

Prüfbericht-Nr.: 50055016 001 Auftrags-Nr.: 164066510 Seite 1 von 32 Test Report No.: Order No.: Page 1 of 32 Kunden-Referenz-Nr.: N/A Auftragsdatum: 20.06.2016 Client Reference No.: Order date: Auftraggeber: SolidLabs, Unit 19, 14 Southgate Road, London, N1 3LY, United Kingdom Client: Prüfgegenstand: Interface Test item: Bezeichnung / Typ-Nr.: INTF001 Identification / Type No.: Auftrags-Inhalt: FCC/IC Test report Order content: Prüfgrundlage: CFR47 FCC Part 15: Subpart C Section 15.247 Test specification: CFR47 FCC Part 15: Subpart C Section 15.209 FCC KDB publication 447498 D01 v06 RSS-247 Issue 1 May 2015 RSS-Gen Issue 4 November 2014 RSS-102 Issue 5 March 2015 Wareneingangsdatum: 15.08.2016 Date of receipt: Prüfmuster-Nr.: A000392067-003. Test sample No.: A000392067-005 Prüfzeitraum: 18.08.2016 - 02.09.2016 Testing period: Refer to photo documents Ort der Prüfung: Accurate Technology Co., Ltd. Place of testing: Prüflaboratorium: TÜV Rheinland (Shenzhen) Testing laboratory: Co., Ltd. Prüfergebnis*: **Pass** Test result*: geprüft von / tested by: kontrolliert von / reviewed by: 05.09.2016 Sam Lin / Assistant Manager 06.09.2016 Winnie Hou / Technical Datum Name / Stellung Unterschrift Datum Name / Stellung Unterschrift Date Name / Position Signature Date Name / Position Signature Sonstiges / Other: This report is FCC/IC test report for Bluetooth device. FCC ID: 2AHFBINTF001 IC: 21133-INTF001 HVIN: 1.0 Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt Condition of the test item at delivery: Test item complete and undamaged * Legende: 1 = sehr gut 2 = gut3 = 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 2 = aood3 = satisfactory Leaend: 1 = very good 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable 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.

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.



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TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 PEAK OUTPUT POWER

RESULT: Pass

5.1.3 6DB BANDWIDTH AND 99% BANDWIDTH

RESULT: Pass

5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH

RESULT: Pass

5.1.5 POWER SPECTRAL DENSITY

RESULT: Pass

5.1.6 Spurious Emissions

RESULT: Pass

5.1.7 CONDUCTED EMISSIONS

RESULT: Not applicable

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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 A: Test Results of Bluetooth 4.0 Low Energy mode

Appendix B: Test Results of RF Exposure - Bluetooth 4.0 Low Energy mode

2. Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

(FCC Registration No.: 752051 & IC Registration Number: 5077A-2)

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

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					
Radio Spectrum Test									
Spectrum Analyzer	R&S	FSV40	101495	Jan.9, 2017					
Conducted emissions									
Test Receiver	R&S	ESCS30	100307	Jan.9, 2017					
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan.9, 2017					
Pulse Limiter	R&S	ESH3-Z2	100815	Jan.9, 2017					
50ΩCoaxial Switch	Anritsu Corp	MP59B	6200283933	Jan.9, 2017					
Radiated emissions	5		1						
Spectrum Analyzer	R&S	FSV40	101495	Jan.9, 2017					
Test Receiver	R&S	ESCS30	100307	Jan.9, 2017					
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan.14, 2017					
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan.14, 2017					
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan.14, 2017					
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan.14, 2017					
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	Jan.9, 2017					
Pre-Amplifier	R&S	CBLU11835 40-01	3791	Jan.9, 2017					
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	Jan.9, 2017					
RF Coaxial Cable	SUHNER	N-3m	No.8	Jan.9, 2017					
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	Jan.9, 2017					
RF Coaxial Cable	SUHNER	N-6m	No.10	Jan.9, 2017					
RF Coaxial Cable	RESENBERGER	N-12m	No.11	Jan.9, 2017					
RF Coaxial Cable	RESENBERGER	N-0.5m	No.12	Jan.9, 2017					

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2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, 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 as below table,

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=1.94dB, k=2, σ=95%
RE (9kHz-30MHz)	Field strength (dBuV/m)	U=3.08dB, k=2, σ=95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.42dB, k=2, σ=95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.06dB, k=2, σ=95%

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A 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. 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.

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3. General Product Information

3.1 Product Function and Intended Use

The EUT is wireless toy using Bluetooth technology.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment:	Interface
Type Designation:	INTF001
FCC ID:	2AHFBINTF001
IC:	21133-INTF001
HVIN:	1.0
Type of Equipment:	Class B digital equipment
Equiupment Class:	DTS
Wireless Technology:	Bluetooth 4.0 Low Energy
Rated output power:	-20 dBm
Operating Frequency Range:	2402-2480 MHz for Bluetooth
Channel Number:	40 channels for Bluetooth 4.0 Low Energy
Channel Separation:	2 MHz for Bluetooth 4.0 Low Energy
Type of Modulation:	GFSK
Operating Voltage:	DC 4.5V via 3xAA ALKALINE Battery
Operating Temperature Range:	-20℃ to 55℃
Antenna Type:	Integral PCB Printed Antenna
Smart Antenna Systems:	Not Applicable
Number of Antenna:	1
Antenna Gain:	Max. 2 dBi for Bluetooth

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Table 3: List of Radio Frequency Channel, Bluetooth 4.0 Low Energy

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

3.3 Independent Operation Modes

The basic operation modes are:

- A. Bluetooth Low Energy operating
 - 1. Transmitting
 - i. Low channel
 - ii. Middle channel
 - iii. High channel
 - 2. Receiving
 - i. Low channel
 - ii. Middle channel
 - iii. High channel
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material	- Circuit Diagram
- PCB Layout	- Instruction Manual
- Photo Document	- Rating Label

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4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation 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.

During testing, test software (nRFgo Studio) provided by the applicant was used to control the operating channel as well as output power for Bluetooth operation.

Table 4: List of Frequencies under Test, Bluetooth 4.0 Low Energy operation

RF Channel of Bluetooth 4.0 Low Energy								
Test Channel Channel number Frequency (MHz) Remark								
Low	0	2402.00	Max. output power level					
Middle	19	2440.00	Max. output power level					
High	39	2480.00	Max. output power level					

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Notebook PC	Lenovo	ThinkPad X240	SL10F31638

Table 6: List of Accessories and Cables

Interface(s) / Port (s)	Max. cable length, Shielding	Cable classification



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4.4 Countermeas	ures to achieve EMC Compliance									
the Constructional Data Fo	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 below 1 GHz

