

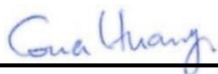
RF EXPOSURE EVALUATION REPORT

FCC ID : GKRRMMT1
Equipment : NTN miniPCIE module
Brand Name : COMPAL
Model Name : RMM-T1
Applicant : COMPAL ELECTRONICS, INC.
No. 581 & 581-1, Ruiguang Rd., Neihu District
Taipei City 11492, Taiwan (R.O.C.)
Manufacturer : COMPAL (VIETNAM) CO., LTD
BA THIEN INDUSTRIAL ZONE, BA HIEN TOWN,
BINH XUYEN DISTRICT, VINH PHUC
PROVINCE VIETNAM
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full



Approved by: Cona Huang / Deputy Manager



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History of this test report

Report No.	Version	Description	Issued Date
FA3D2704	Rev. 01	Initial issue of report	Aug. 13, 2024

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	NTN miniPCIE module
Brand Name	COMPAL
Model Name	RMM-T1
FCC ID	GKRRMMT1
Wireless Technology and Frequency Range	NTN Band 23: 2000 MHz ~ 2020 MHz NTN Band 24: 1626.5 MHz ~ 1660.5 MHz NTN Band 255: 1626.5 MHz ~ 1660.5 MHz
Mode	BPSK, QPSK
HW Version	V1.0
EUT Stage	Identical Prototype

Reviewed by: Jason Wang

Report Producer: Wan Liu

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
NTN	Band 23	25
	Band 24	25
	Band 255	25

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP (dBm)	Maximum ERP (W)	Maximum EIRP (dBm)	Maximum EIRP (W)	Maximum Output Power Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
NTN Band 23	7.00	25.00	29.850	0.966	32.000	1.585	2.000	1584.893	0.315	1.000
NTN Band 24	7.00	25.00	29.850	0.966	32.000	1.585	2.000	1584.893	0.315	1.000
NTN Band 255	7.00	25.00	29.850	0.966	32.000	1.585	2.000	1584.893	0.315	1.000

4.2. Collocated Power Density Calculation

Note:

1. This MPE analysis is applicable to any collocated transmitters with transmit power for WLAN is less than or equal to 26dBm and for Bluetooth is less than or equal to 15dBm.
2. A maximum antenna gain of 5 dBi for WLAN/BT has been assumed for all collocated antennas.

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
NTN Band 23	7.00	25.00	32.0	1.58	1584.89	0.315	1.000	0.315
NTN Band 24	7.00	25.00	32.0	1.58	1584.89	0.315	1.000	0.315
NTN Band 255	7.00	25.00	32.0	1.58	1584.89	0.315	1.000	0.315
WLAN2.4GHz Band	5.0	26.0	31.0	1.26	1258.93	0.251	1.000	0.251
WLAN5GHz Band	5.0	26.0	31.0	1.26	1258.93	0.251	1.000	0.251
Bluetooth	5.0	15.0	20.0	0.10	100.00	0.020	1.000	0.020

NTN Power Density / Limit	WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of NTN+WLAN+Bluetooth
0.315	0.251	0.020	0.586

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for NTN + WLAN + Bluetooth.
2. Considering the NTN module collocation with the WLAN and Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant

**Conclusion:**

Based on FCC 47 CFR §1.1307, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gain do not exceed the limits for each given frequency band per wireless technology as follow table:

Device	Technology	Band	Maximum Conducted Power (dBm)	Stanalone Maximum Antenna Gain (dBi)	Collocated Maximum Antenna Gain (dBi)
RMM-T1	NTN	Band 23	25.0	7.0	7.0
		Band 24	25.0	7.0	7.0
		Band 255	25.0	7.0	7.0