

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt Test item complete and undamaged: Legende: 1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n) 2 = gut P(ail) = entspricht nicht o.g. Prüfgrundlage(n) 4 = ausreichend P(ass) = mangelhalt P(ail) = entspricht nicht o.g. Prüfgrundlage(n) 5 = mangelhalt N/T = nicht gete P(ass) = nicht anwendbar P(ass) = poor Legend: 1 = very good P(ass) = good P(ass) = good P(ass) = satisfactory 4 = sufficient 5 = poor	Prüfbericht-Nr.: Test report No.:	50083461 (001	Auftrags-Nr.: Order No.:	164091456	Seite 1 von 23 Page 1 of 23			
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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. 99% BANDWIDTH

RESULT: Passed

5.1.6. CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100kHz BANDWIDTH

RESULT: Passed

5.1.7. Spurious Emission

RESULT: Passed

6.1.1. ELECTROMAGNETIC FIELDS

RESULT: Pass



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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

Accurate Technology Co., Ltd.

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

FCC Registration No.: 752051

Test site Industry Canada No.: 5077A-2

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



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2.2.List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Туре	S/N	Calibrated until
Spurious emission a	nd Radiated emission			
Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	06-01-2018
Test Receiver	Rohde&Schwarz	ESCS30	100307	06-01-2018
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	09-01-2018
Loop Antenna	Schwarzbeck	FMZB1516	1516131	09-01-2018
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	09-01-2018
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	09-01-2018
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	06-01-2018
Pre-Amplifier	Rohde&Schwarz	CBLU11835 40-01	3791	06-01-2018
Radio Spectrum Test	i e			
Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	06-01-2018



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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 $\pm 3 dB$.

2.6.Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix 1 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 Accurate Technology Co., Ltd. test facility located at F1, Bldg. A, Changyuan New Meterial 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.



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3. General Product Information

3.1.Product Function and Intended Use

The EUT is a SoundMoovz (wrist band) with Bluetooth low energy technology. 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:	SoundMoovz
Type Designation:	BMZ001
Trade Mark:	SoundMoovz
FCC ID:	2ALX7001
IC:	22677-001
HVIN:	BMZ001

Table 3: Technical Specification of EUT

Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Bluetooth Core Version	4.2 (Low Energy)
Channel separation	2MHz
Extreme Temperature Range	-20°C to +55°C
Operation Voltage	DC 3V via CR2032 Lithium Battery
Modulation	GFSK
Antenna Type	Internal Antenna, Non-User Replaceable
Antenna Gain	1 dBi



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3.3.Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth Transmitting
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Operating
- C. Off

3.4. Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5. Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document
- Technical Description

- Circuit Diagram
- Instruction Manual
- Rating Label



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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 C63.10: 2013.

4.3. Special Accessories and Auxiliary Equipment

The EUT was tested with following accessories

Description	Manufacturer	Туре	S/N
Galaxy S6 SAMAUNG		SM-G9209	R28G91298WH
Notebook Lenovo		ThinkPad X240	N/A

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.

Products

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4.5.Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

