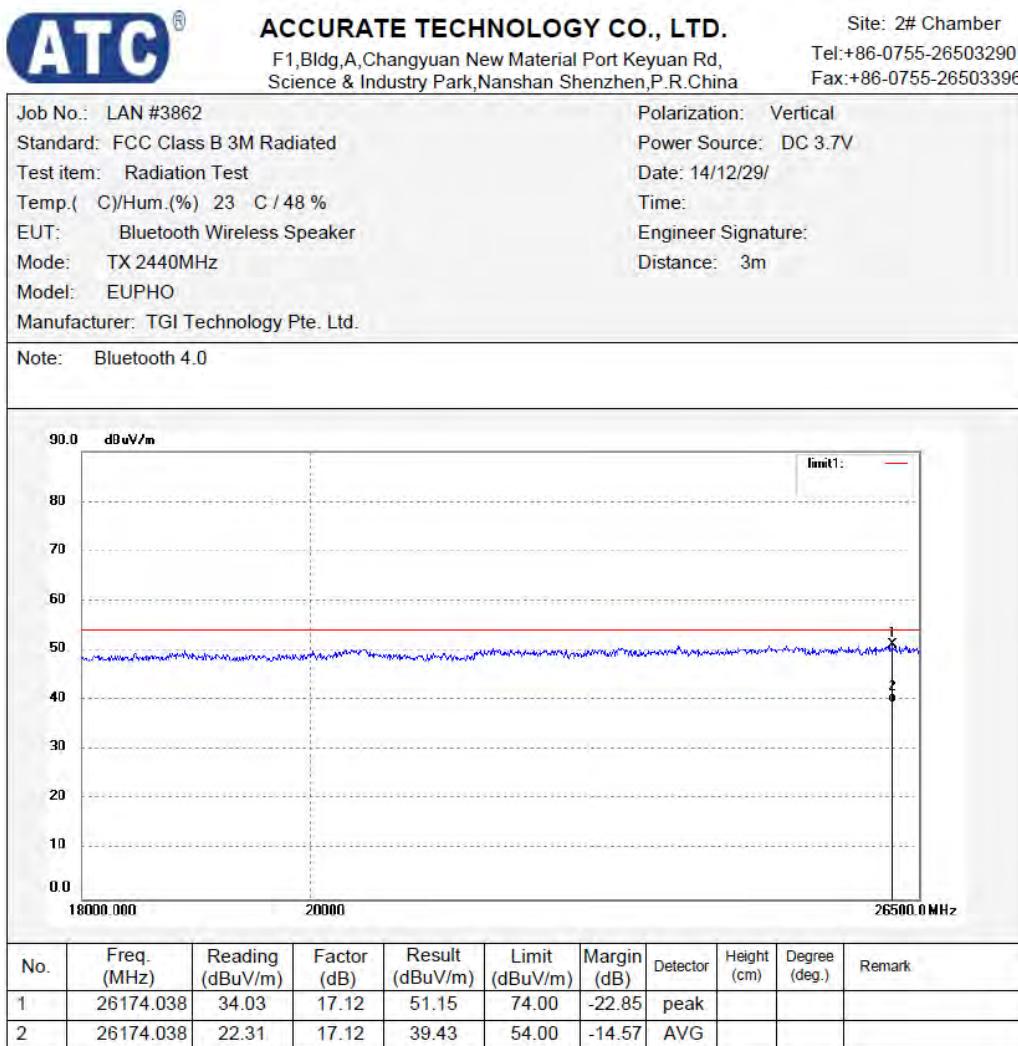


Figure 41: Test figure of spurious emissions, mode B.3, Horizontal polarity (9kHz – 30MHz)

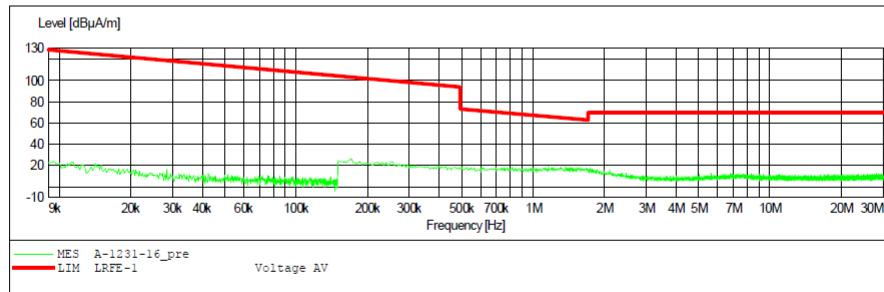
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2480MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: X
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE Fin"

Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



**Figure 42: Test figure of spurious emissions, mode B.3, Vertical polarity
(9kHz – 30MHz)**

ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3m Radiated

EUT: Bluetooth Wireless Speaker M/N:EUPHO
Manufacturer: TGI Technology Pte. Ltd.
Operating Condition: TX 2480MHz
Test Site: 1#Shielding Room
Operator: LAN
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2014-12-31 /

SCAN TABLE: "LFRE_Fin"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

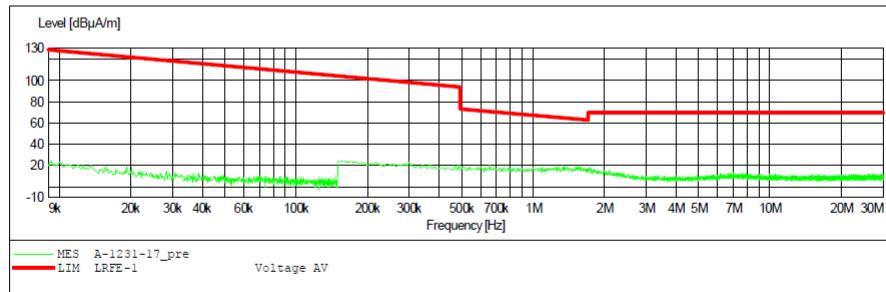


Figure 43: Test figure of spurious emissions, mode B.3, Horizontal polarity (30MHz – 1GHz)

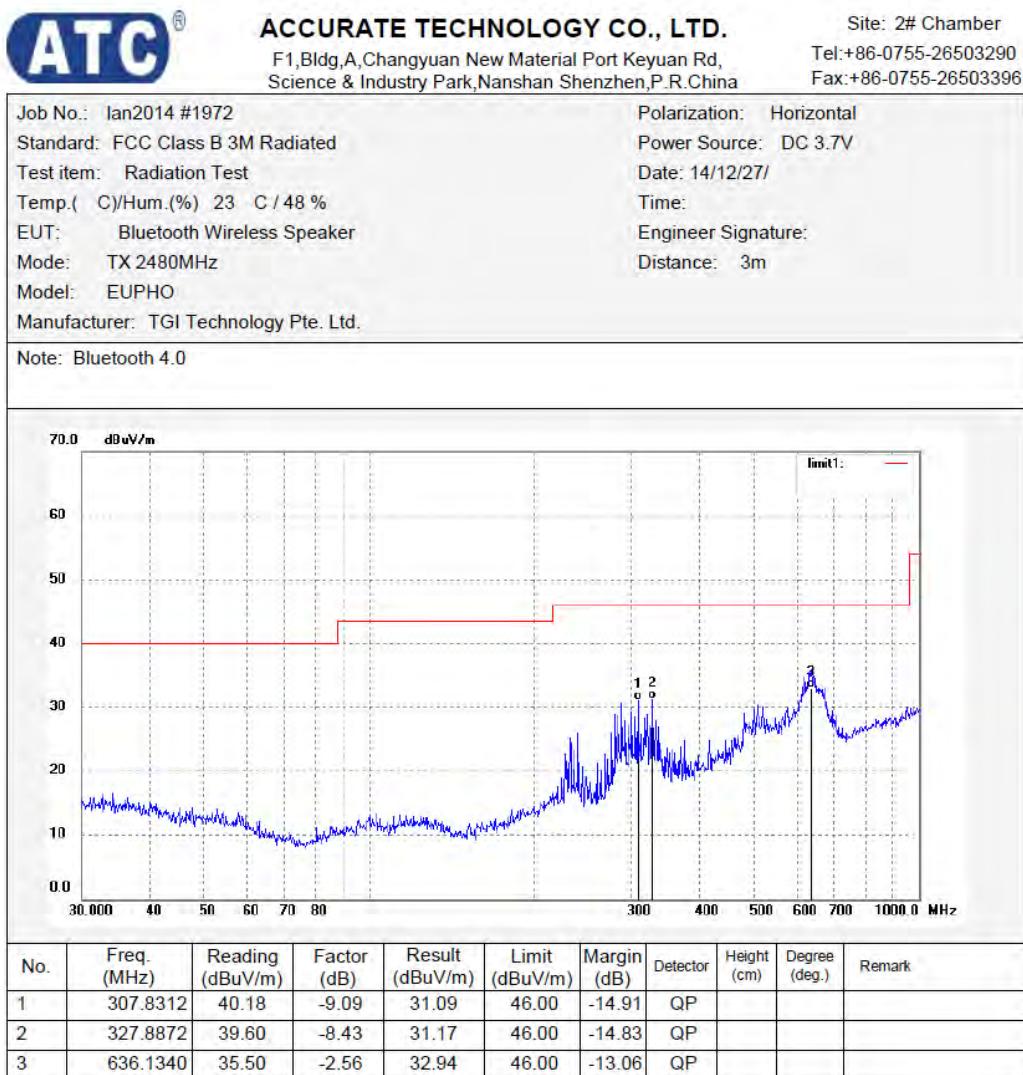


Figure 44: Test figure of spurious emissions, mode B.3, Vertical polarity (30MHz – 1GHz)

