

Wireless LAN Module

DAUK-W8812

User Manual

Copyright Statement

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

The final end product must be labeled in a visible area with the following: “Contains FCC ID: NKRDAUK-W8812”.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Industry Canada statement:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC éta

5	DNSA-GP1_G02	RF		378	5	1.32%	D896855109D8 D89685510805 D896855107D9 D896855107E5 D89685510746
8	DNSA-GP1_G02	RF		360	2	0.56%	D89685510A60 D89685510A4A

s pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

This device is intended only for OEM integrators under the following conditions: (For module device use)

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée de telle sorte qu'une distance de 20 cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 2 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: _____".

Plaque signalétique du produit final

Ce module émetteur est autorisé uniquement pour une utilisation dans un dispositif où l'antenne peut être installée de telle sorte qu'une distance de 20cm peut être maintenue entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: _____".

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and

(iii) the maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.

(iv) Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Avertissement:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(i) les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5 250-5 350 MHz et 5 470-5 725 MHz doit se conformer à la limite de p.i.r.e.;

(iii) le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5 725-5 825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

(iv) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour

les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Europe – EU Declaration of Conformity

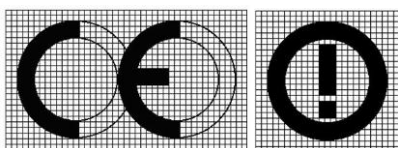
This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:


- EN60950-1:2006+A11:2009+A1:2010+A12:2011
- IEC60950-1:2005 (2nd Edition); Am 1:2009
Safety of Information Technology Equipment

- EN 62311: 2008 / Article 3(1)(a) and Article 2 2006/95/EC)
- Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz-300 GHz)

- EN 300 328 V1.8.1: 2012-06
- Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
-
- EN 301 893 V1.7.1: 2012-06
- Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
-
- EN 301 489-1 V1.9.2: 2011
- Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
-
- EN 301 489-17 V2.2.1 2012
- Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems
-

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.



 Český [Czech]	<i>[Jméno výrobce]</i> tímto prohlašuje, že tento <i>[typ zařízení]</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
 Dansk [Danish]	Undertegnede <i>[fabrikantens navn]</i> erklærer herved, at følgende udstyr <i>[udstyrets typebetegnelse]</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
 Deutsch [German]	Hiermit erkläre <i>[Name des Herstellers]</i> , dass sich das Gerät <i>[Gerätetyp]</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
 Eesti [Estonian]	Käesolevaga kinnitab <i>[tootja nimi = name of manufacturer]</i> seadme <i>[seadme tüüp = type of equipment]</i> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
 English	Hereby, <i>[name of manufacturer]</i> , declares that this <i>[type of equipment]</i> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
 Español [Spanish]	Por medio de la presente <i>[nombre del fabricante]</i> declara que el <i>[clase de equipo]</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
 Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>[name of manufacturer]</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>[type of equipment]</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
 Français [French]	Par la présente <i>[nom du fabricant]</i> déclare que l'appareil <i>[type d'appareil]</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
 Italiano [Italian]	Con la presente <i>[nome del costruttore]</i> dichiara che questo <i>[tipo di apparecchio]</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>[name of manufacturer / izgatavotāja nosaukums]</i> deklarē, ka <i>[type of equipment / iekārtas tips]</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo <i>[manufacturer name]</i> deklaruoją, kad šis <i>[equipment type]</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
 Nederland s [Dutch]	Hierbij verklaart <i>[naam van de fabrikant]</i> dat het toestel <i>[type van toestel]</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
 Malti [Maltese]	Hawnhekk, <i>[isem tal-manifattur]</i> , jiddikjara li dan <i>[il-mudel tal-prodott]</i> jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.






<p> Magyar [Hungarian]</p>	<p>Alulírott, <i>[gyártó neve]</i> nyilatkozom, hogy a <i>[... típus]</i> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.</p>
<p> Polski [Polish]</p>	<p>Niniejszym <i>[nazwa producenta]</i> oświadcza, że <i>[nazwa wyrobu]</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.</p>
<p> Português [Portuguese]</p>	<p><i>[Nome do fabricante]</i> declara que este <i>[tipo de equipamento]</i> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.</p>
<p> Slovensko [Slovenian]</p>	<p><i>[Ime proizvajalca]</i> izjavlja, da je ta <i>[tip opreme]</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.</p>
<p>Slovensky [Slovak]</p>	<p><i>[Meno výrobcu]</i> týmto vyhlasuje, že <i>[typ zariadenia]</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.</p>
<p> Suomi [Finnish]</p>	<p><i>[Valmistaja = manufacturer]</i> vakuuttaa täten että <i>[type of equipment = laitteen tyyppimerkintä]</i> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.</p>

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1. Introduction

Thank you for purchasing the 802.11 a/b/g/n /ac module that provides the easiest way to wireless networking. This User Manual contains detailed instructions in the operation of this product. Please keep this manual for future reference.