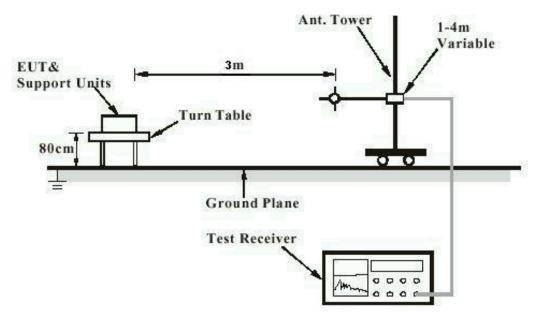
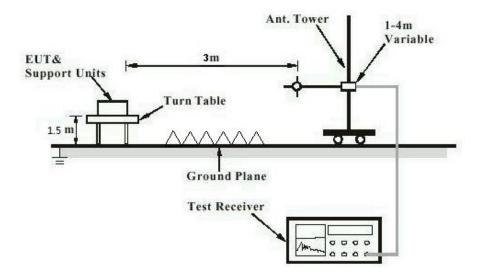
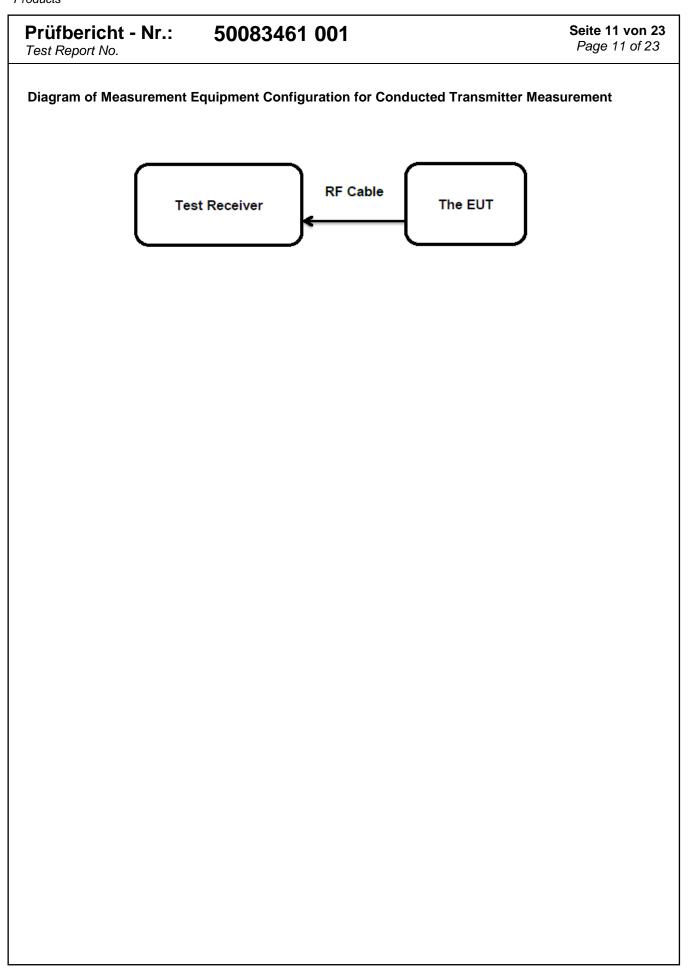


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)





Products





Products

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5. Test Results

5.1. Transmitter Requirement & Test Suites

5.1.1.Antenna Requirement

RESULT: Passed

Test standard : FCC Part 15.247(b)(4) and Part 15.203

RSS-Gen 6.7

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 1 dBi, 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.



Products

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5.1.2. Peak Output Power

RESULT: Passed

Test date 2017-05-20

Test standard FCC Part 15.247(b)(3)

RSS-247 Clause 5.4(2)&(4)

Basic standard ANSI C63.10: 2013

Limit 1 Watt

Kind of test site Shielded room

Test setup

Test Channel Low/ Middle/ High

Test Channel :
Operation Mode :
Ambient temperature :
Relative humidity :
Atmospheric pressure : Α **25**℃ 55% 101 kPa

Table 4: Test result of Peak Output Power

Channel	Channel Frequency	Peak Out	Limit	
	(MHz)	(dBm)	(W)	(W)
Low Channel	2402	-3.18	0.00048	1
Middle Channel	2440	-3.34	0.00046	1
High Channel	2480	-3.45	0.00045	1



Products

50083461 001 Seite 14 von 23 Prüfbericht - Nr.: Page 14 of 23 Test Report No.