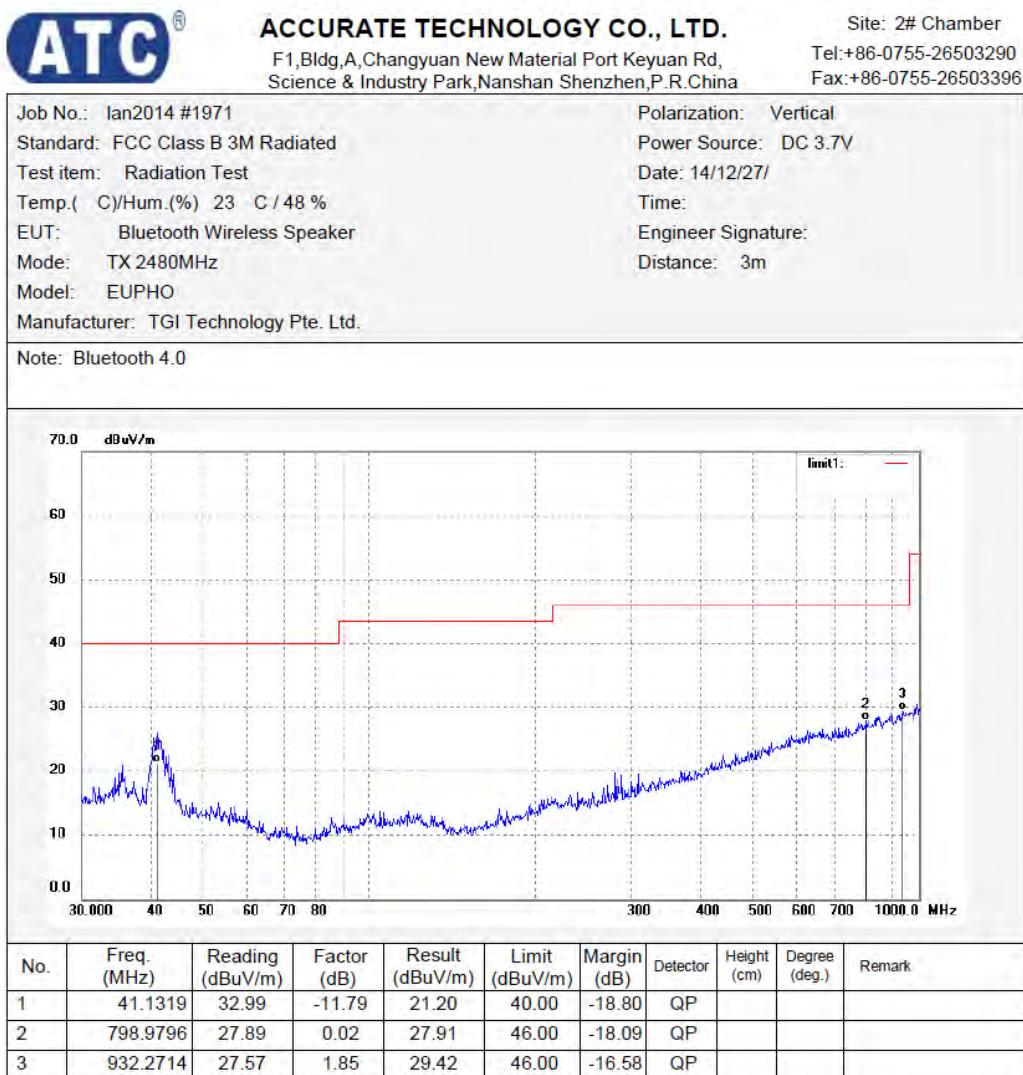


Figure 45: Test figure of spurious emissions, mode B.3, Horizontal polarity (1GHz –18GHz)

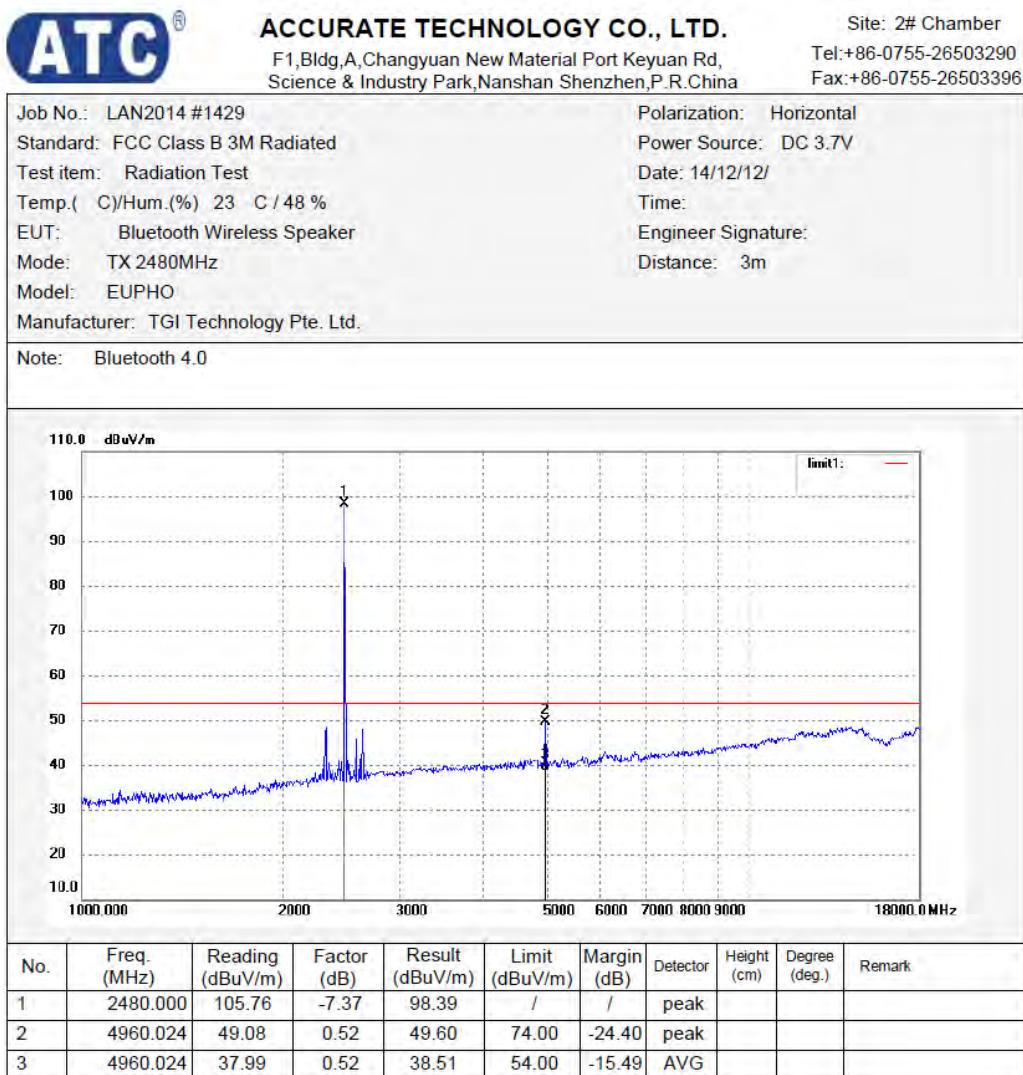


Figure 46: Test figure of spurious emissions, mode B.3, Vertical polarity (1GHz – 18GHz)

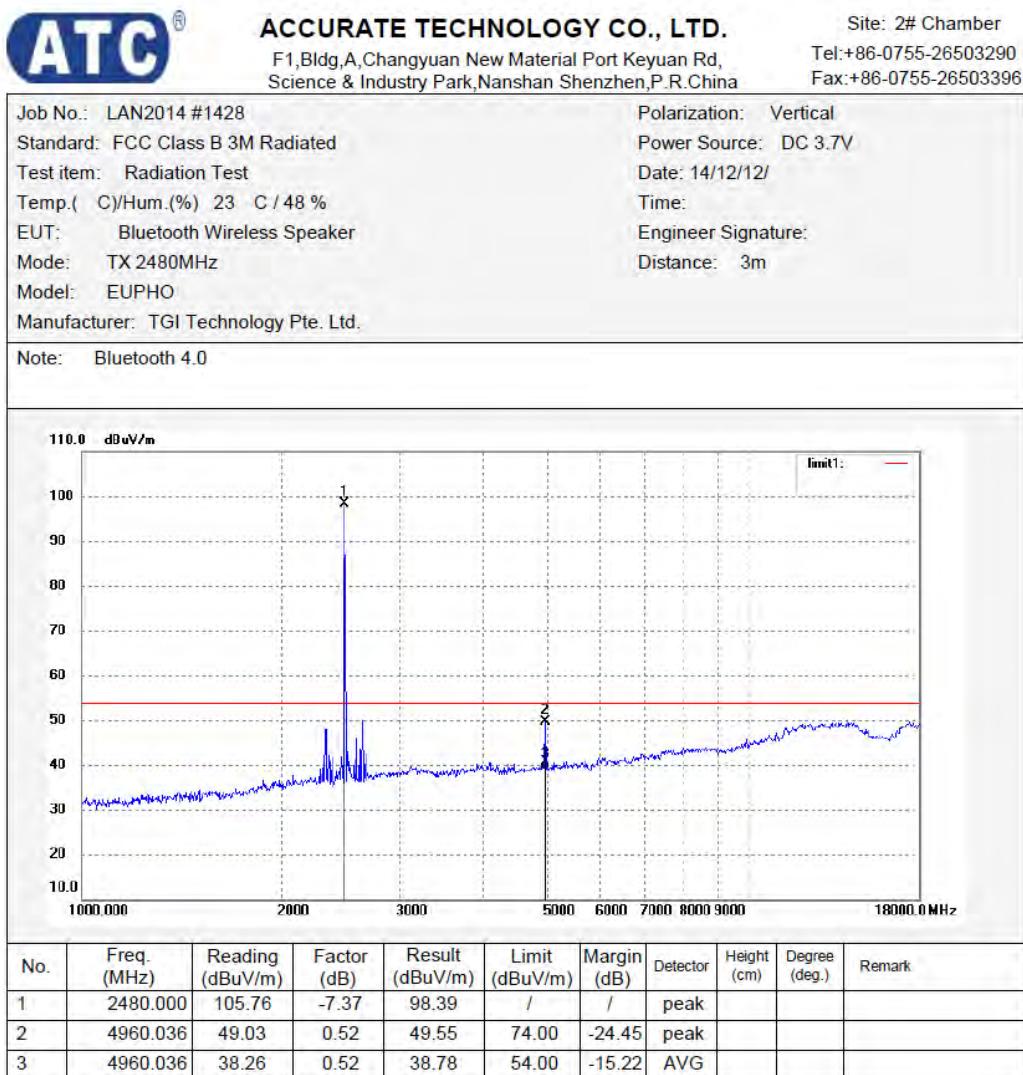


Figure 47: Test figure of spurious emissions, mode B.3, Horizontal polarity (18GHz –25GHz)