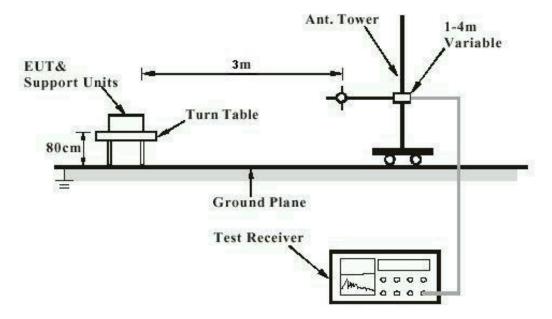
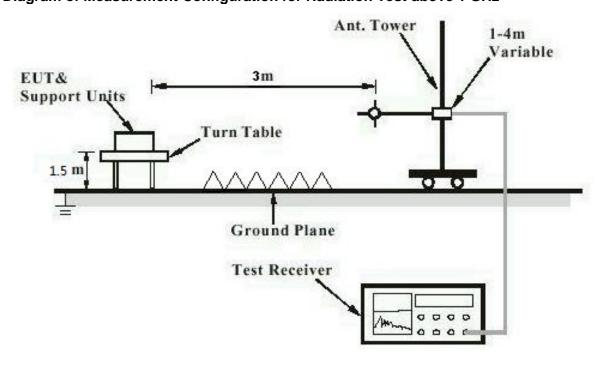


Diagram of Measurement Configuration for Radiation Test above 1 GHz





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Diagram of Measurement Equipment Configuration for Conduction Measurement

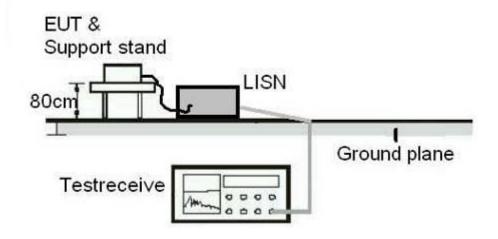
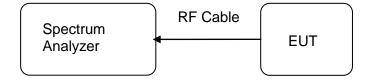


Diagram of Measurement Equipment Configuration for Transmitter Measurement





Produkte Products

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5. Test Results

5.1 Test Requirements & Test Suites - Part 15 Subpart C DTS equipment

5.1.1 Antenna Requirement

RESULT: Pass

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 2 dBi for Bluetooth, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to compliance the provision.

Refer to EUT photo for details.



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Test Report No.

5.1.2 Peak Output Power

RESULT: Pass

Date of testing 2016-08-18 to 2016-09-02 Test standard FCC Part 15.247(b)(3)

RSS-247 Section 5.4

RSS-Gen Issue 4 Clause 6.12

ANSI C63.10:2013 Basic standard :

FCC KDB 558074 v03r05

1Watt Limit

Shielded room Kind of test site

Test setup

Test Channel Low/ Middle/ High

Operation Mode A.1 **23**℃ Ambient temperature Relative humidity 51% Atmospheric pressure 101.0 kPa :

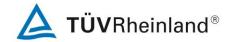
Table 7: Test result of Peak Output Power, Bluetooth Low Energy operation

	Channal	Bluetooth 4.0 Low Energy					
Channel	Channel Frequency (MHz)	Measured Result	Cable Loss	Peak O Power	utput	Limit (W)	Verdict
		(dBm)	(dB)	dBm	W		
Low Channel	2402	-20.07	0	-20.07	0.000010	1	Pass
Middle Channel	2440	-20.46	0	-20.46	0.000009	1	Pass
High Channel	2480	-20.64	0	-20.64	0.000009	1	Pass

Note:

2. Cable loss included in measured result

^{1.} Peak Output Power (dBm) = Measured Result + Cable Loss



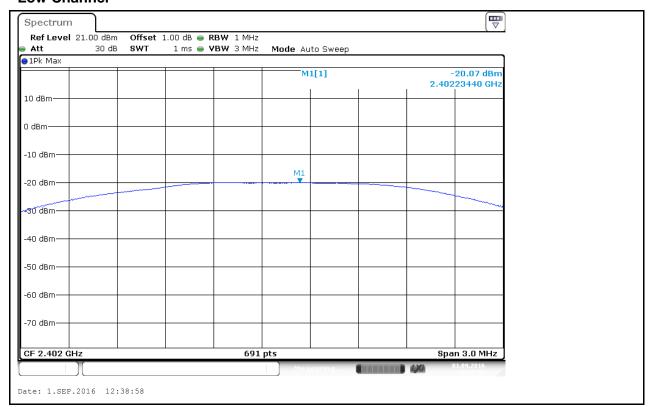
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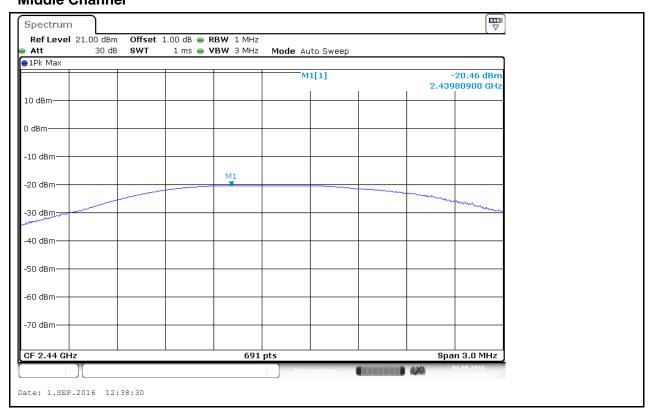
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Test Graph of Peak Output Power, Bluetooth 4.0 Low Energy mode **Low Channel**



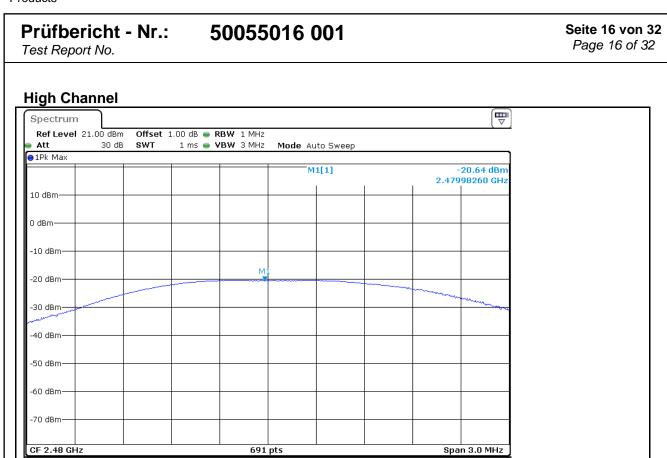
Middle Channel

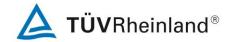




Date: 1.SEP.2016 12:37:40

Products





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5.1.3 6dB Bandwidth and 99% Bandwidth

RESULT: Pass

Date of testing 2016-08-18 to 2016-09-02 Test standard FCC Part 15.247(a)(2) RSS-247 Section 5.2

RSS-Gen Issue 4 Clause 6.6

Basic standard ANSI C63.10:2013

FCC KDB 558074 v03r05

Kind of test site : Shielded room

Test setup

Test Channel Low/ Middle/ High

Operation Mode A.1 Ambient temperature **23**℃ Relative humidity 51% 101.0 kPa Atmospheric pressure

Table 8: Test result of 6dB Bandwidth and 99% Bandwidth, Bluetooth Low Energy operation

Bluetooth 4.0 Low Energy								
Channel 6dB 99% Channel Frequency (MHz) Bandwidth (kHz) Limit (kHz) Verdict								
Low Channel	2402	772.8	1740.96	at least 500	Pass			
Mid Channel	2440	699.0	1450.07	at least 500	Pass			
High Channel	2480	716.4	1350.22	at least 500	Pass			