5.1.3.Conducted Power Spectral Density

RESULT: Passed

Test date 2017-05-20

Test standard FCC Part 15.247(e)

RSS-247 Clause 5.2(2)

Basic standard ANSI C63.10: 2013

Limit 8dBm/3kHz Kind of test site Shielded room

Test setup

Test Channel Low/ Middle/ High

Test Channel :
Operation Mode :
Ambient temperature :
Relative humidity :
Atmospheric pressure : Α **25**℃ 55% 101 kPa

Table 5: Test result of Conducted Power Spectral Density

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2402	-21.41	8
Middle Channel	2440	-21.49	8
High Channel	2480	-21.54	8



Products

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5.1.4.-6dB Bandwidth

RESULT: Passed

2017-05-20 Date of testing

FCC Part 15.247(a)(2) Test standard

RSS-247 Clause 5.2(1)

Basic standard ANSI C63.10: 2013 Kind of test site Shielded room

Test setup

Test Channel Low/ Middle/ High

Test Channel :
Operation Mode :
Ambient temperature :
Relative humidity :
Atmospheric pressure : **25**℃ 55% 101 kPa

Table 6: Test result of -6dB Bandwidth

Channel	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	777.2	500	Pass
Mid Channel	2440	772.8	500	Pass
High Channel	2480	781.5	500	Pass



Products

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5.1.5.99% Bandwidth

RESULT: Passed

2017-05-20 Date of testing

Test standard RSS-Gen clause 6.6 Basic standard ANSI C63.10: 2013 Kind of test site Shielded room

Test setup

Test Channel Low/ Middle/ High

Test Channel
Operation Mode
Ambient temperature
Relative humidity Α **25**℃ Relative humidity 55% Atmospheric pressure : 101 kPa

Table 7: Test result of 99% Bandwidth

Channel	Channel Frequency (MHz)		Limit (MHz)	Result
Low Channel	2402	1094	/	Pass
Mid Channel	2440	1090	/	Pass
High Channel	2480	1103	/	Pass



Products

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5.1.6. Conducted spurious emissions measured in 100kHz Bandwidth

RESULT: Passed

Date of testing : 2017-05-20

Test standard : FCC part 15.247(d)

RSS-247 Clause 5.5

Basic standard : ANSI C63.10: 2013

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

All emissions are more than 20dB below fundamental, details refer to Appendix 1.



Products

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5.1.7. Spurious Emission

RESULT: Passed

Date of testing : 2017-05-20

Test standard : FCC part 15.247(d)

FCC Part 15.205

RSS-247 Clause 3.3

Basic standard : ANSI C63.10: 2013

Limits : Refer to 15.209(a) of FCC part 15.247(d)

RSS-Gen Table 4 & Table 5

Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : Low/ Middle/ High

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.



Products

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Note 1: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

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



ACCURATE TECHNOLOGY CO., LTD.

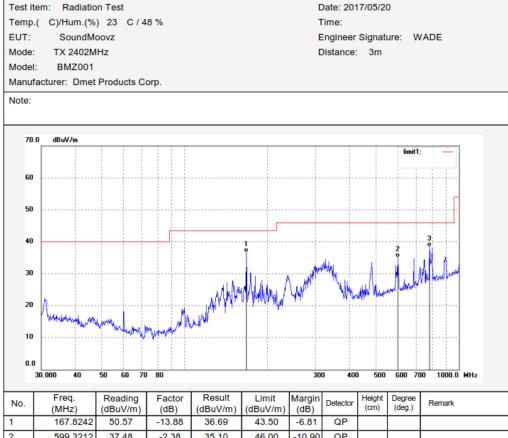
F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

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

Horizontal

Power Source: DC 3V

Standard: FCC Class B 3M Radiated



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	167.8242	50.57	-13.88	36.69	43.50	-6.81	QP				
2	599.3212	37.48	-2.38	35.10	46.00	-10.90	QP				
3	782.3452	38.09	0.41	38.50	46.00	-7.50	QP				Τ