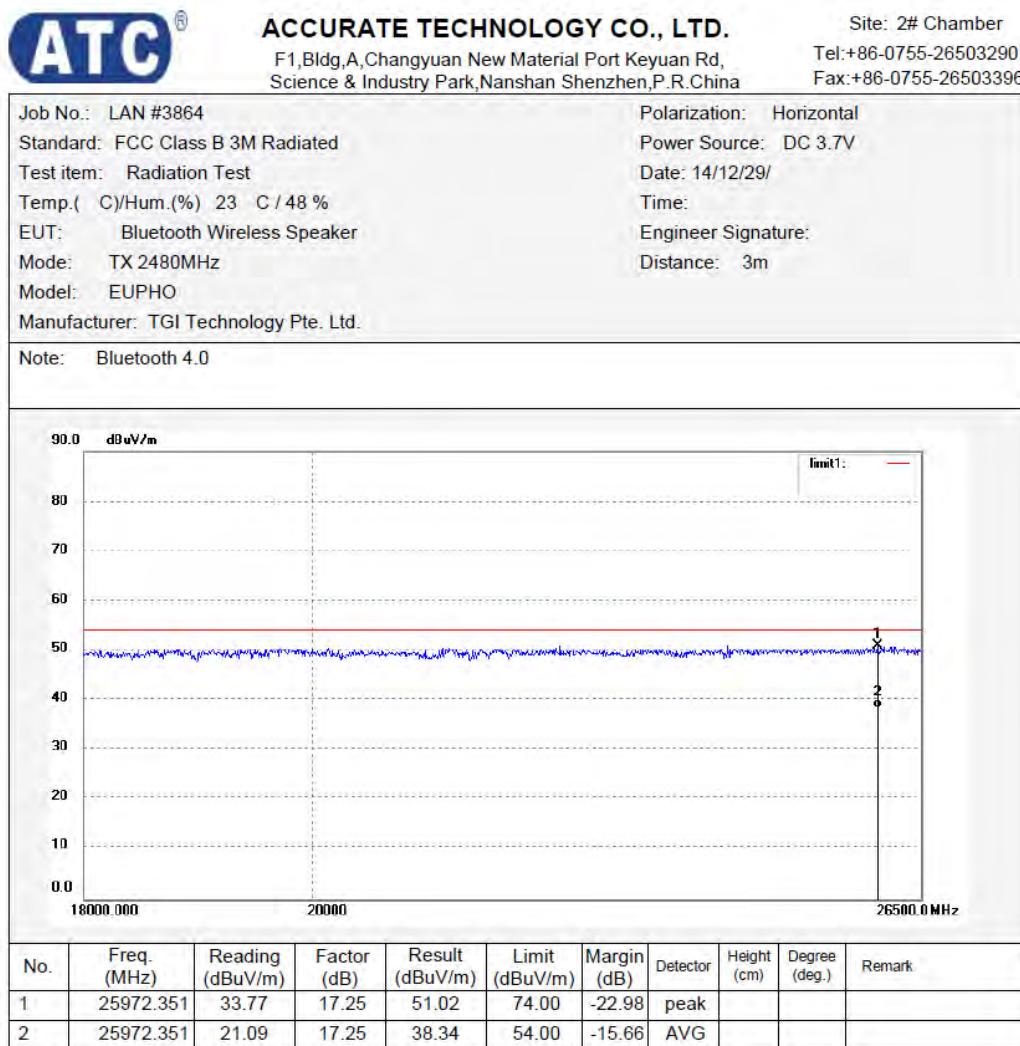


Figure 48: Test figure of spurious emissions, mode B.3, Vertical polarity (18GHz – 25GHz)



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

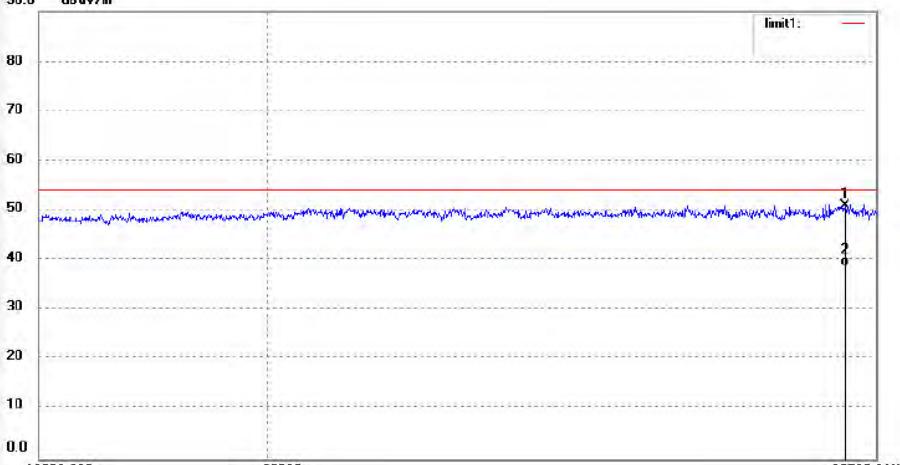
Job No.:	LAN #3865	Polarization:	Vertical							
Standard:	FCC Class B 3M Radiated	Power Source:	DC 3.7V							
Test item:	Radiation Test	Date:	14/12/29/							
Temp.(C)/Hum.(%)	23 C / 48 %	Time:								
EUT:	Bluetooth Wireless Speaker	Engineer Signature:								
Mode:	TX 2480MHz	Distance:	3m							
Model:	EUPHO									
Manufacturer:	TGI Technology Pte. Ltd.									
Note:	Bluetooth 4.0									
										
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26123.470	33.89	17.15	51.04	74.00	-22.96	peak			
2	26123.470	21.56	17.15	38.71	54.00	-15.29	AVG			

Figure 49: Test figure of Radiated emissions in restricted bands, Mode A.1, Horizontal

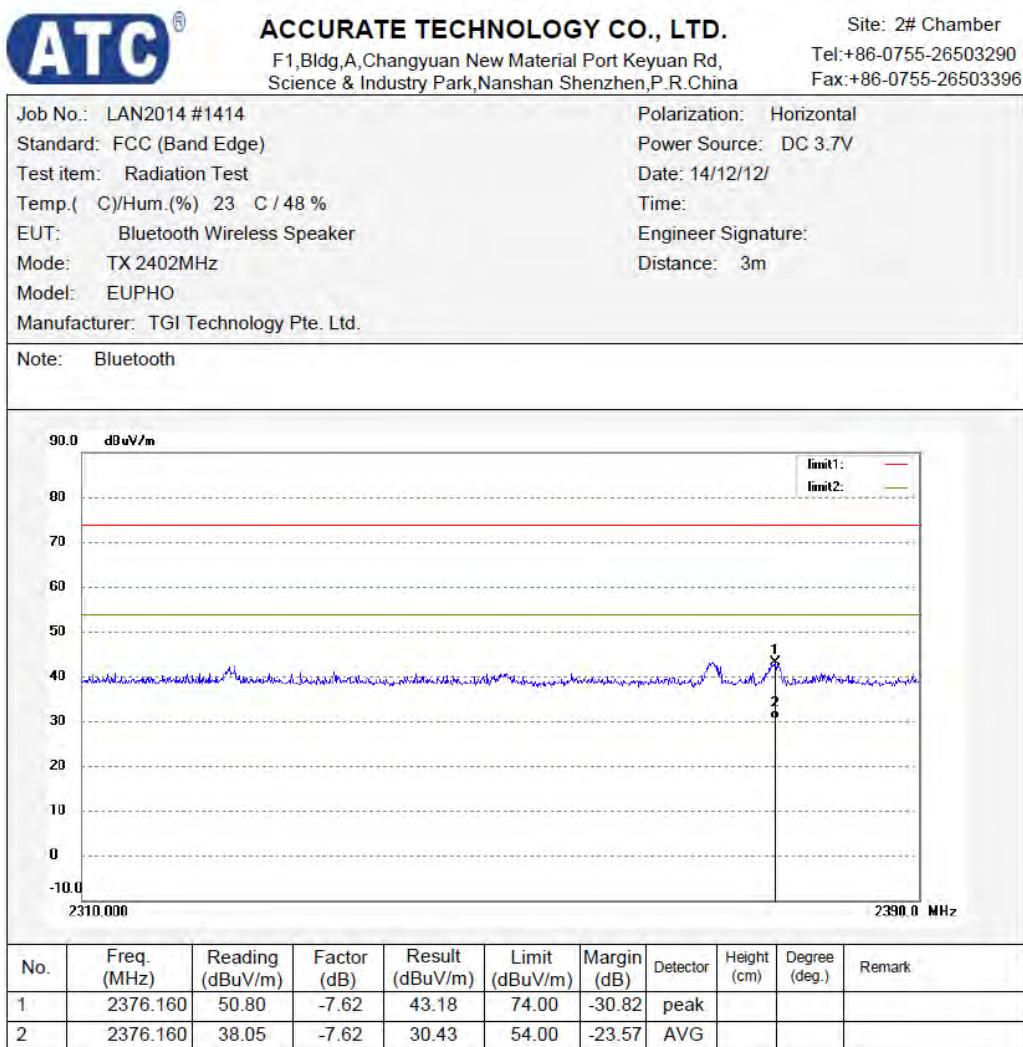


Figure 50: Test figure of Radiated emissions in restricted bands, Mode A.1, Vertical

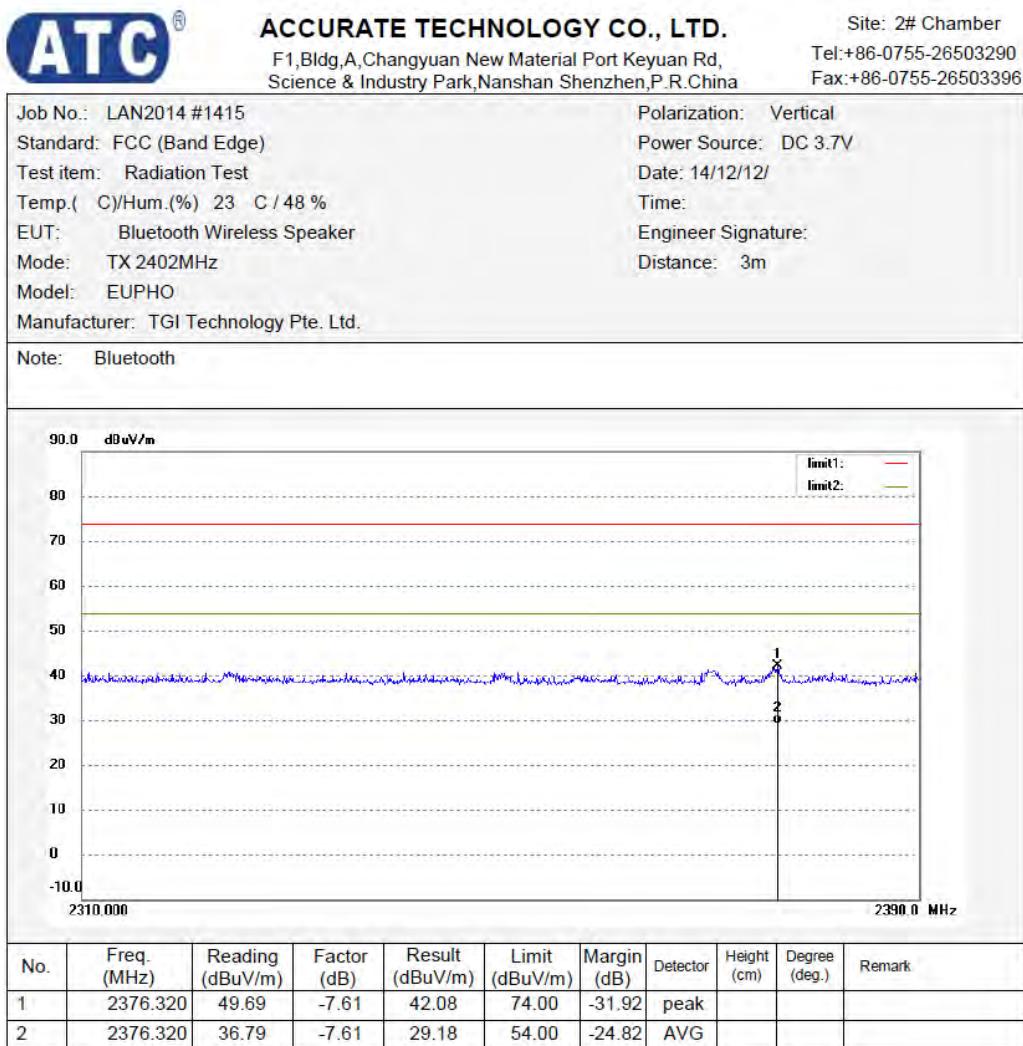


Figure 51: Test figure of Radiated emissions in restricted bands, Mode A.3, Horizontal

