



# Certificate of Compliance

This certificate is issued for the following:

S-RT5+ M9

**Prepared for:**

Hilti Inc  
7250 Dallas Parkway  
Legacy Tower Suite 1000  
Plano, TX 75024  
United States

FM Approvals Class: 4451

Approval Identification: PR458494

Approval Granted: 2/26/2021

To verify the availability of the Approved product, please refer to [www.roofnav.com](http://www.roofnav.com)

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in RoofNav, an online resource of FM Approvals.

A handwritten signature in dark ink, appearing to read 'Phillip J. Smith', is written above a horizontal line.

Phillip J. Smith  
VP - Manager of Materials  
FM Approvals  
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Norwood, MA 02062



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# APPROVAL REPORT

**Project No:** PR458494  
**Class:** 4451  
**Product Name:** S-RT5+ M9  
**Name of Listing Company:** Hilti Inc  
**Address of Listing Company:** 7250 Dallas Parkway  
Suite 1000,  
Plano, TX 75024  
United States  
**Customer ID:** 1000004113  
**Customer website:** www.hilti.com

**Prepared by**



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Dena Eidipour  
Engineer  
Materials

**Reviewed by**



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Joanna Blaney  
AVP, Technical Team Manager Materials



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Phillip Smith  
AVP, Manager, Materials

**2/26/2021**

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**Date of Approval**

## 1 INTRODUCTION

1.1 Hilti Inc requested Approval of their S-RT5+ M9 fastener to determine if it meets the Approval requirements of the standard listed in Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

### 1.3 Standard

Title	Number	Issue Date
Approval Standard for Profiled Steel Panels for Use as Decking in Class 1 Insulated Roof Construction	4451	06/2012

### 1.4 Listing

The products and assemblies will be listed in RoofNav, an on-line resource of FM Approvals. Drawings and specifications are on file at FM Approvals.

## 2 DESCRIPTION

The S-RT5+ M9 is as described in RoofNav.

2.1 The S-RT5+ M9 is a self-drilling steel screw with a 5/16 in. (7.85 mm) hexagonal drive head and has a fluted shank to improve the thread cutting properties of the screw and is for use in securing 16, 18, 20, and 22 gauge (MSG) [0.0598, 0.0474, 0.0358, and 0.0295 in. (1.5, 1.2, 0.91, and 0.75 mm) thick] steel roof deck to the roof structural steel supporting members. The screws has a min 0.555 in. (14.1 mm) washer head. It is 1.340 in. (34 mm) long and contains 24 threads per 1 in. (25 mm) length of threaded shaft. The threads have a minimum 0.225 in. (5.72 mm) major diameter, 0.178 in. (4.52 mm) minimum minor diameter and a minimum 0.201 in. (5.10 mm) point diameter. The fastener is designed for securing steel deck to steel supporting members having a thickness range of 0.0598 to 0.375 in. (1.5 to 9.5 mm).

## 3 EXAMINATIONS AND TESTS

3.1 All components (except those listed in 2.1) were produced under the FM Approvals Surveillance Audit program as indicated by FM Approvals labels. All samples were considered to be representative of standard production and were examined and tested as indicated below. Test samples were prepared by, or under the supervision of, FM Approvals personnel. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 Several performance requirements and tests required by the Standard have been waived due to previous successful testing. See Table 1 below for details.

Table 1

FM Standard 4451 Performance Requirement	FM Standard 4451 Section	Justification/Comments
Allowable Live Load Deflection	4.1	Waived, Not applicable
Combustibility From Below the Roof Deck	4.2	Waived, See 3049232, 3036326, 3021719, 3029102, and 2Y6A7.AM
Combination pull out / pull over resistance of fasteners (Testing)	4.3.1.1	Waived, See PR451693
Pull over resistance of fasteners (Calculation)	4.3.1.2	Waived, See 3049232
Combination pull off / pull over resistance of arc spot welds	4.3.1.3	Waived, Not applicable
Side lap fastener and side lap crimping and interlocking resistance	4.3.1.4	Waived, See 3049232, 3036326, 3021902, and 3011115
Fastener pull out resistance for above deck components	4.3.1.5	Waived, Not applicable
Steel Deck Bending Stresses Under Service Wind Loads	4.3.1.6	Waived, Not applicable
Wind Uplift Ratings Greater Than Class 1-90 and all assemblies that utilize steel deck with a design thickness less than 0.0295 in. (0.75 mm)	4.3.2	Waived, Not requested
Foot Traffic Resistance of Insulation	4.4	Waived, Not applicable
Bearing Capacity of Insulation	4.5	Waived, Not applicable
Corrosion Resistance Test (Optional Test)	4.6	Waived, Not requested
Drivability Evaluation of Fasteners	4.7	Waived, See PR451693