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

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

Polarization: Vertical

Power Source: DC 3V

Engineer Signature: WADE

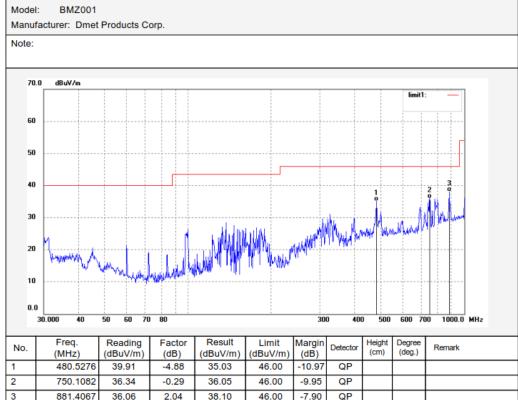
Date: 2017/05/20

Distance: 3m

LGW2017 #2306 Standard: FCC Class B 3M Radiated Test item: Radiation Test Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2402MHz

BMZ001





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



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Polarization: Horizontal

Engineer Signature: WADE

Power Source: DC 3V

Date: 2017/05/20

LGW2017 #2280 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2402MHz

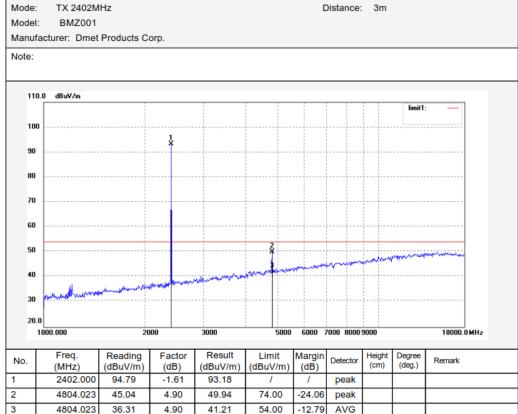




Figure 4: Test figure of spurious emissions, mode A.1, Vertical polarity (1GHz – 18GHz)

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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

Polarization: Vertical

Power Source: DC 3V

Date: 2017/05/20

Job No.: LGW2017 #2281 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

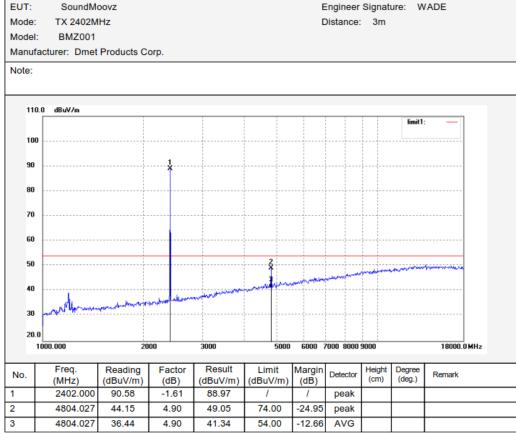




Figure 5: Test figure of spurious emissions, mode A.2, Horizontal polarity (30MHz – 1GHz)

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Polarization: Horizontal

Engineer Signature: WADE

Power Source: DC 3V

Date: 2017/05/20

Distance: 3m

Job No.: LGW2017 #2308 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: SoundMoovz Mode: TX 2440MHz Model: BMZ001

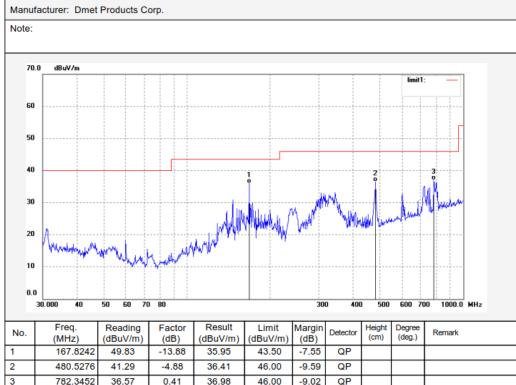




Figure 6: Test figure of spurious emissions, mode A.2, Vertical polarity (30MHz - 1GHz)

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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