2. Driver/Utility Installation

The driver should have been installed before the TV is shipped from the manufacturer. You can start using its network function without installing driver or utility.

This module is associated product for TV host.

The following description provides a basic installation for wireless module.

For more information about the Wireless Module, please refer to your TV manual.

Installing Wi-Fi module :

1. Link cable with USB connector on wireless module
2. Link wireless module with USB connector to PC and install software in wireless module
3. Open the back lid of TV, lock wireless module on internal main board of TV
4. Power supply on internal main-board and allow TV to load fully.

3. Technical spec.

Item	Key specifications
Main chipset	➤ RTL
Compliance	➤ Support 801.11a/b/g/n/ac data rate
Frequency range	➤ USA: 2.400 ~ 2.483GHz, 5.15 ~ 5.35GHz, 5.47 ~ 5.725GHz, 5.725 ~ 5.85GHz ➤ Europe: 2.400 ~ 2.483GHz, 5.15 ~ 5.35GHz, 5.47 ~ 5.725GHz ➤ Japan: 2.400 ~ 2.497GHz, 5.15 ~ 5.35GHz, 5.47 ~ 5.725GHz ➤ China: 2.400 ~ 2.483GHz, 5.725 ~ 5.85GHz
Transmit center frequency tolerance	➤ Transmitted center frequency tolerance within ± 20 ppm.

<p>Modulation technique</p>	<p>➤ 802.11 Legacy a/b/g/ac DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16-QAM, 64-QAM) DSSS (Direct Sequence Spread Spectrum) with DBPSK (Differential Binary Phase Shift Keying 1Mbps), DQPSK (Differential Quaternary Phase Shift Keying 2Mbps), and CCK (Complementary Code Keying 5.5&11Mbps), and OFDM (Orthogonal Frequency Division Multiplexing with BPSK for 6,9Mbps 、 QPSK for 12,18Mbps 、 16QAM for 24,36Mbps 、 64QAM for 48,54Mbps)</p> <p>➤ 802.11n a/g ➤ OFDM (BPSK, QPSK, 16-QAM, 64-QAM)</p>												
<p>Operation voltage</p>	<p>➤ 5V +/- 5%</p>												
<p>Power consumption @25° C@5V</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">802.11n (2.4GHz)</th> <th style="width: 25%; text-align: center;">802.11n (5GHz)</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 20px;">FTP TX (the worse average current)</td> <td style="text-align: center;">400 mA</td> <td style="text-align: center;">650 mA</td> </tr> <tr> <td>➤ AP scanning, no association with AP</td> <td style="text-align: center;">188 mA</td> <td style="text-align: center;">188 mA</td> </tr> <tr> <td colspan="3" style="padding-top: 10px;">***The maximum current consumption would be impacted by radiation environment and the driver mechanism.</td> </tr> </tbody> </table>		802.11n (2.4GHz)	802.11n (5GHz)	FTP TX (the worse average current)	400 mA	650 mA	➤ AP scanning, no association with AP	188 mA	188 mA	***The maximum current consumption would be impacted by radiation environment and the driver mechanism.		
	802.11n (2.4GHz)	802.11n (5GHz)											
FTP TX (the worse average current)	400 mA	650 mA											
➤ AP scanning, no association with AP	188 mA	188 mA											
***The maximum current consumption would be impacted by radiation environment and the driver mechanism.													

Output power (dBm)	➤ 802.11a								
	Test Frequencies	6-24_Target		36_Target		48_Target		54_Target	
	5180	14		14		14		14	
	5320	14		14		14		14	
	5500	14		14		14		14	
	5600	14		14		14		14	
	5700	14		14		14		14	
	5825	14		14		14		14	
	➤ 802.11b								
	Test Frequencies	1/2_Target		5.5_Target		11_Target			
	2412	17		17		17			
	2472	17		17		17			
	2484	17		17		17			
	➤ 802.11g								
	Test Frequencies	6-24_Target		36_Target		48_Target		54_Target	
	2412	15		15		15		15	
	2437	15		15		15		15	
	2472	15		15		15		15	
	➤ 802.11n								
	Freq. Range: HT20								
	Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
	5180	13	13	13	13	13	13	13	13
	5240	13	13	13	13	13	13	13	13
	5320	13	13	13	13	13	13	13	13
	5500	13	13	13	13	13	13	13	13
	5700	13	13	13	13	13	13	13	13
	5745	13	13	13	13	13	13	13	13
	5825	13	13	13	13	13	13	13	13
Freq. Range: HT40									
Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15	
5190	13	13	13	13	13	13	13	13	
5230	13	13	13	13	13	13	13	13	
5270	13	13	13	13	13	13	13	13	

5510	13	13	13	13	13	13	13	13	13
5670	13	13	13	13	13	13	13	13	13
5755	13	13	13	13	13	13	13	13	13
5795	13	13	13	13	13	13	13	13	13