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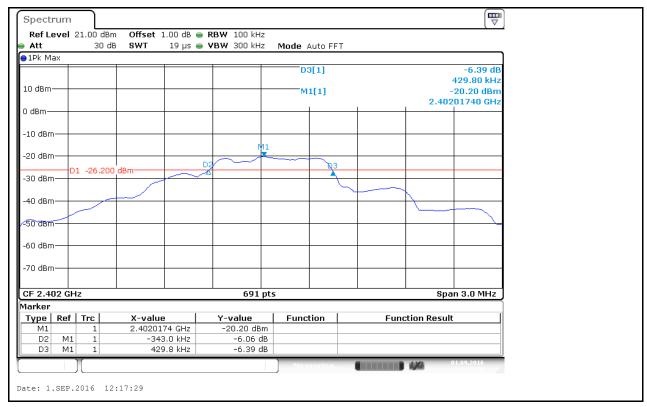
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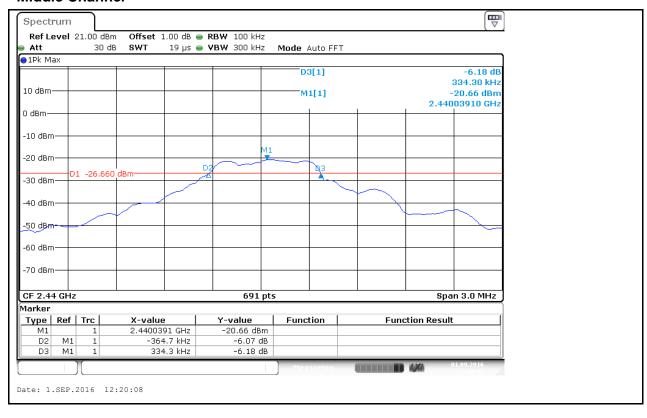
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Test Graph of 6dB Bandwidth, Bluetooth 4.0 Low Energy mode

Low Channel

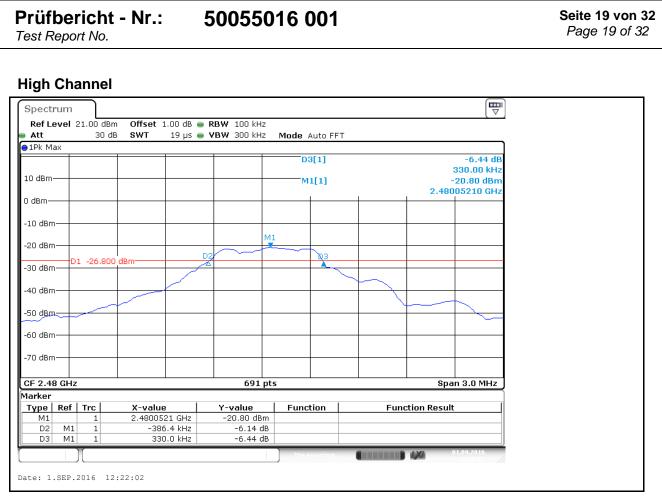


Middle Channel



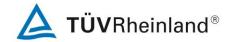


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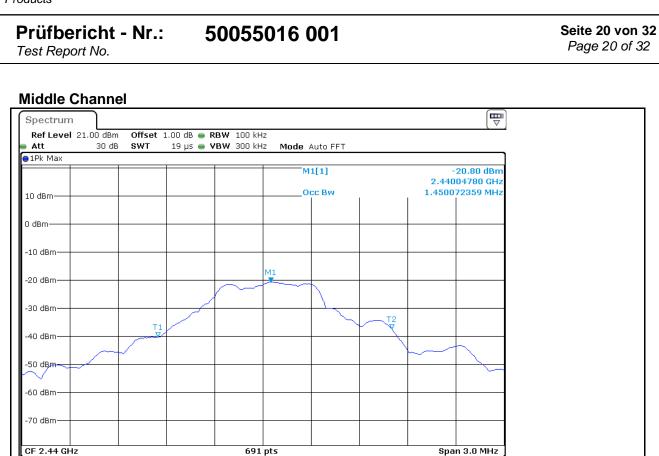


Test Graph of 99% Bandwidth, Bluetooth 4.0 Low Energy mode Low Channel





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High Channel

Date: 1.SEP.2016 12:24:06





Products

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5.1.4 Conducted Spurious Emissions measured in 100 kHz **Bandwidth**

RESULT: Pass

Date of testing 2016-08-18 to 2016-09-02 : Test standard FCC part 15.247(d)

RSS-247 Section 5.5

RSS-Gen Issue 4 Clause 6.13

Basic standard ANSI C63.10:2013

FCC KDB 558074 v03r05

Limit 20dB (below that in the 100kHz bandwidth within the

band that contains the highest level of the desired

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/ Middle/ High

Operation mode A.1 Ambient temperature **23**℃ Relative humidity 51% Atmospheric pressure 101.0 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test graph, and compliance is achived as well.



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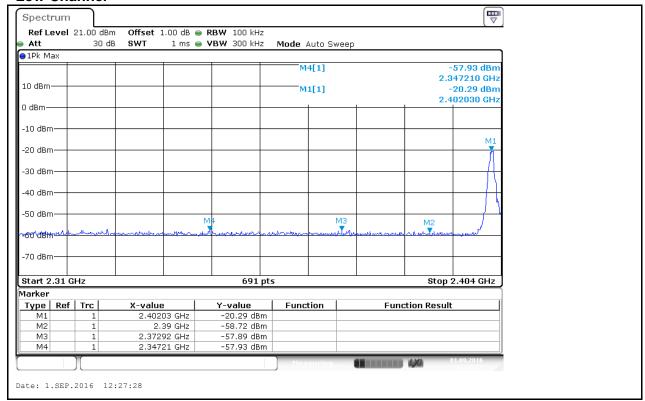
Prüfbericht - Nr.: 50055016 001

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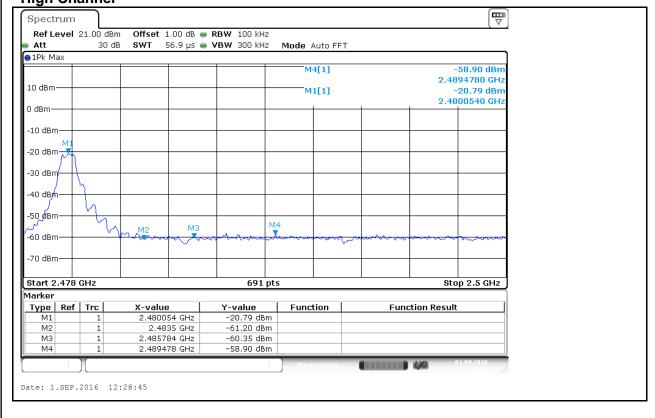
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Test Graph of 100 kHz Bandwidth of Frequency Band Edge, Bluetooth 4.0 Low Energy mode