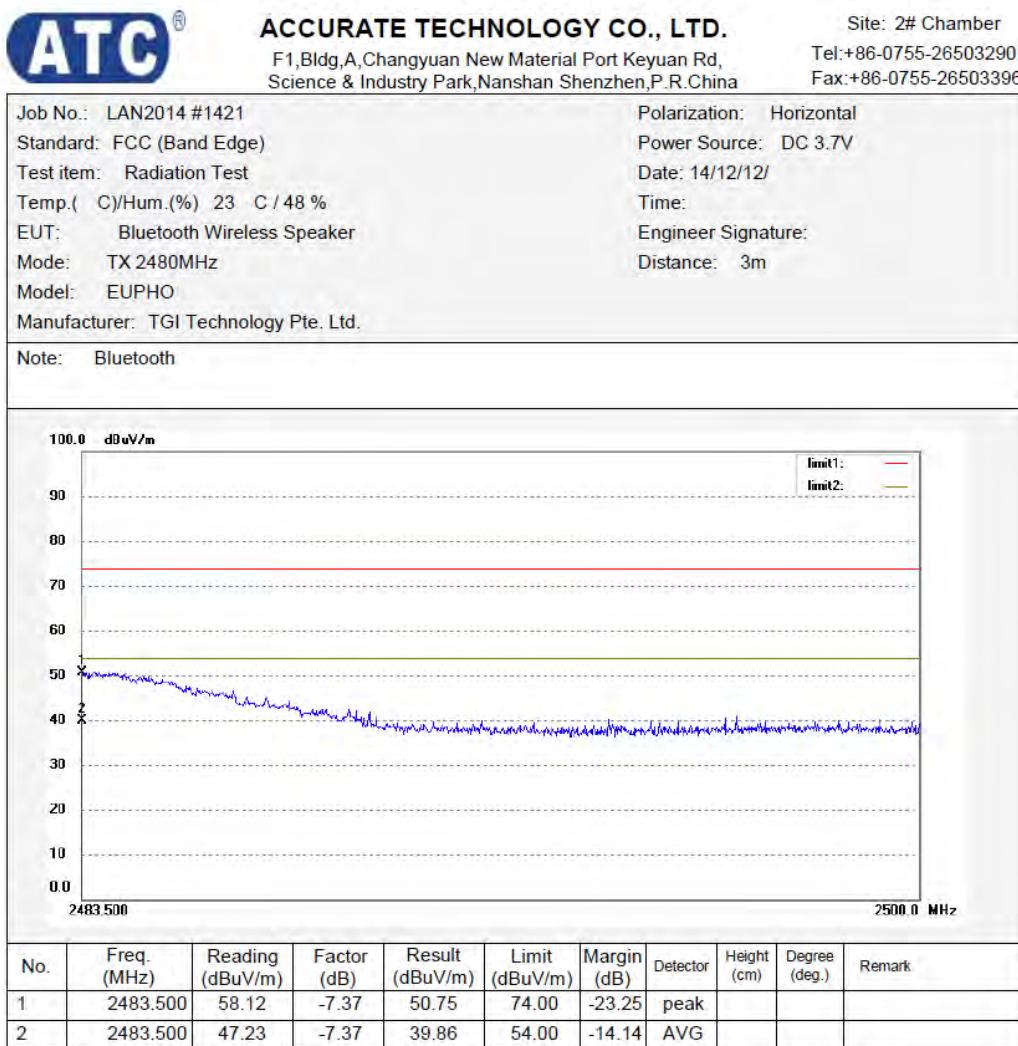


Figure 52: Test figure of Radiated emissions in restricted bands, Mode A.3, Vertical

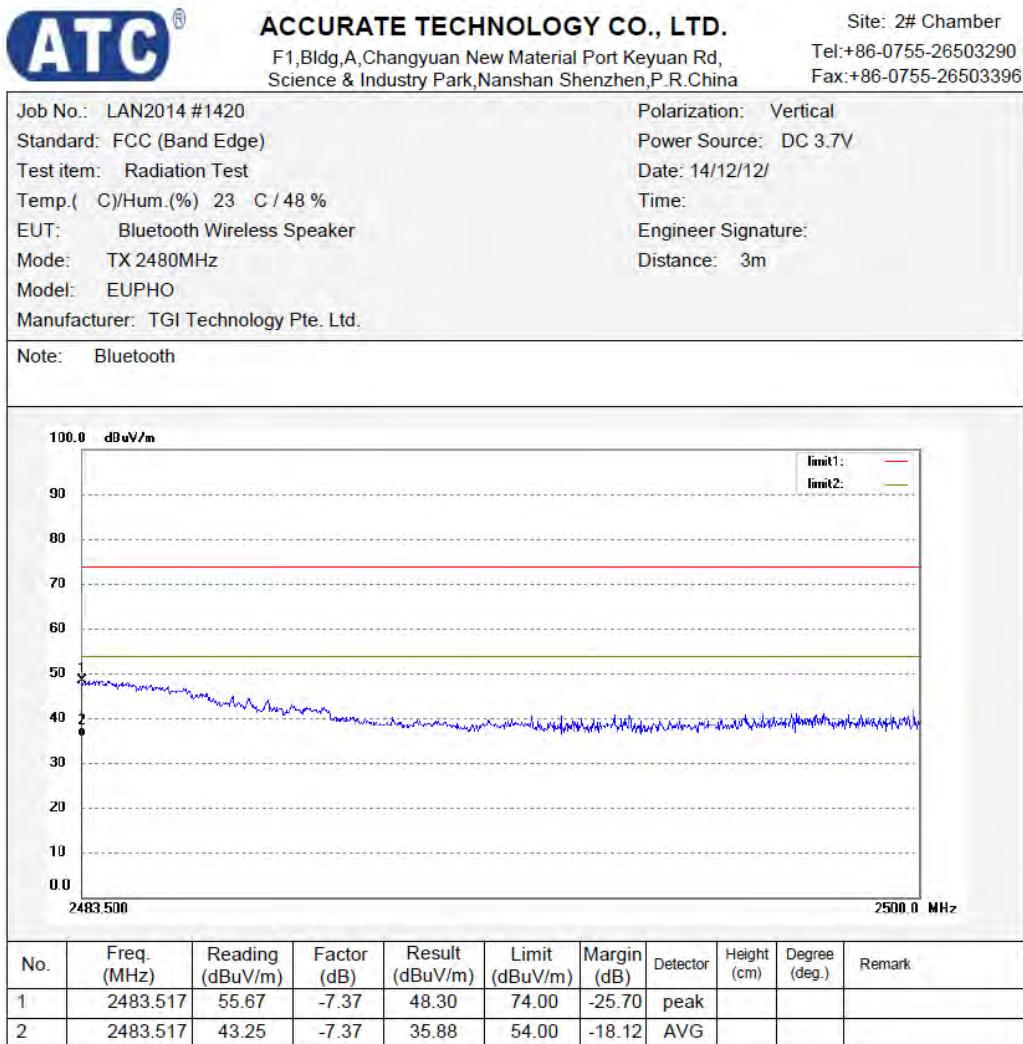


Figure 53: Test figure of Radiated emissions in restricted bands, Mode B.1, Horizontal

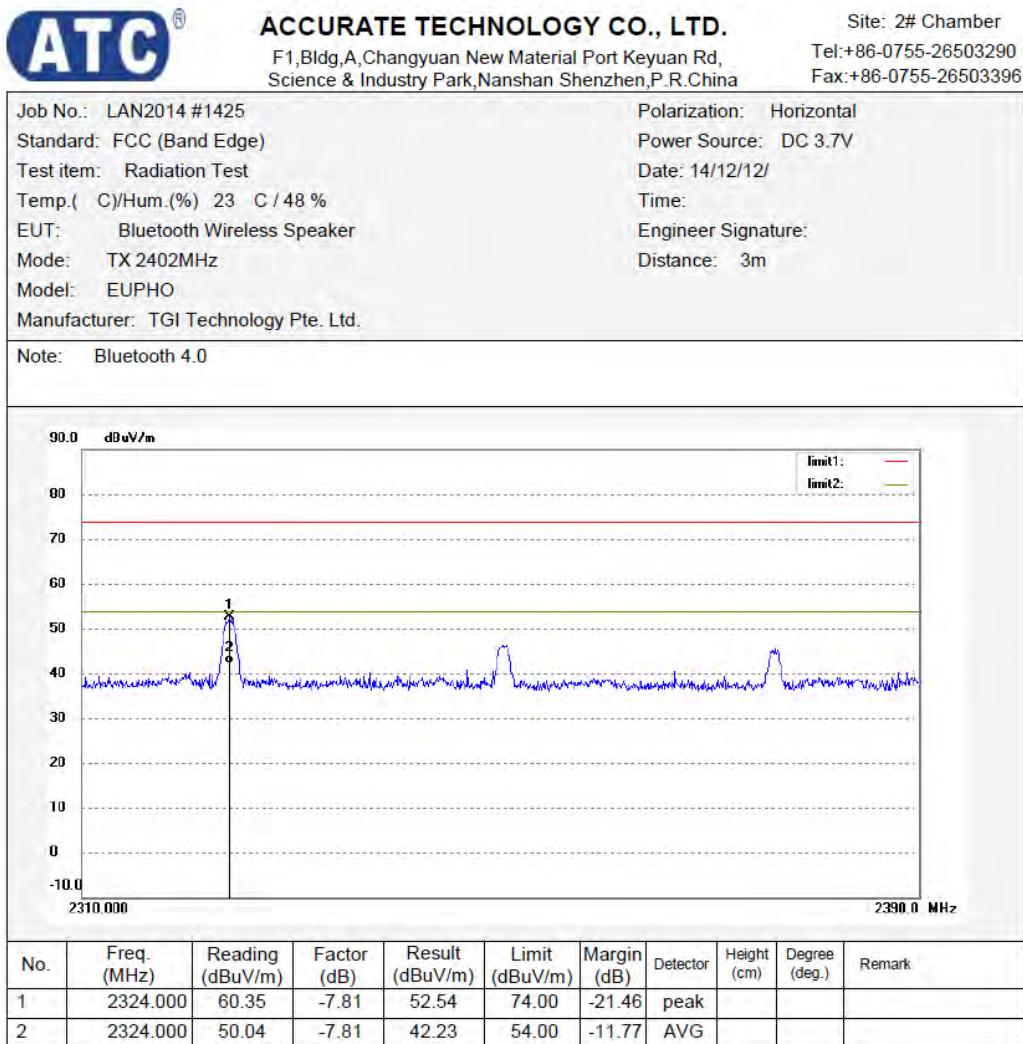


Figure 54: Test figure of Radiated emissions in restricted bands, Mode B.1, Vertical