Freq. Range: **HT20**

Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
2412	15	15	15	15	15	15	15	15
2437	15	15	15	15	15	15	15	15
2472	15	15	15	15	15	15	15	15

Freq. Range: **HT40**

Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
2412	15	15	15	15	15	15	15	15
2437	15	15	15	15	15	15	15	15
2472	15	15	15	15	15	15	15	15

➤ 802.11ac (Typical)

Freq. Range: 5GHz/VHT80:

Test Freq	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9
5210	10	10	10	10	10	10	10	10	10	10
5530	10	10	10	10	10	10	10	10	10	10
5775	10	10	10	10	10	10	10	10	10	10

Sensitivity	➤ 802.11a			
	Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical(1Rx dBm)
	BPSK	1/2	-82	-90
	BPSK	3/4	-81	-89
	QPSK	1/2	-79	-88
	QPSK	3/4	-77	-86
	16-QAM	1/2	-74	-83
	16-QAM	3/4	-70	-80
	64-QAM	2/3	-66	-76
	64-QAM	3/4	-65	-74
	➤ 802.11b			
	Modulation	IEEE Spec (1Rx dBm)	Typical/Maximum (1Rx dBm)	
	DBPSK	not specified	-95	
	DQPSK	not specified	-92	
	CCK	not specified	-90	
	➤ 802.11g			
	Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical/Maximum (1Rx dBm)
	BPSK	1/2	-82	-89
	BPSK	3/4	-81	-89
	QPSK	1/2	-79	-87
	QPSK	3/4	-77	-85
	16-QAM	1/2	-74	-82
	16-QAM	3/4	-70	-79
	64-QAM	2/3	-66	-75
	64-QAM	3/4	-65	-73
	➤ 802.11ng			
	Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical/Maximum (2Rx dBm)
	✧ HT20			
	(MCS0) BPSK	1/2	-82	-90
	(MCS1) QPSK	1/2	-79	-86
	(MCS2) QPSK	3/4	-77	-84
	(MCS3) 16-QAM	1/2	-74	-81
(MCS4) 16-QAM	3/4	-70	-78	
(MCS5) 64-QAM	2/3	-66	-73	
(MCS6) 64-QAM	3/4	-65	-72	
(MCS7) 64-QAM	5/6	-64	-70	

✧ HT40				
(MCS0) BPSK	1/2		-79	-87
(MCS1) QPSK	1/2		-76	-84
(MCS2) QPSK	3/4		-74	-82
(MCS3) 16-QAM	1/2		-71	-79
(MCS4) 16-QAM	3/4		-67	-76
(MCS5) 64-QAM	2/3		-63	-72
(MCS6) 64-QAM	3/4		-62	-69
(MCS7) 64-QAM	5/6		-61	-68
➤ 802.11na				
Modulation	Code Rate		IEEE Spec (1Rx dBm)	Typical/Maximum (2Rx dBm)
✧ HT20				
(MCS0) BPSK	1/2		-82	-90
(MCS1) QPSK	1/2		-79	-88
(MCS2) QPSK	3/4		-77	-86
(MCS3) 16-QAM	1/2		-74	-83
(MCS4) 16-QAM	3/4		-70	-79
(MCS5) 64-QAM	2/3		-66	-75
(MCS6) 64-QAM	3/4		-65	-74
(MCS7) 64-QAM	5/6		-64	-70
✧ HT40				
(MCS0) BPSK	1/2		-79	-88
(MCS1) QPSK	1/2		-76	-85
(MCS2) QPSK	3/4		-74	-82
(MCS3) 16-QAM	1/2		-71	-79
(MCS4) 16-QAM	3/4		-67	-76
(MCS5) 64-QAM	2/3		-63	-72
(MCS6) 64-QAM	3/4		-62	-70
(MCS7) 64-QAM	5/6		-61	-68
➤ 802.11ac				
Modulation	Code Rate		IEEE Spec (1Rx dBm)	Typical/Maximum (1Rx dBm)
✧ VHT80				
(MCS0) BPSK	1/2		-76	-85
(MCS1) QPSK	1/2		-73	-82
(MCS2) QPSK	3/4		-71	-80

	(MCS3) 16-QAM	1/2	-68	-77
	(MCS4) 16-QAM	3/4	-64	-73
	(MCS5) 64-QAM	2/3	-60	-69
	(MCS6) 64-QAM	3/4	-59	-67
	(MCS7) 64-QAM	5/6	-58	-65
	(MCS8) 256-QAM	3/4	-53	-61
	(MCS9) 256-QAM	5/6	-51	-58
Operation temperature	➤ 0° ~ 60° C			
Storage temperature	➤ -20° ~ 80° C			

Antenna Information:

Model	Type	Connector	Peak gain (dBi)				
			2400~2483.5MHz	5150~5250MHz	5250~5350MHz	5470~5725MHz	5725~5850MHz
81.EEW15.GFV	PIFA	U.FL	-3.77	-4	-3.5	-3.56	-4.31