Low Channel









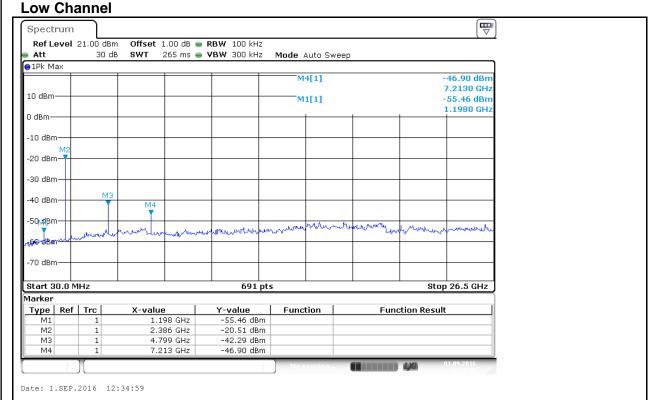
Products

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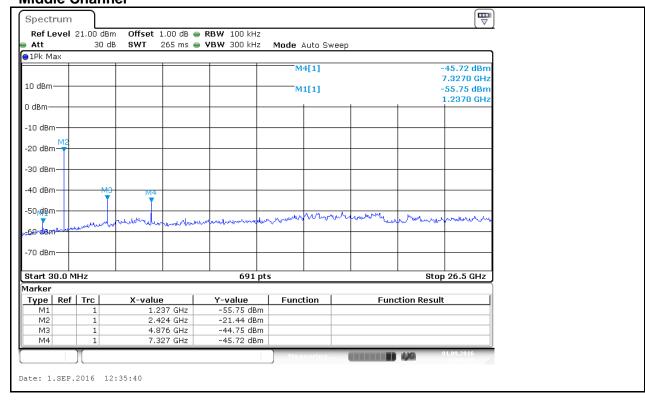
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Test Graph of Conducted spurious emissions measured in 100 kHz Bandwidth, Bluetooth 4.0 Low Energy mode



Middle Channel





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Μ4

Date: 1.SEP.2016 12:36:18

50055016 001 Seite 24 von 32 Prüfbericht - Nr.: Page 24 of 32 Test Report No. **High Channel** Spectrum Ref Level 21.00 dBm Offset 1.00 dB
RBW 100 kHz Att 30 dB SWT 265 ms 🍙 **VBW** 300 kHz Mode Auto Sweep ●1Pk Max M4[1] -48.49 dBn 7.4420 GHz 10 dBm-M1[1] -55.38 dBm 1.2370 GHz 0 dBm -10 dBm--20 dBm--30 dBm--40 dBm--50 **d**8m -70 dBm-Start 30.0 MHz 691 pts Stop 26.5 GHz Marker Type | Ref | Trc | **Y-value** -55.38 dBm -21.08 dBm Function X-value **Function Result** 1.237 GHz 2.462 GHz МЗ 4.952 GHz -45.90 dBm

-48.49 dBm

7.442 GHz



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5.1.5 Power spectral density

RESULT: Pass

Date of testing 2016-08-18 to 2016-09-02

Test standard FCC part 15.247(e)

RSS-247 Section 5.2

Basic standard ANSI C63.10:2013

FCC KDB 558074 v03r05

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

Test setup

Test Channel Low/ Middle/ High

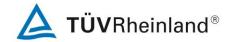
Operation mode A.1 Ambient temperature **23**℃ Relative humidity 51% Atmospheric pressure 101.0 kPa

Table 9: Test result of Power spectral density, Bluetooth Low Energy operation

Operation Mode	Channel	Nesuit			Limit (dBm/3kHz)	Verdict	
	2402	-33.59	0	-33.59	8	Pass	
Bluetooth 4.0 Low Energy	2440	-34.15	0	-34.15	8	Pass	
	2480	-33.92	0	-33.92	8	Pass	

^{1.} PSD = Measured Result + Cable Loss

^{2.} Cable loss included in measured result



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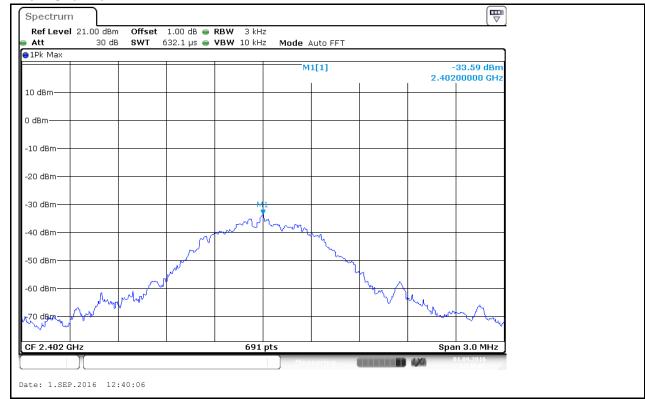
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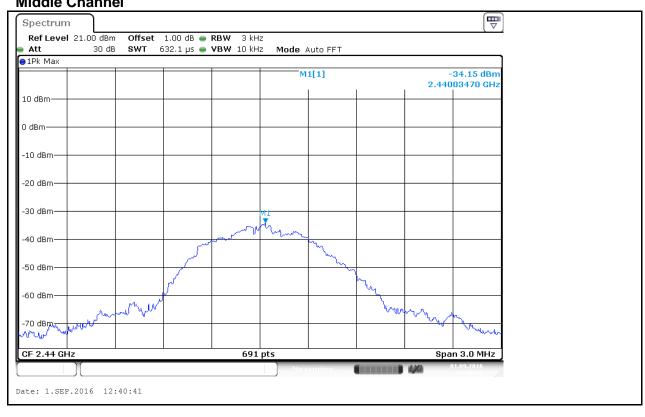
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Test Graph of Power Spectral Density, Bluetooth 4.0 Low Energy mode

Low Channel



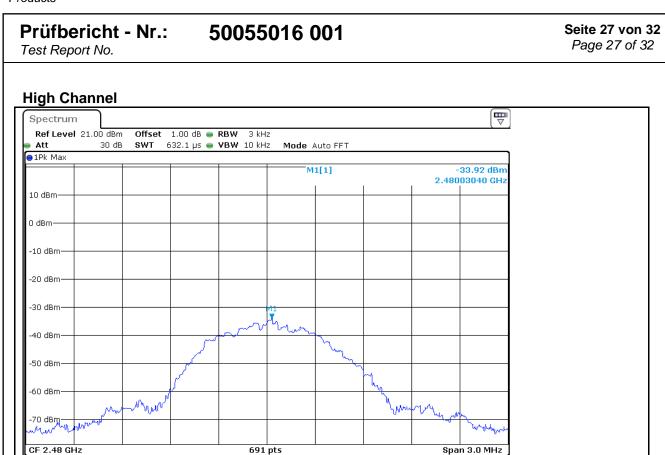
Middle Channel





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Date: 1.SEP.2016 12:41:09





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5.1.6 Spurious Emissions

RESULT: Pass

Date of testing 2016-08-18 to 2016-09-02

Test standard FCC part 15.247(d)

FCC part 15.209

RSS-247 Section 5.5 and Section 3.3

RSS-Gen Issue 4 Clause 6.13

Basic standard ANSI C63.10:2013 Limits Refer to 15.209(a)

RSS-Gen Issue 4 Clause 8.9 and 8.10

Kind of test site 3m Semi-Anechoic Chamber

Test setup

Test Channel Low/ Middle/ High

: Operation mode A.1 Ambient temperature **23**℃ Relative humidity 48% Atmospheric pressure : 101.0 kPa

Refer to attached Appendix A for details.