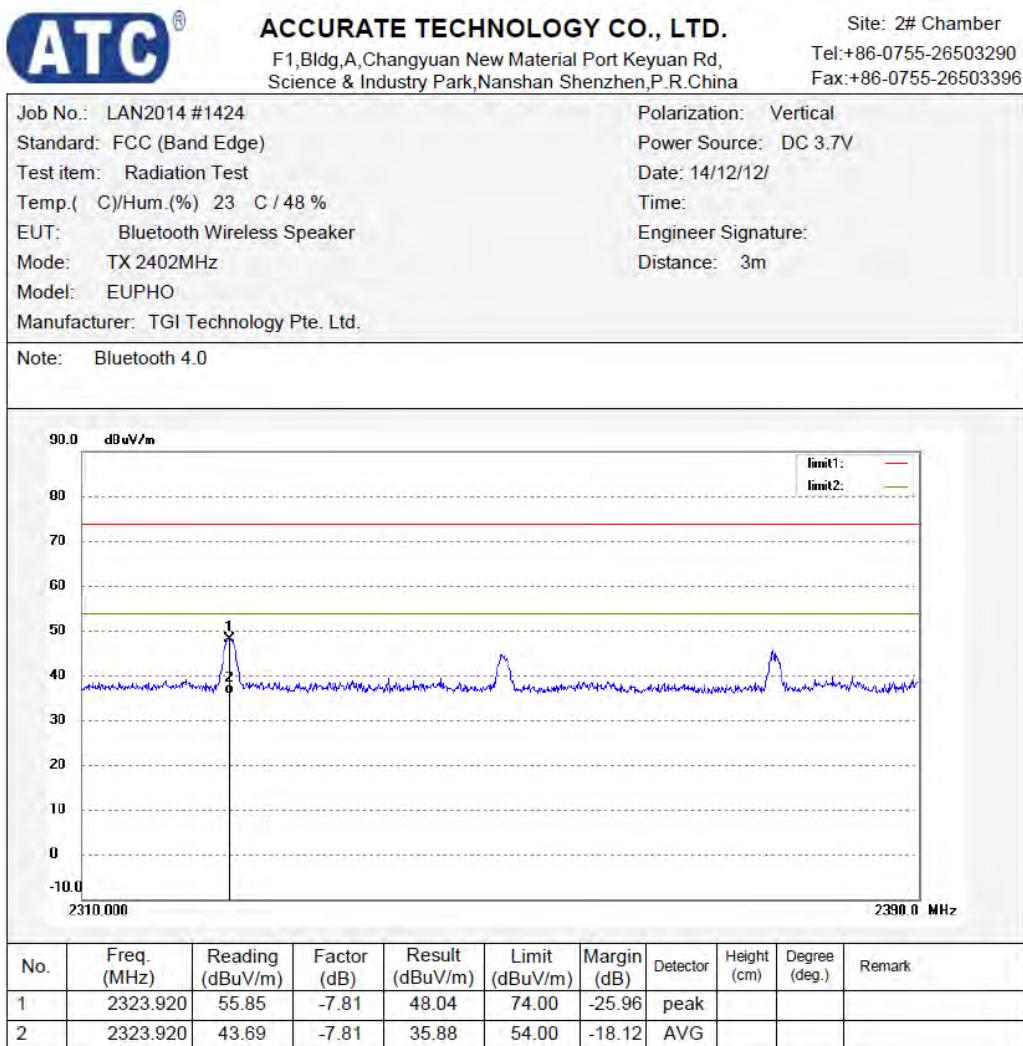


Figure 55: Test figure of Radiated emissions in restricted bands, Mode B.3, Horizontal

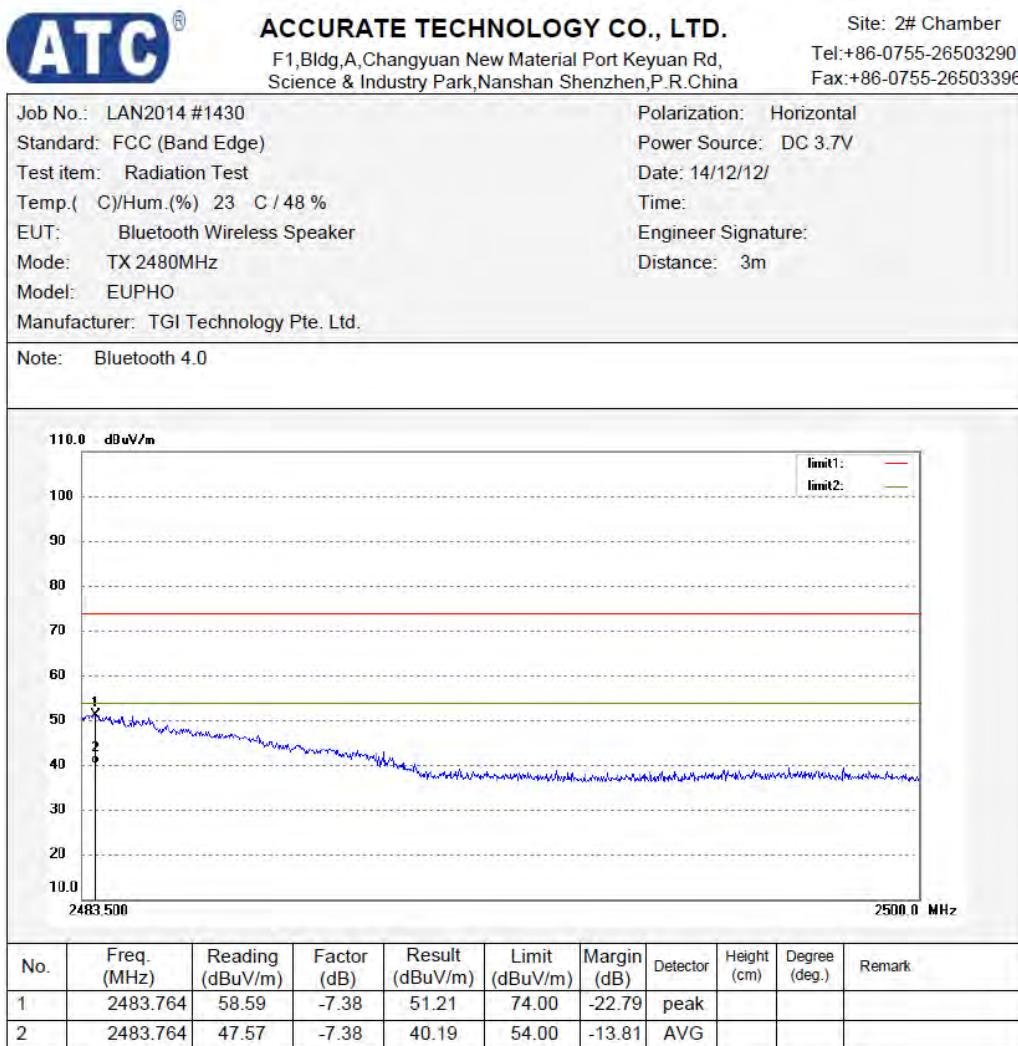


Figure 56: Test figure of Radiated emissions in restricted bands, Mode B.3, Vertical

