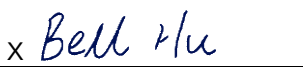


Prüfbericht-Nr.: Test report no.:	CN254HIA 003	Auftrags-Nr.: Order no.:	168548303	Seite 1 von 9 Page 1 of 9	
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2025-04-14		
Auftraggeber: Client:	Zhong Shan City Richsound Electronic Industrial Ltd. No.16, East Shagang Road, Gangkou, Zhongshan, Guangdong, China.				
Prüfgegenstand: Test item:	5.1.2-Soundbar with Subwoofer and Satellite Speakers				
Bezeichnung / Typ-Nr.: Identification / Type no.:	NS-SB512, NS-SB512-C, TB643DW7S (Trademark: INSIGNIA, RSR)				
Auftrags-Inhalt: Order content:	Test Report				
Prüfgrundlage: Test specification:	CFR Title 47 FCC Part 2: Section 2.1091				
Wareneingangsdatum: Date of sample receipt:	2025-04-21	Please refer to Photo Document			
Prüfmuster-Nr.: Test sample no.:	A003970302-001~003				
Prüfzeitraum: Testing period:	2025-04-27 - 2025-05-22				
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: Test result*:	Pass				
geprüft von: tested by:			genehmigt von: authorized by:		
Datum: Date:	2025-07-07	Signed by: Jonathan Li		Ausstellungsdatum: Issue date:	2025-07-07
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / Other:	FCC ID: Z8M-NSSB512				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet	
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested	
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. <i>This test report only relates to the above mentioned 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>					

Prüfbericht-Nr.: CN254HIA 003
Test report no.:

Seite 2 von 9
Page 2 of 9

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfbedingungen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

Prüfbericht - Nr.: CN254HIA 003
Test Report No.:

Seite 3 von 9
Page 3 of 9

Test Summary

3.1.1 RF EXPOSURE COMPLIANCE
RESULT: Pass

Contents

1.	TEST SITES.....	5
1.1	TEST FACILITIES.....	5
1.2	TRACEABILITY.....	5
1.3	CALIBRATION.....	5
1.4	LOCATION OF ORIGINAL DATA	5
1.5	STATUS OF FACILITY USED FOR TESTING	5
2.	GENERAL PRODUCT INFORMATION.....	6
2.1	PRODUCT FUNCTION AND INTENDED USE	6
2.2	RATING AND SYSTEM DETAILS	6
3.	TEST RESULTS.....	7
3.1	TRANSMITTER REQUIREMENTS & TEST SUITES.....	7
3.1.1	RF Exposure Compliance.....	7
4.	LIST OF TABLES.....	9

1. Test Sites

1.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, China

A2LA Certificate Number: 5162.01

FCC Accreditation Designation No.: CN1260

ISED Wireless Device Testing Laboratory: 25069

1.2 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

1.3 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 basis using in house standards or comparisons.

1.4 Location of Original Data

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

1.5 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. facility located at 2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

2. General Product Information

2.1 Product Function and Intended Use

The Product is a 5.1.2 Soundbar with Subwoofer and Satellite Speakers which supports Bluetooth dual mode and 5.8GHz wireless technology.

All the models are the same except for trademark difference.

For details refer to the User Manual, Technical Description and Circuit Diagram.

2.2 Rating and System details

Table 1: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	5.1.2-Soundbar with Subwoofer and Satellite Speakers
Type Designation:	NS-SB512, NS-SB512-C, TB643DW7S
Trademark:	INSIGNIA, RSR
FCC ID:	Z8M-NSSB512
Operating Voltage:	100-240V~50/60Hz, 30W
Testing Voltage:	AC 120V, 60Hz
Technical Specification of Bluetooth (dual mode)	
Operating Frequency:	2402 MHz to 2480 MHz
Type of Modulation:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Channel Number:	BR & EDR mode:79 channels, Low Energy mode:40 channels
Channel Separation:	BR & EDR mode:1MHz, Low Energy mode:2MHz
Data Rate:	BR & EDR mode: 1Mbps, 2Mbps, 3Mbps Low Energy mode: 1Mbps, 2Mbps
Antenna Type:	Integral Antenna
Antenna Gain:	2.47 dBi (Provided by the Client)
Technical Specification of 5.8GHz	
Operating Frequency:	5729-5849MHz
Channel Number:	61 channels
Type of Modulation:	GFSK
Channel Separation:	2MHz
Antenna Type:	Integral Antenna
Antenna Number:	1
Antenna Gain:	3.56 dBi (Provided by the Client)

3. Test Results

3.1 Transmitter Requirements & Test Suites

3.1.1 RF Exposure Compliance

RESULT:
Pass

Test standard : CFR Title 47 FCC Part 2: Section 2.1091
Limit : Table 1 of CFR Title 47 FCC Part 1: Section 1.1310
Kind of test site : Shielded room

This device is mobile device, and the applicant declares that the minimum separation distance is greater than 20cm. Therefore, MPE measurement or computational modelling should be used to determine compliance.

Antenna Gain: 2.47 dBi for Bluetooth, 3.56 dBi for 5.8GHz.

3.1.1.1 RF Exposure Compliance Requirement for FCC

➤ **Radio Frequency Exposure Limit**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)
300-1,500	--	--	f/1500
1,500-100,000	--	--	1.0

➤ **Radio Frequency Exposure Calculation Formula**

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

Prüfbericht - Nr.: CN254HIA 003
Test Report No.:
Seite 8 von 9
Page 8 of 9
Table 2: Test Results of RF Exposure Calculations for FCC, stand-alone mode

Operating Mode	Max. EIRP (dBm)	Distance (cm)	MPE P_d (mW/cm ²)	Limit (mW/cm ²)	Verdict
Bluetooth	5.97	20	0.00079	1.0	Pass
5.8GHz	6.38	20	0.0009	1.0	Pass

The EIRP value are conducted from radio report CN254HIA 001/002.

Table 3: Test Results of RF Exposure Calculations for FCC, Simultaneous mode

Co-location Mode	Sum of the MPE Ratios	Limit	Verdict
Bluetooth + 5.8GHz	$0.00079/1+0.0009/1=0.00169$	1.0	Pass

➤ **Conclusion**

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

4. List of Tables

Table 1: Technical Specification of EUT 6
Table 2: Test Results of RF Exposure Calculations for FCC, stand-alone mode..... 8
Table 3: Test Results of RF Exposure Calculations for FCC, Simultaneous mode..... 8