Products

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5.1.7 Conducted emissions

RESULT: Not applicable

Test standard : FCC Part 15.207

RSS-Gen Clause 8.8

Basic standard : ANSI C63.10: 2013
Frequency range : 0.15MHz – 30MHz
Limits : FCC Part 15.207(a)

Table 3 of RSS-Gen

Kind of test site : Shield Room

Conclusion:

The EUT does not have AC mains port, therefore this requirement is not applicable for EUT.



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Table 1: List of Test and Measurement Equipment5

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Appendix A

Test Results of Bluetooth 4.0 Low Energy Mode

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Appendix A.1: Spurious Emissions of Bluetooth 4.0 Low Energy operation Low Channel

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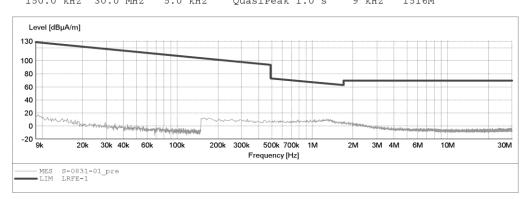
FCC Class B 3M Radiated

Interface M/N:INF001

Therrace I SolidLabs Operating Condition: TX 2402MHz
Test Site: 2# Chamber Operator: Tigwnbr Test Specification: DC 4.5V Comment:

Start of Test: 2016-8-31 /

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step _SUB_STD_VTERM2 1.70 __SUB_STD_vIENDE___ Detector Meas. Time Transducer Bandw. 200 Hz 1516M 1516M





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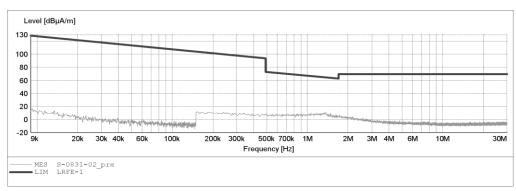
FCC Class B 3M Radiated

Interface M/N:INF001

manufacturer: SolidLabs
Operating Condition: TX 2402MHz
Test Site: 2# Chamber
Operator: TGMADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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





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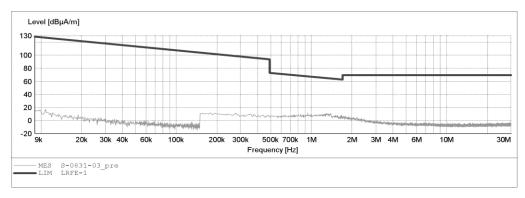
FCC Class B 3M Radiated

Interface M/N:INF001

manufacturer: SolidLabs
Operating Condition: TX 2402MHz
Test Site: 2# Chamber
Operator: LGWADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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





Site: 2# Chamber

Tel:+86-0755-26503290

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Power Source: DC 4.5V

Polyal TKI, Fax:+86-0755-26503396

Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Job No.: Igwade #1453

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

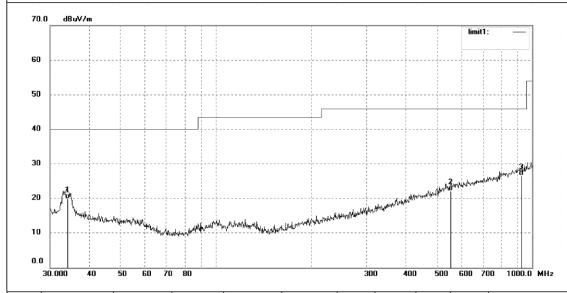
EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.0363	29.37	-9.48	19.89	40.00	-20.11	QP			
2	552.8831	25.61	-3.54	22.07	46.00	-23.93	QP			
3	925.7563	24.74	1.74	26.48	46.00	-19.52	QP			

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Job No.: Igwade #1454

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

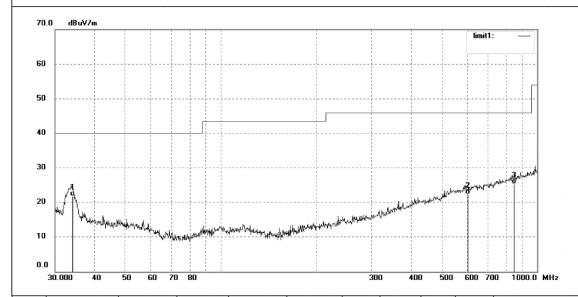
Polarization: Vertical
Power Source: DC 4.5V
Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.1561	31.19	-9.32	21.87	40.00	-18.13	QP			
2	605.6592	25.15	-2.90	22.25	46.00	-23.75	QP			
3	845.0878	24.65	0.69	25.34	46.00	-20.66	QP			

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Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Job No.: Igwade #1482

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

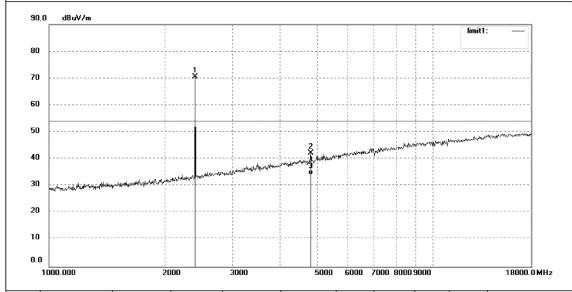
Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	77.92	-7.45	70.47	1	/	peak			
2	4804.025	42.50	-0.30	42.20	74.00	-31.80	peak			
3	4804.025	34.35	-0.30	34.05	54.00	-19.95	AVG			

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Job No.: Igwade #1483 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

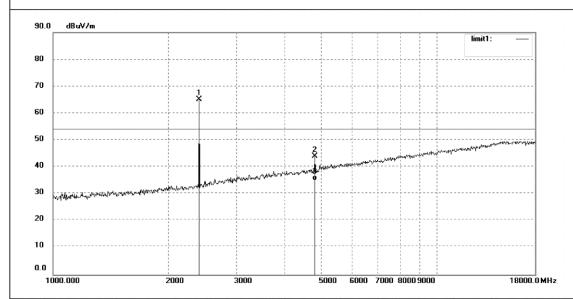
Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	72.48	-7.45	65.03	/	/	peak			
2	4804.028	44.21	-0.30	43.91	74.00	-30.09	peak			
3	4804.028	35.40	-0.30	35.10	54.00	-18.90	AVG			

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Job No.: Igwade #1492

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

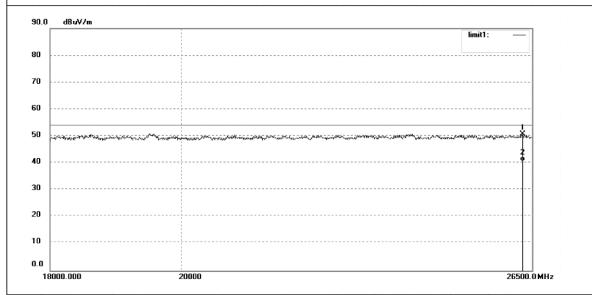
Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26305.974	33.72	17.03	50.75	74.00	-23.25	peak			
2	26305.974	23.68	17.03	40.71	54.00	-13.29	AVG			