Polarization: Vertical

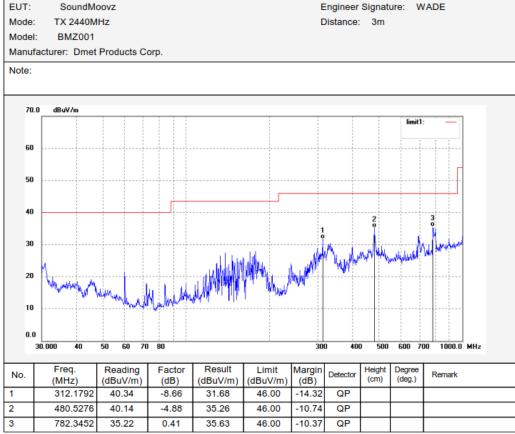
Power Source: DC 3V

Date: 2017/05/20

LGW2017 #2309 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz TX 2440MHz



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Figure 7: Test figure of spurious emissions, mode A.2, Horizontal polarity (1GHz - 18GHz)

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

Polarization: Horizontal

Engineer Signature: WADE

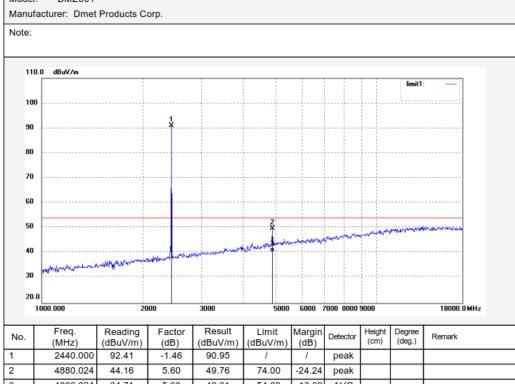
Power Source: DC 3V

Date: 2017/05/20

Distance: 3m

Job No.: LGW2017 #2284 Standard: FCC Class B 3M Radiated Test item: Radiation Test Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2440MHz BMZ001



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	92.41	-1.46	90.95	1	/	peak			
2	4880.024	44.16	5.60	49.76	74.00	-24.24	peak			
3	4880.024	34.71	5.60	40.31	54.00	-13.69	AVG			



Figure 8: Test figure of spurious emissions, mode A.2, Vertical polarity (1GHz - 18GHz)

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

Polarization: Vertical

Power Source: DC 3V

Engineer Signature: WADE

Date: 2017/05/20

Distance: 3m

LGW2017 #2285 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2440MHz

BMZ001

4880.026

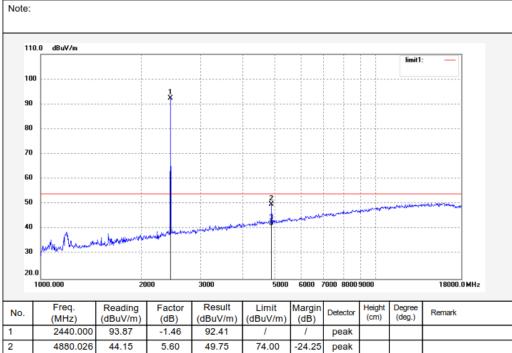
3

35.74

5.60

41.34

Manufacturer: Dmet Products Corp.



54.00

-12.66

AVG



Figure 9: Test figure of spurious emissions, mode A.3, Horizontal polarity (30MHz – 1GHz)

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Polarization: Horizontal

Engineer Signature: WADE

Power Source: DC 3V

Date: 2017/05/20

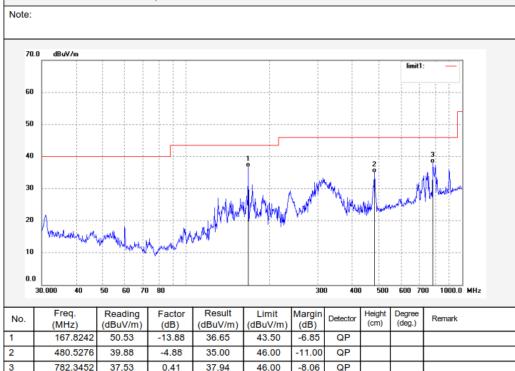
Distance: 3m

Job No.: LGW2017 #2311 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: SoundMoovz Mode: TX 2480MHz Model: BMZ001

Manufacturer: Dmet Products Corp.