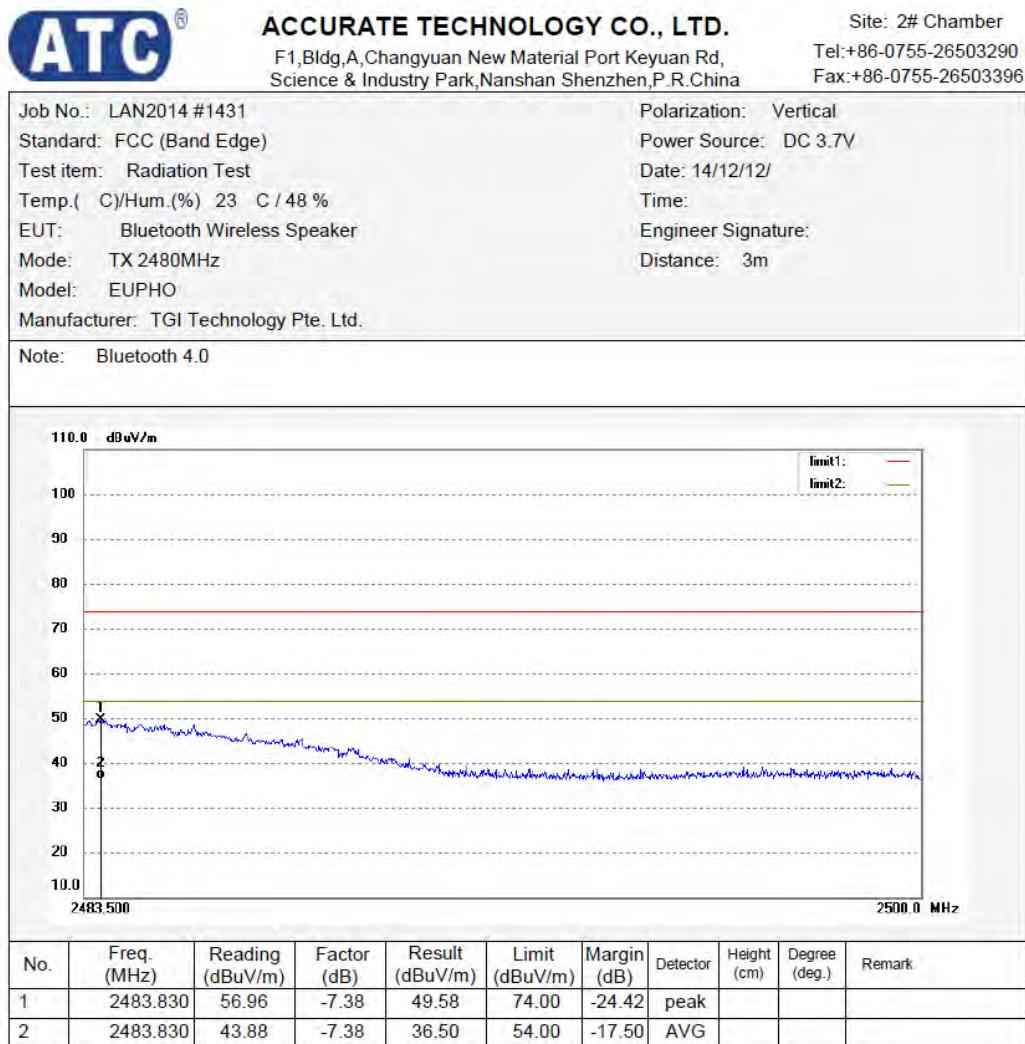
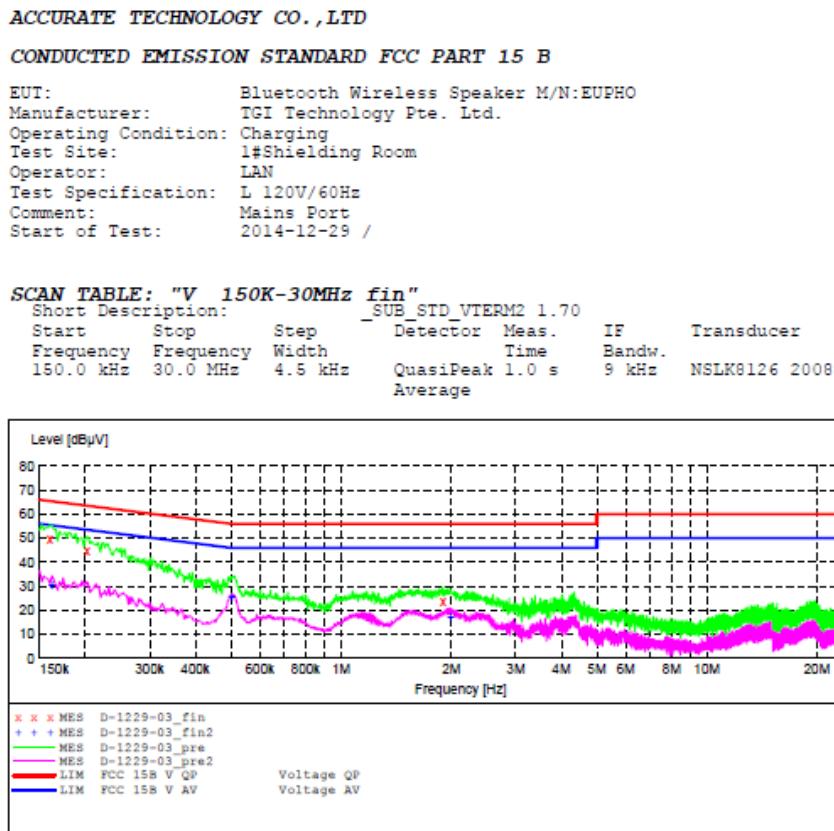


Figure 57: Test figure of Conducted emissions, Mode D, line live



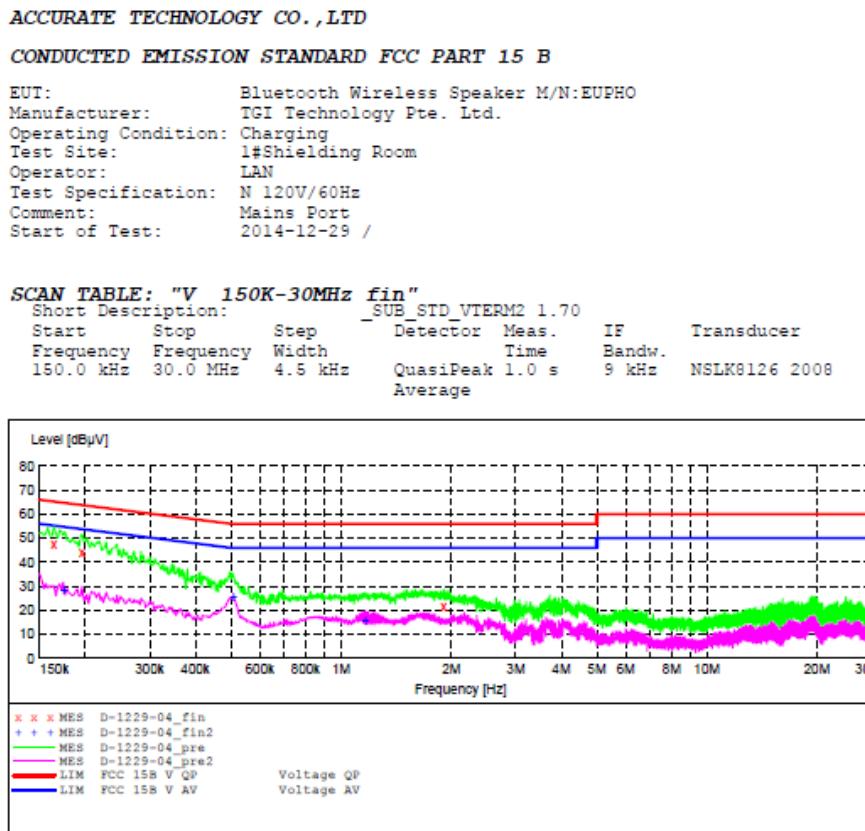
MEASUREMENT RESULT: "D-1229-03_fin"

2014-12-29	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dB μ V	dB	dB μ V	dB			
	0.160000	49.40	10.4	66	16.1	QP	L1	GND
	0.202000	44.80	10.6	64	18.7	QP	L1	GND
	1.898000	23.40	11.7	56	32.6	QP	L1	GND

MEASUREMENT RESULT: "D-1229-03_fin2"

2014-12-29	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dB μ V	dB	dB μ V	dB			
	0.162000	30.90	10.4	55	24.5	AV	L1	GND
	0.502000	25.70	11.5	46	20.3	AV	L1	GND
	1.990000	16.90	11.7	46	29.1	AV	L1	GND

Figure 58: Test figure of Conducted emissions, Mode D, line neutral



MEASUREMENT RESULT: "D-1229-04_fin"

2014-12-29	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dB μ V	dB	dB μ V	dB			
	0.164000	47.60	10.4	65	17.7	QP	N	GND
	0.196000	44.20	10.6	64	19.6	QP	N	GND
	1.906000	21.50	11.7	56	34.5	QP	N	GND

MEASUREMENT RESULT: "D-1229-04_fin2"

2014-12-29	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dB μ V	dB	dB μ V	dB			
	0.174000	28.70	10.5	55	26.1	AV	N	GND
	0.508000	25.50	11.5	46	20.5	AV	N	GND
	1.162000	15.70	11.6	46	30.3	AV	N	GND