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Job No.: Igwade #1493

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

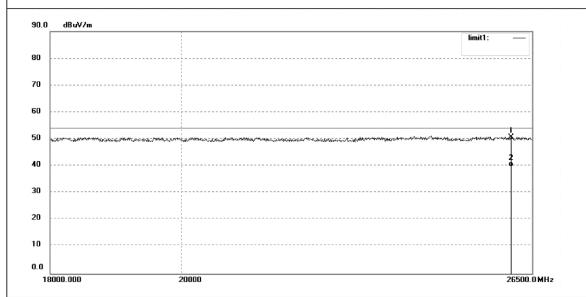
Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26062.917	34.16	16.50	50.66	74.00	-23.34	peak			
2	26062.917	23.23	16.50	39.73	54.00	-14.27	AVG			



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Middle Channel

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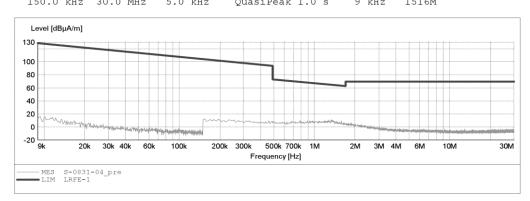
FCC Class B 3M Radiated

Interface M/N:INF001

Therrace I SolidLabs Operating Condition: TX 2440MHz
Test Site: 2# Chamber Operator: Tigwnbr Test Specification: DC 4.5V Comment:

Start of Test: 2016-8-31 /

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
Frequency Frequency Width Time Bandw.
9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz 1516M Transducer





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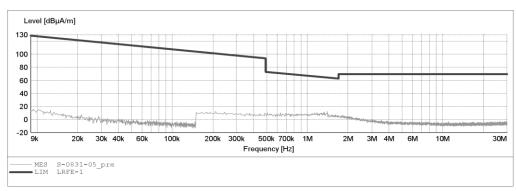
FCC Class B 3M Radiated

Interface M/N:INF001

manufacturer: SolidLabs
Operating Condition: TX 2440MHz
Test Site: 2# Chamber
Operator: TGMADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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





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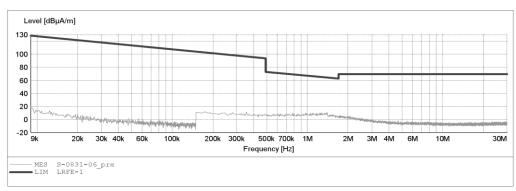
FCC Class B 3M Radiated

Interface M/N:INF001

manufacturer: SolidLabs
Operating Condition: TX 2440MHz
Test Site: 2# Chamber
Operator: LGWADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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



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Site: 2# Chamber

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eyuan Rd, Tel:+86-0755-26503290 n,P.R.China Fax:+86-0755-26503396 Polarization: Vertical

Job No.: Igwade #1455 Standard: FCC Class B 3M Radiated

Standard. 1 CC Class B SW Madiate

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2440MHz

Model: INF001

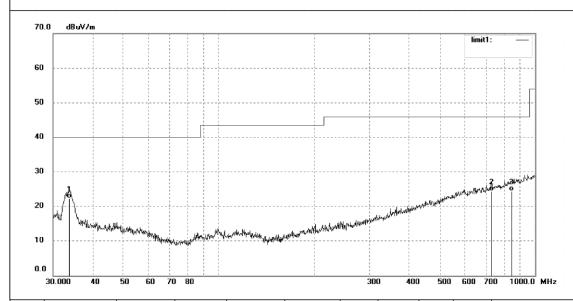
Manufacturer: SolidLabs

Power Source: DC 4.5V Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.7986	31.52	-9.22	22.30	40.00	-17.70	QP			
2	729.3582	25.76	-1.36	24.40	46.00	-21.60	QP			
3	842.1295	23.77	0.66	24.43	46.00	-21.57	QP			



Site: 2# Chamber

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Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Job No.: Igwade #1456

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

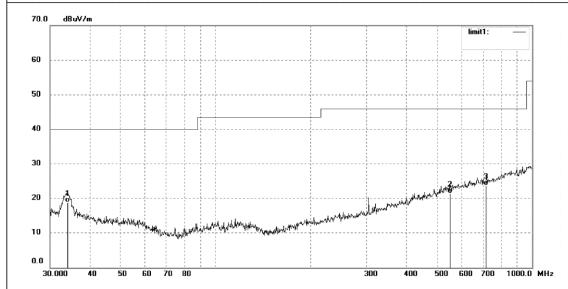
Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Interface

Mode: TX 2440MHz

Model: INF001

Manufacturer: SolidLabs



- 1											
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
	1	34.1561	28.22	-9.49	18.73	40.00	-21.27	QP			
	2	550.9479	25.08	-3.59	21.49	46.00	-24.51	QP			
	3	716.6820	25.28	-1.54	23.74	46.00	-22.26	QP			

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Job No.: Igwade #1486 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2440MHz

Model: INF001

Manufacturer: SolidLabs

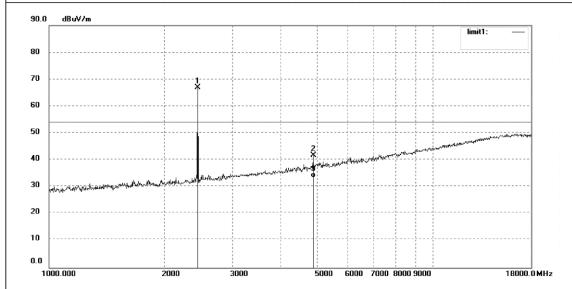
Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



- 1											
	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	74.33	-7.36	66.97	/	/	peak			
	2	4880.029	41.68	0.13	41.81	74.00	-32.19	peak			
	3	4880.029	33.25	0.13	33.38	54.00	-20.62	AVG			

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Job No.: Igwade #1487 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2440MHz

Model: INF001

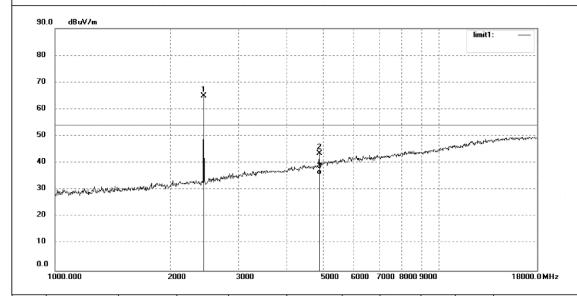
Manufacturer: SolidLabs

Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18 Time:

Engineer Signature: LGWADE

Distance: 3m



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	72.33	-7.36	64.97	1	/	peak			
2	4880.024	43.44	0.13	43.57	74.00	-30.43	peak			
3	4880.024	35.56	0.13	35.69	54.00	-18.31	AVG			

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Job No.: Igwade #1494 Standard: FCC Class B 3M Radiated