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Figure 10: Test figure of spurious emissions, mode A.3, Vertical polarity (30MHz - 1GHz)



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Polarization: Vertical

Power Source: DC 3V

Engineer Signature: WADE

Date: 2017/05/20

Distance: 3m

LGW2017 #2310 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2480MHz BMZ001

Manufacturer: Dmet Products Corp.

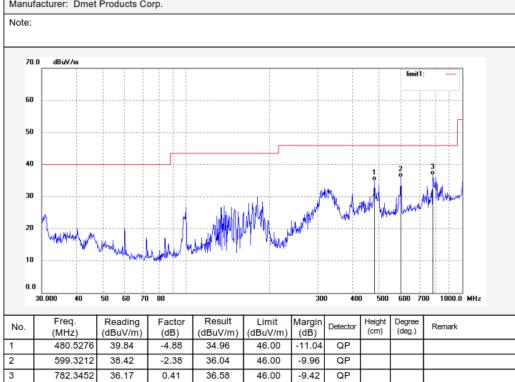




Figure 11: Test figure of spurious emissions, mode A.3, Horizontal polarity (1GHz -18GHz)

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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

Polarization: Horizontal

Engineer Signature: WADE

Power Source: DC 3V

Date: 2017/05/20

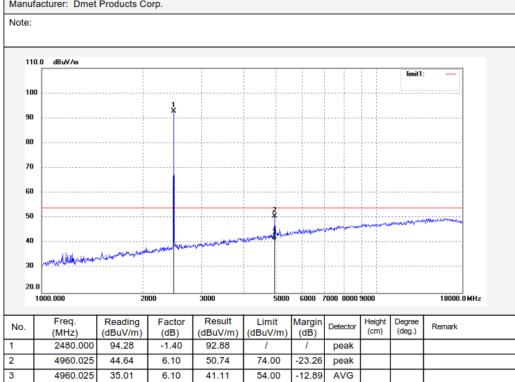
Distance: 3m

LGW2017 #2287 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

SoundMoovz Mode: TX 2480MHz BMZ001

Manufacturer: Dmet Products Corp.



50083461 001



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Figure 12: Test figure of spurious emissions, mode A.3, Vertical polarity (1GHz – 18GHz)