Figure 59: Test figure of Radiated emissions, Mode C, Below 1GHz, Horizontal

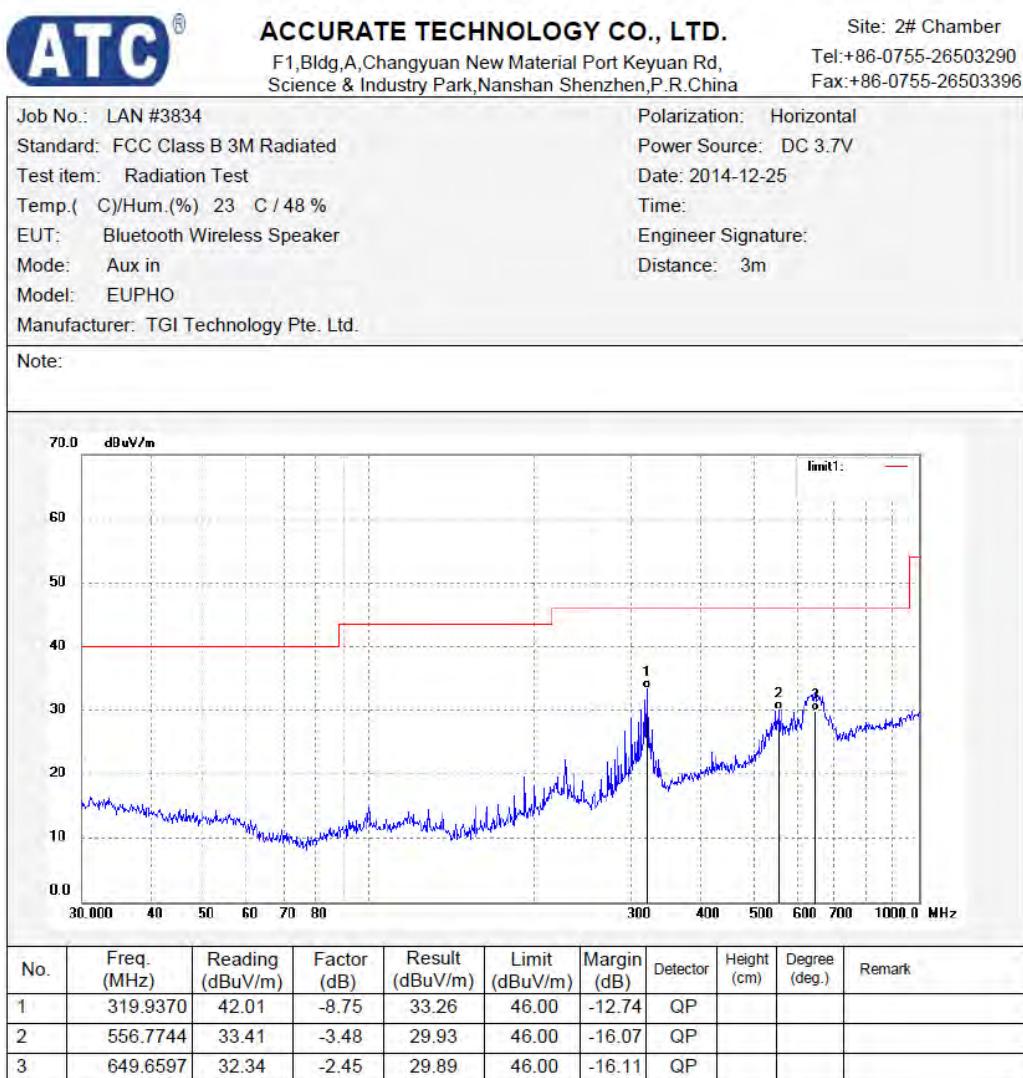


Figure 60: Test figure of Radiated emissions, Mode C, Below 1GHz, Vertical

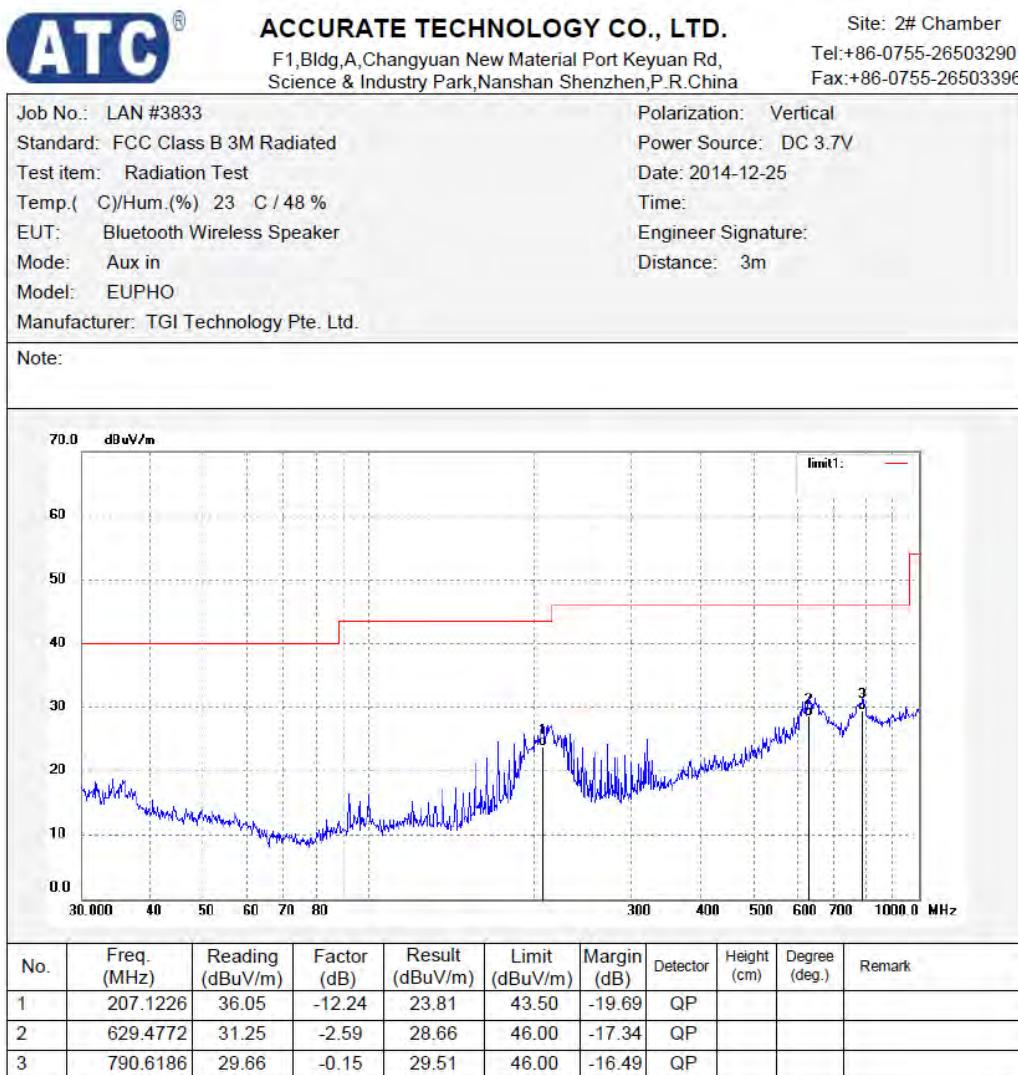


Figure 61: Test figure of Radiated emissions, Mode C, Above 1GHz, Horizontal

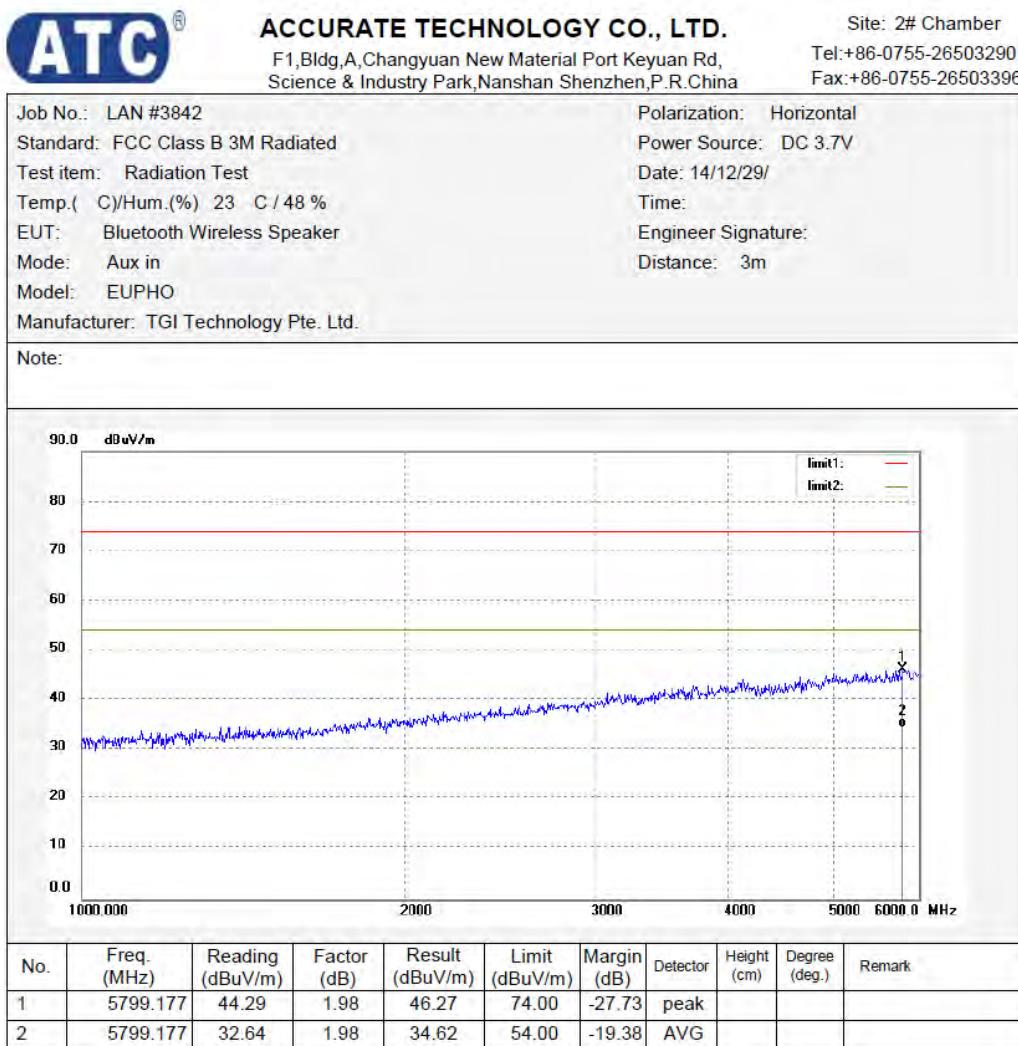


Figure 62: Test figure of Radiated emissions, Mode C, Above 1GHz, Vertical