Standard. 1 CC Class B Sivi Nadiate

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2440MHz

Model: INF001

Manufacturer: SolidLabs

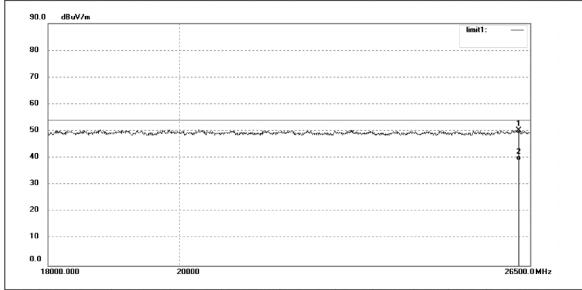
Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26255.151	33.87	16.50	50.37	74.00	-23.63	peak			
2	26255.151	22.45	16.50	38.95	54.00	-15.05	AVG			

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Job No.: Igwade #1495 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2440MHz

Model: INF001

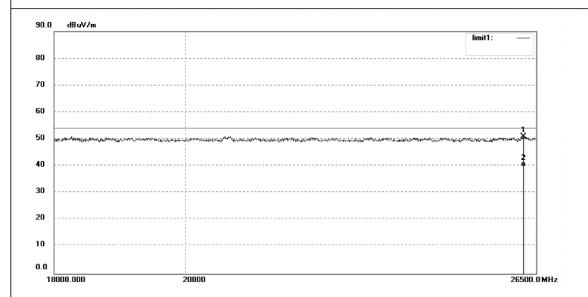
Manufacturer: SolidLabs

Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18 Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26234.849	33.79	17.08	50.87	74.00	-23.13	peak			
2	26234.849	22.68	17.08	39.76	54.00	-14.24	AVG			



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High Channel

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FCC Class B 3M Radiated

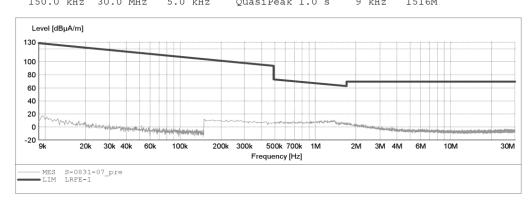
Interface M/N:INF001

Therrace I SolidLabs Operating Condition: TX 2480MHz
Test Site: 2# Chamber Operator: Tigwnbr Test Specification: DC 4.5V

Comment:

Start of Test: 2016-8-31 /

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
Frequency Frequency Width Time Bandw.
9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz 1516M Transducer





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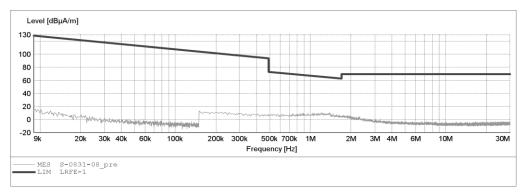
FCC Class B 3M Radiated

Interface M/N:INF001

manufacturer: SolidLabs
Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: LGWADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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





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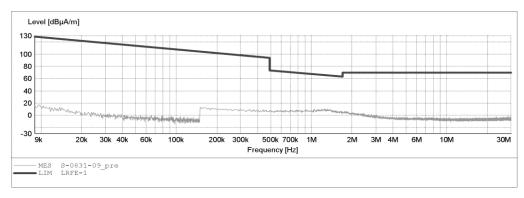
FCC Class B 3M Radiated

Interface M/N:INF001

Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: LGWADE Test Specification: DC 4.5V Comment: Start of Test: 2016-8-31 /

Transducer

SCAN TABLE: "LFRE Fin"
Short Description:
Start Stop Step Detector Meas. IF Transcription:
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





Site: 2# Chamber

Tel:+86-0755-26503290

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n,P.R.China Fax:+86-0755-26503396
Polarization: Horizontal

Job No.: Igwade #1457 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2480MHz

Model: INF001

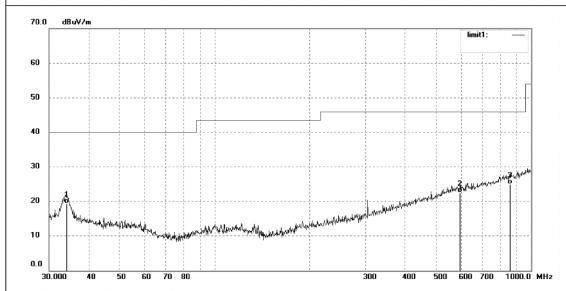
Manufacturer: SolidLabs

Power Source: DC 4.5V

Date: 2016/08/18 Time:

Engineer Signature: LGWADE

Distance: 3m



- 1											
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
	1	34.0363	28.88	-9.48	19.40	40.00	-20.60	QP			
	2	597.2233	25.49	-3.01	22.48	46.00	-23.52	QP			
	3	860.0352	24.10	0.86	24.96	46.00	-21.04	QP			

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Job No.: Igwade #1458

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

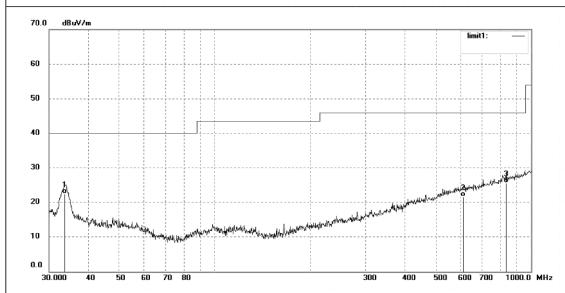
EUT: Interface
Mode: TX 2480MHz
Model: INF001
Manufacturer: SolidLabs

Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18 Time:

Engineer Signature: LGWADE

Distance: 3m



- 1											
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
	1	33.5623	31.64	-9.15	22.49	40.00	-17.51	QP			
	2	609.9215	24.36	-2.79	21.57	46.00	-24.43	QP			
	3	833.3170	25.12	0.59	25.71	46.00	-20.29	QP			

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Job No.: Igwade #1488

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2480MHz

Model: INF001

Manufacturer: SolidLabs

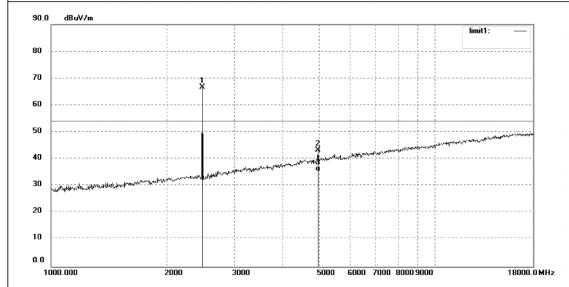
Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



П											
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
	1	2480.000	74.10	-7.37	66.73	/	/	peak			
	2	4960.027	42.75	0.52	43.27	74.00	-30.73	peak			
	3	4960.027	34.86	0.52	35.38	54.00	-18.62	AVG			



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Job No.: Igwade #1489

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2480MHz

Model: INF001

Manufacturer: SolidLabs

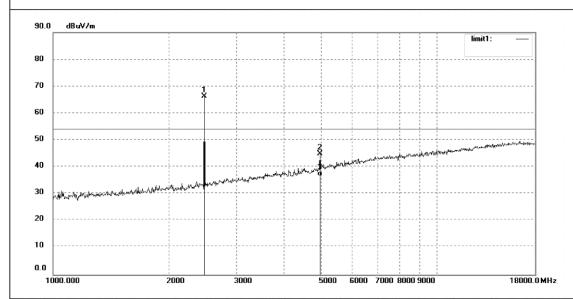
Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	73.61	-7.37	66.24	/	/	peak			
2	4960.022	44.43	0.52	44.95	74.00	-29.05	peak			
3	4960.022	36.10	0.52	36.62	54.00	-17.38	AVG			