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Polarization: Vertical

Power Source: DC 3V

Engineer Signature: WADE

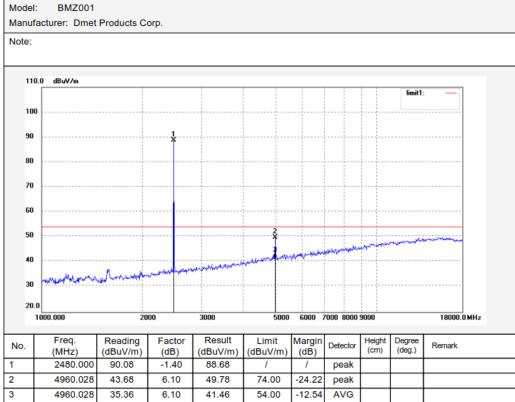
Date: 2017/05/20

Distance: 3m

Job No.: LGW2017 #2286 Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

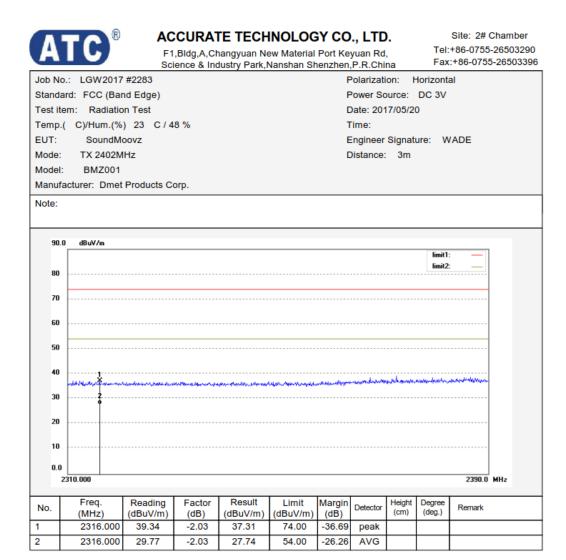
EUT: SoundMoovz Mode: TX 2480MHz





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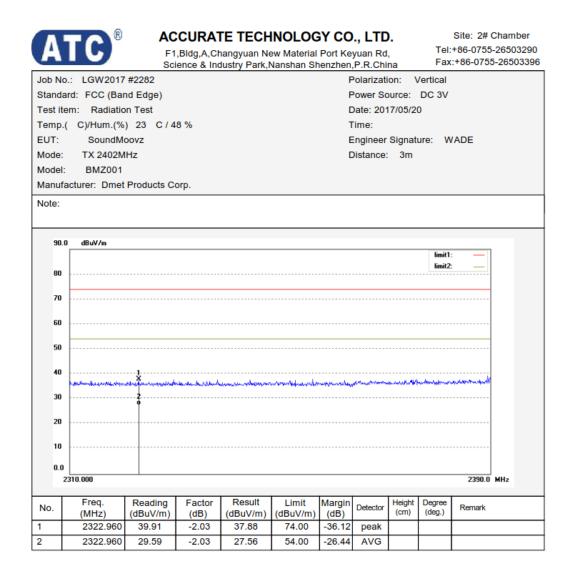
Figure 13: Test figure of Radiated emissions in restricted bands, Mode A.1, Horizontal





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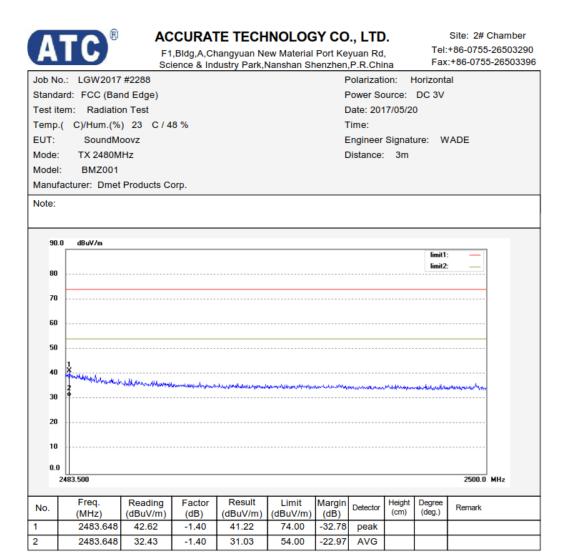
Figure 14: Test figure of Radiated emissions in restricted bands, Mode A.1, Vertical





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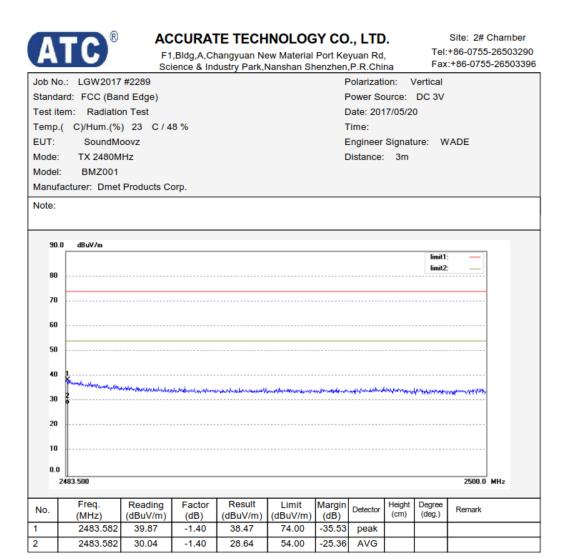
Figure 15: Test figure of Radiated emissions in restricted bands, Mode A.3, Horizontal