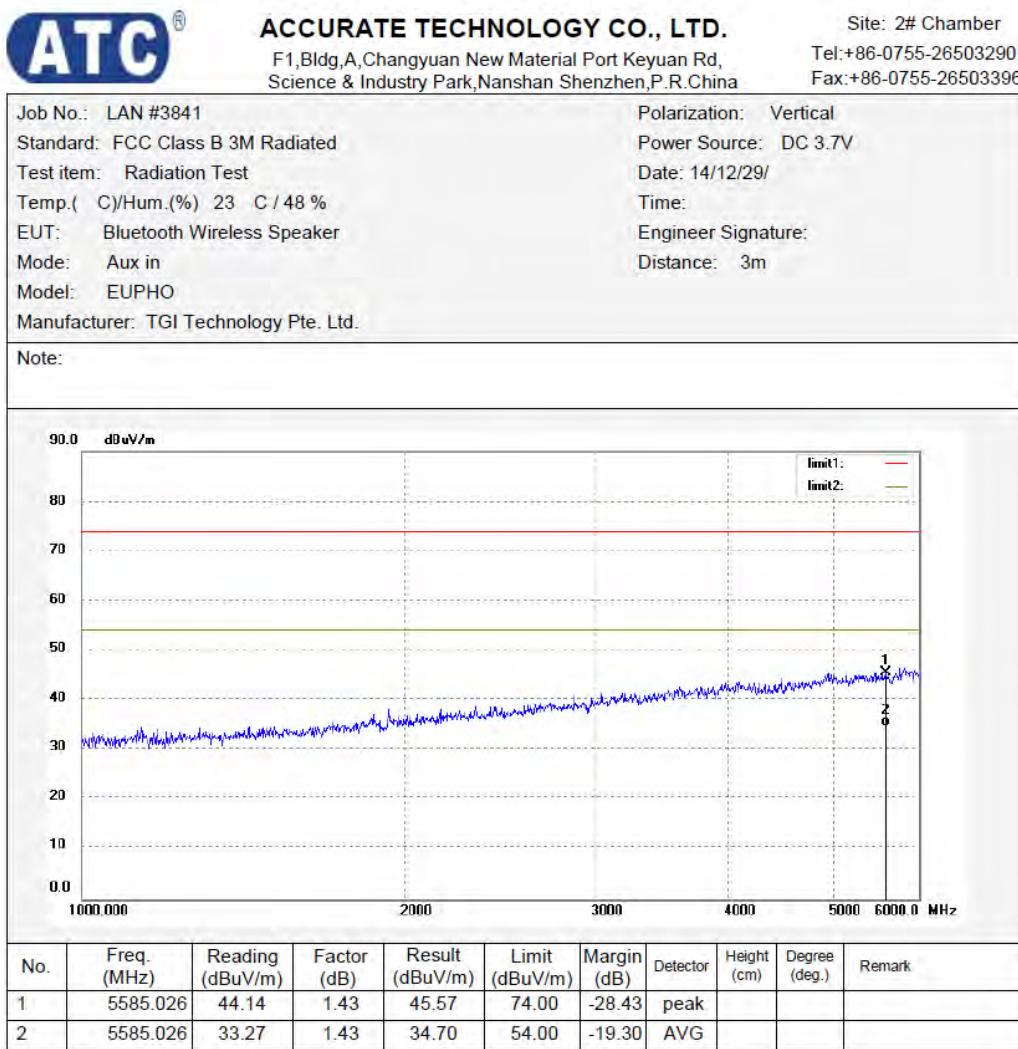


Figure 63: Test figure of Radiated emissions, Mode D, Below 1GHz, Horizontal

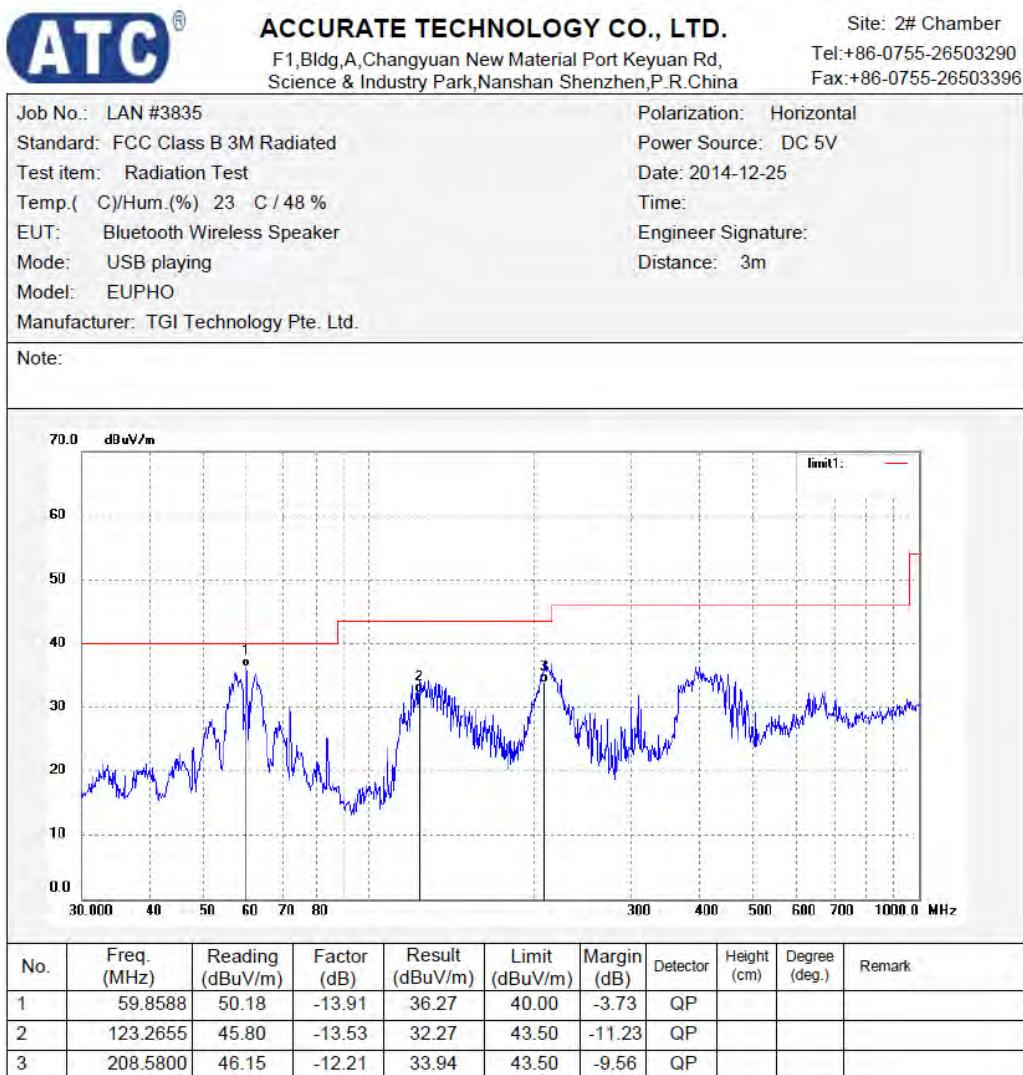


Figure 64: Test figure of Radiated emissions, Mode D, Below 1GHz, Vertical

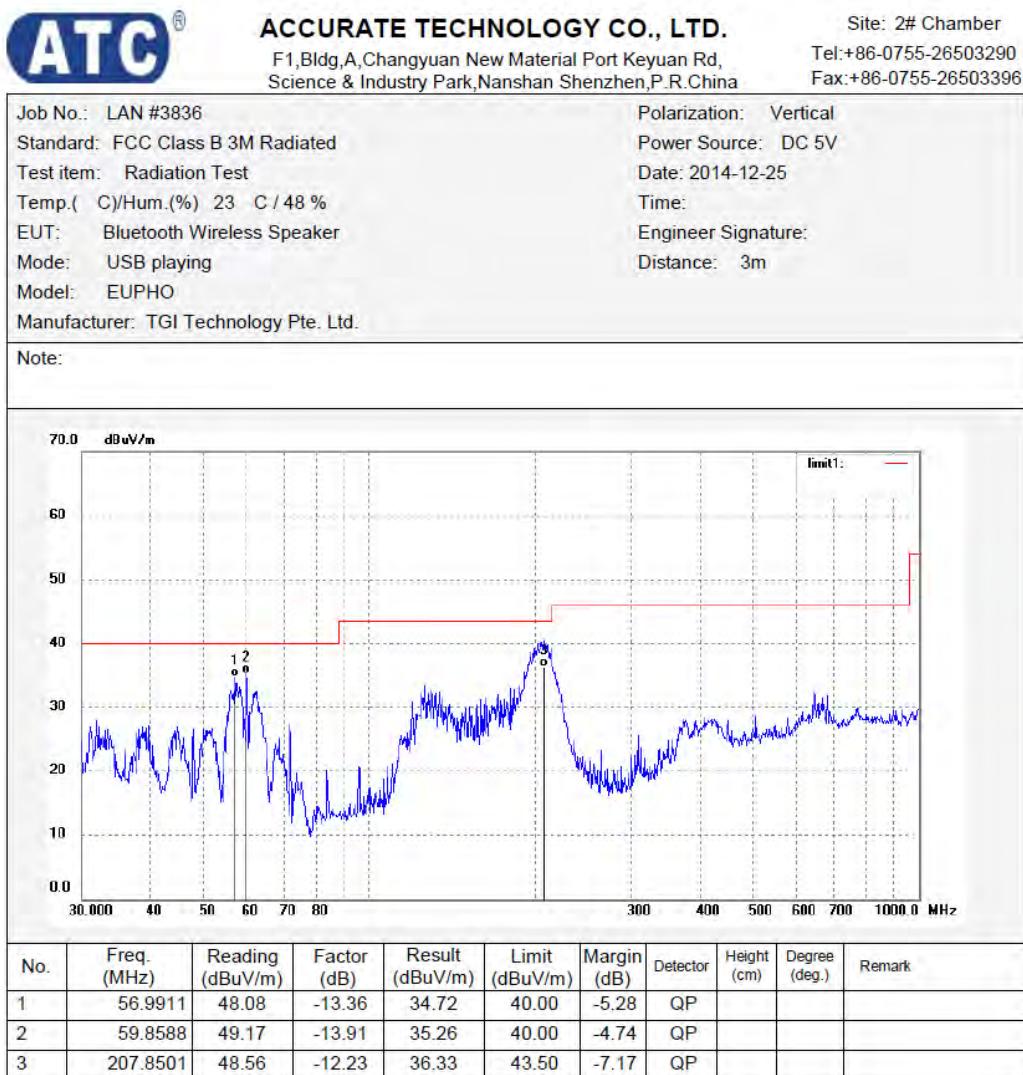


Figure 65: Test figure of Radiated emissions, Mode D, Above 1GHz, Horizontal

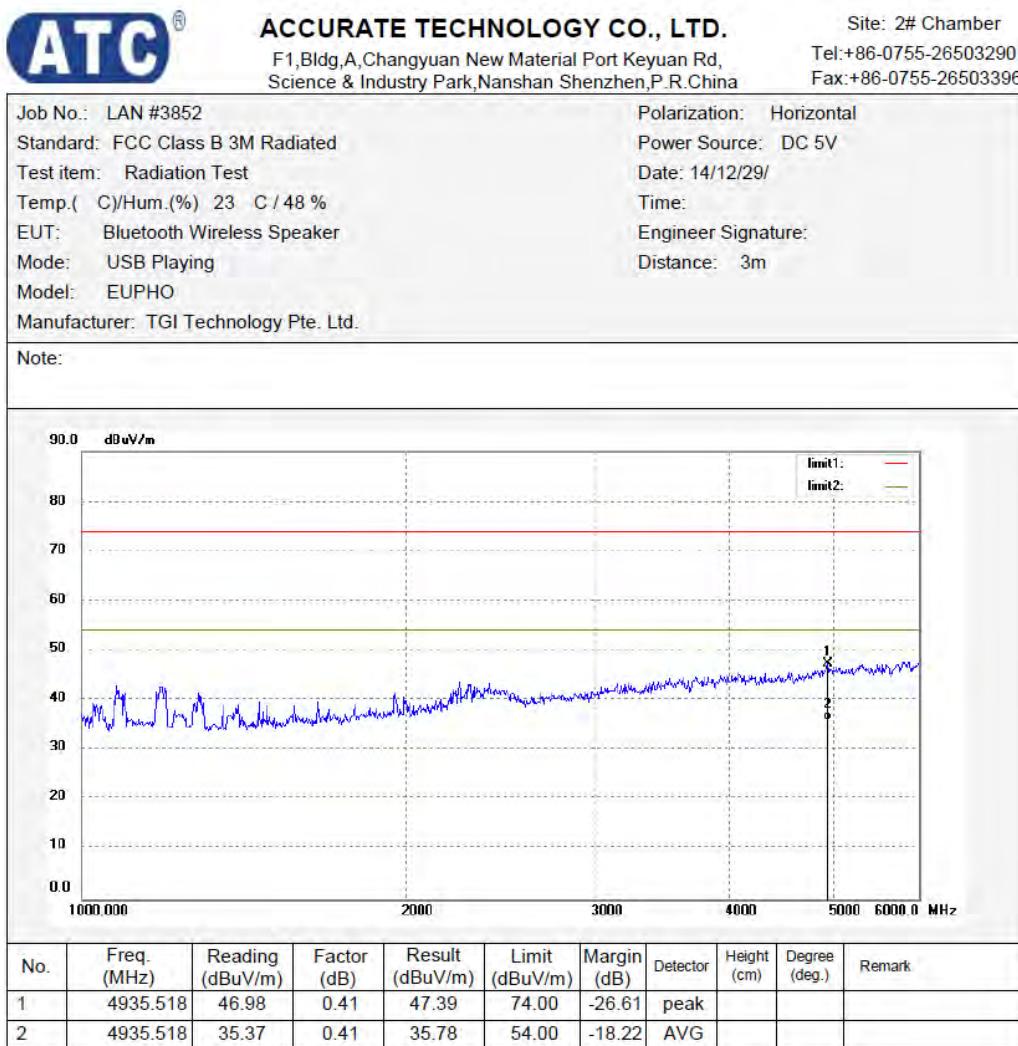


Figure 66: Test figure of Radiated emissions, Mode D, Above 1GHz, Vertical