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

Job No.: Igwade #1496

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface

Mode: TX 2480MHz

Model: INF001

Manufacturer: SolidLabs

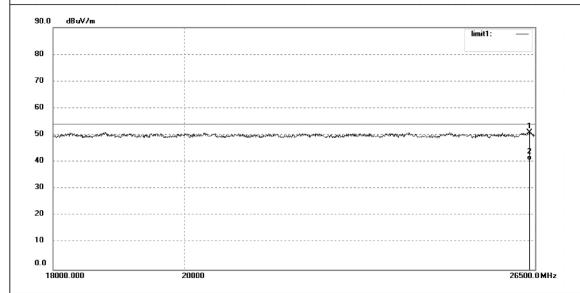
Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26377.291	34.02	16.98	51.00	74.00	-23.00	peak			
2	26377.291	23.65	16.98	40.63	54.00	-13.37	AVG			

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

Job No.: Igwade #1497

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Interface Mode: TX 2480MHz Model: INF001 Manufacturer: SolidLabs

(MHz)

2

26174.038

26174.038

(dB)

16.50

16.50

50.82

40.10

34.32

23.60

Polarization: Horizontal Power Source: DC 4.5V

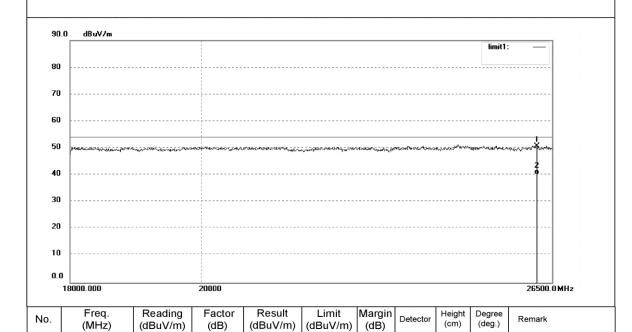
Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



(dBuV/m)

74.00

54.00

(dB)

-23.18

-13.90

peak

AVG

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Appendix A.2: Radiated Emissions in Restricted Bands Low Channel



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Polarization: Vertical
Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Job No.: Igwade #1484 Standard: FCC (Band Edge) Test item: Radiation Test

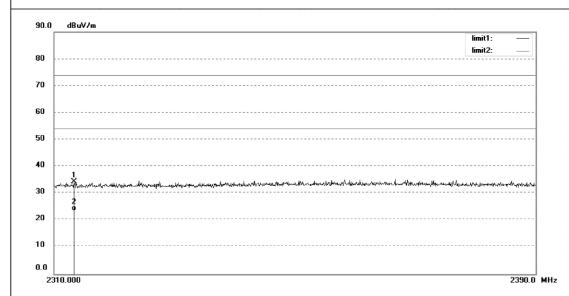
Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs



	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
Ì	1	2313.360	42.01	-7.81	34.20	74.00	-39.80	peak			
	2	2313.360	31.23	-7.81	23.42	54.00	-30.58	AVG			

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Job No.: Igwade #1485 Standard: FCC (Band Edge) Test item: Radiation Test

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

EUT: Interface

Mode: TX 2402MHz

Model: INF001

Manufacturer: SolidLabs

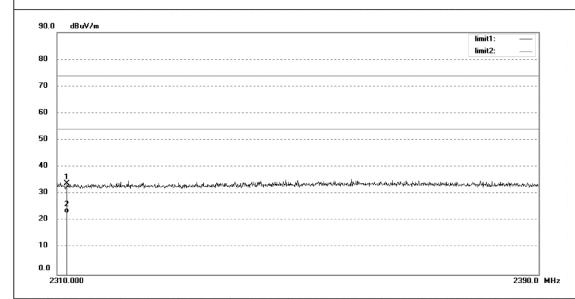
Polarization: Horizontal Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2311.680	41.61	-7.82	33.79	74.00	-40.21	peak			
2	2311.680	30.59	-7.82	22.77	54.00	-31.23	AVG			

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High Channel



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Polarization: Horizontal Power Source: DC 4.5V Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m

Job No.: Igwade #1490 Standard: FCC (Band Edge) Test item: Radiation Test

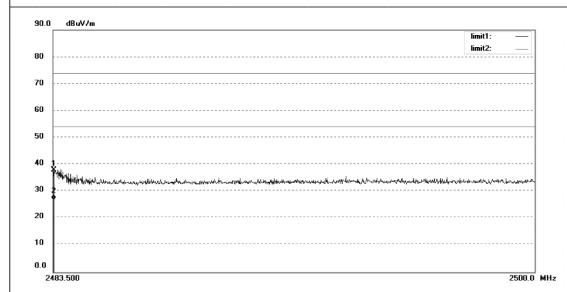
Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Interface

Mode: TX 2480MHz

Model: INF001

Manufacturer: SolidLabs



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.533	45.35	-7.37	37.98	74.00	-36.02	peak			
2	2483.533	34.20	-7.37	26.83	54.00	-27.17	AVG			

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Job No.: Igwade #1491
Standard: FCC (Band Edge)
Test item: Radiation Test

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

EUT: Interface

Mode: TX 2480MHz

Model: INF001

Manufacturer: SolidLabs

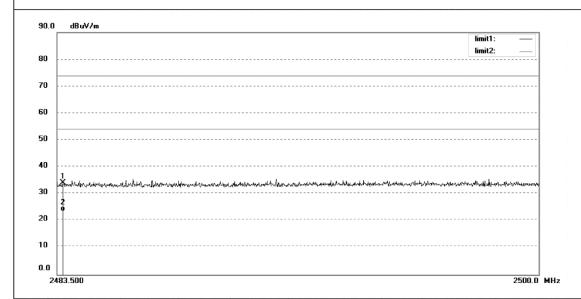
Polarization: Vertical Power Source: DC 4.5V

Date: 2016/08/18

Time:

Engineer Signature: LGWADE

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.698	41.43	-7.37	34.06	74.00	-39.94	peak			
2	2483.698	30.86	-7.37	23.49	54.00	-30.51	AVG			

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Appendix B

Test Results of RF Exposure - Bluetooth 4.0 Low Energy Mode

APPENDIX B.1: RF EXPOSURE COMPLIANCE	2
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Appendix B

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Appendix B.1: RF Exposure Compliance

Radio Frequency Exposure Compliance

RESULT: Pass

Test standard : FCC 1.1310

RSS-102 Issue 5

KDB 447498 D01 General RF Exposure Guidance v06

This device is Bluetooth 4.0 Low Energy.

This RF exposure evaluation is only for Bluetooth 4.0 Low Energy operation.

Since the maximum peak output power of the transmitter is 0.01 mW. The maximum peak output power is less than 10mW (FCC Limit) and 4mW (IC Limit), hence the EUT is exclueded from SAR evaluation according to FCC KDB 447498 D01: Mobile Portable RF Exposure and RSS-102 Issue 5