**3.3 Combination pull out / pull over resistance of fasteners**

**3.3.2** Two (2) sets of samples were tested for Combination pull out / pull over resistance of the fasteners in PR451693. The components and sequence of installation were as follows:

Deck:	22 ga [0.0295 in (0.75 mm) thick steel] , Grade 80 ksi (552 MPa)
Fastener:	S-RT5+ M9
Result:	The test sample set met the average of 398 lbf (1772N)

Deck:	22 ga [0.0295 in. (0.75 mm) thick steel] , Grade 80 ksi (552 MPa)
Fastener:	S-MD 12-24 x 1-5/8 M HWH5
Result:	The test sample set met the average of 382 lbf (1697N)

3.3.2 One Drivability test was conducted in PR451693 as follows:

Deck:	16 ga [0.0598 (1.52 mm)], Grade 80 ksi (552 MPa)
Fastener:	S-RT5+ M9
Plate Thickness:	Max Thickness 0.375 in (9.5 mm)
Result:	Fastener penetrated through all the layers

## 4 MARKING

4.1 Marking on the product or, if not possible due to size, on its packaging or label accompanying the product, shall include the following information:

- name and address of the manufacturer or marking traceable to the manufacturer;
- date of manufacture or code traceable to date of manufacture or lot identification;
- trade name or model number.

4.2 The product trade name, model number or model type identification shall correspond with RoofNav, the manufacturer's catalog designation and shall uniquely identify the product as FM Approved. The manufacturer shall not place this trade name or model number identification on any other product unless covered by a separate agreement with FM Approvals.

4.3 The Approval Mark shall be displayed visibly and permanently on the product and/or packaging. The manufacturer shall not use this Mark on any other product unless such product is covered by a separate report.

4.4 Labels or markings denoting FM Approval shall be applied by the manufacturer only within and on the premises of manufacturing locations that are under the FM Approvals Surveillance Audit Program.

4.5 All markings shall be legible and durable.

## 5 REMARKS

The roof cover must be installed using a roof perimeter flashing system Approved by FM Approvals. See RoofNav.

## 6 SURVEILLANCE AUDIT

The manufacturing facilities at the following locations shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. An FM Approved Products/Specification-Tested Revision Request Form shall be submitted to FM Approvals for requesting to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

**Audit Locations**

1 Shengde Rd.  
Kangshan  
Kaoshiung Taiwan, 820  
Taiwan, Republic of China

18, 2nd Industrial Rd., Tainan  
Taiwan, Republic of China

**7 MANUFACTURER’S RESPONSIBILITIES**

- 7.1 The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using the FM Approved Products/Specification-Tested Revision Request Form. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals.
- 7.2 To ensure compliance with his procedures in the field, the manufacturer shall supply to the installer such necessary instruction or assistance required to produce the desired performance achieved in the tests.

**8 DOCUMENTATION**

Document Title	Issue Date
Surveillance Audit Manual	December 2020

**9 CONCLUSIONS**

- 9.1 Test results from this and previous programs indicate that S-RT5+ M9 fastener is Approved as an equivalent fastener to S-MD 12-24 x 1-5/8 M HWH5 steel deck fastener and meets the requirements of the FM Approvals Standard listed in section 1.3. Consult RoofNav for details of this Approval.
- 9.2 Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.
- 9.3 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.4 Continued Approval will depend upon satisfactory field experience and periodic Surveillance Audits.

**PROJECT DATA RECORD:** PR458494

**ORIGINAL TEST DATA** See PDRs in Table 1