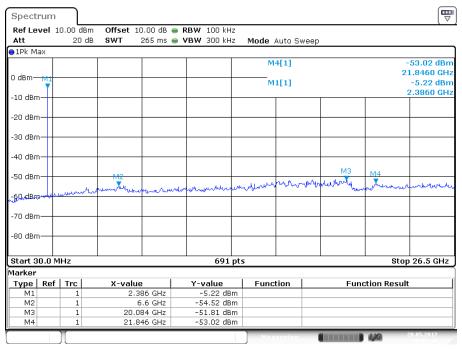
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Figure 16: Test figure of Radiated emissions in restricted bands, Mode A.3, Vertical



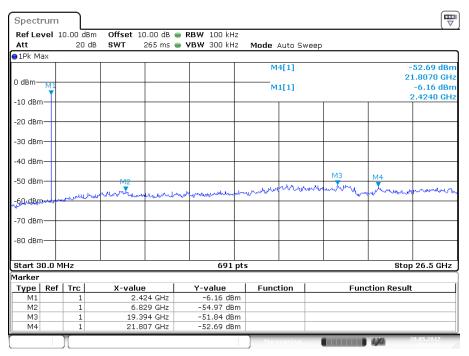
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Figure 17: Test figure of conducted emissions in 100kHz Bandwidth, Mode A.1



Date: 20.MAY.2017 15:02:39

Figure 18: Test figure of conducted emissions in 100kHz Bandwidth, Mode A.2

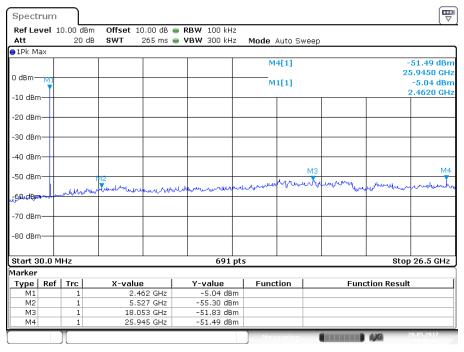


Date: 20.MAY.2017 15:01:53



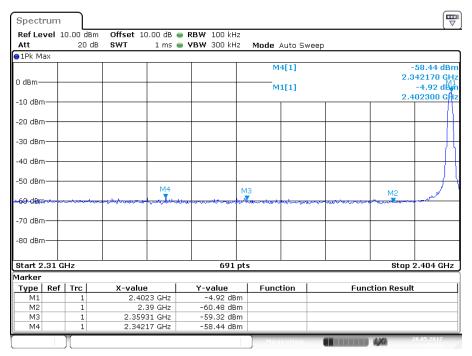
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Figure 19: Test figure of conducted emissions in 100kHz Bandwidth, Mode A.3



Date: 20.MAY.2017 15:01:07

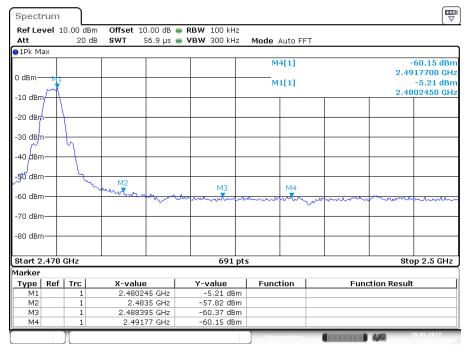
Figure 20: Test figure of Frequency Band Edge in 100kHz Bandwidth, Mode A.1



Date: 20.MAY.2017 14:56:39

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Figure 21: Test figure of Frequency Band Edge in 100kHz Bandwidth, Mode A.3



Date: 20.MAY.2017 14:57:52