RAYTAC
www.raytac.com
勁達國際電子有限公司
Raytac Corporation
Tel: +886-2-3234-0208   Mail: service@raytac.com

Approval Sheet

(產品承認書)

產品名稱 (Product):　　BT 4.2 & BT 5 Module (nRF52832)

using WLCSP Package IC

產品型號 (Model No.):　　**MDBT42V – 512K** (Chip Antenna)

MDBT42V – P512K (PCB Antenna)

Advantage of MDBT42V & MDBT42V-P series:

1. *Long working distance:*
   MDBT42V: over 80 meters in open space.
   MDBT42V-P: up to 60 meters in open space.

2. *Declaration ID includes all Nordic applied profiles.*

3. *Granted main regional certification such as FCC (USA), CE(EU)*
   TELEC (Japan), SRRC (China), IC (Canada), NCC (Taiwan),

Index

1. Overall Introduction

Raytac's MDBT42V & MDBT42V-P is a BT 4.0, BT 4.1, BT 4.2 and BT 5.0 stack (Bluetooth low energy or BLE) module designed based on **Nordic nRF52832 SoC solution**, which incorporates: **GPIO**, **SPI**, **UART**, **I2C**, **I2S**, **PWM**, **ADC** and **NFC** interfaces for connecting peripherals and sensors.

Features of the module:

1. Dual Transmission mode of BLE & 2.4Ghz RF upon customer preference.
2. Compact size with **(L) 8.4 x (W) 6.4 x (H) 1.75 or 1.50 mm**.
3. Low power requirements, ultra-low peak, average and idle mode power consumption.
4. Be compatible with a large installed base of mobile phones, tablets and computers.
5. Fully coverage of BLE software stack. See 1.3 Profile & Service Information.
6. BLE & RF transmission switching helps products fit all operation system and most hardware.

1.1. Application

- IoT
  - Home automation
  - Sensor networks
  - Building automation
- Personal Area Networks
  - Health / fitness sensor and monitor device
  - Medical devices
  - Key-fobs and wrist watches
- Interactive entertainment devices
  - Remote control
  - Gaming controller
- Beacons
- A4WP wireless chargers and devices
- Remote control toys
- Computer peripherals and I/O devices
  - Mouse
  - Keyboard
  - Multi-touch trackpad

1.2. Features

- Multi-protocol 2.4GHz radio
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
- 512KB flash programmed memory and 64KB RAM
- Software stacks available as downloads
- Application development independent from protocol stack
- On-air compatible with nRF51, nRF24AP and nRF24L series
- Programmable TX output power from -20dBm to +4dBm in 4dB steps
- RSSI
- RAM mapped FIFOs using EasyDMA
- Dynamic on-air payload length up to 256 bytes
- Flexible and configurable 20 pin GPIO
- Programmable peripheral interface - PPI
- Simple ON / OFF global power mode
- Full set of digital interface all with Easy DMA including:
  - 3 x Hardware SPI master ; 3 x Hardware SPI slave
  - 2 x two-wire master ; 2 x two-wire slave
  - 1 x UART (CTS / RTS)
  - PDM for digital microphone
  - I2S for audio
- Quadrature demodulator
- 12-bit / 200KSPS ADC
- 128-bit AES ECB / CCM / AAR co-processor
- Lowe cost external crystal 32MHz $\pm$ 40ppm for Bluetooth ; $\pm$ 50ppm for ANT Plus
- Lowe power 32MHz crystal and RC oscillators
- Wide supply voltage range 1.7V to 3.6V
- On-chip DC/DC buck converter
- Individual power management for all peripherals
- Timer counter
  - 5 x 32-bit
  - 3 x 24-bit RTC
- Type 2 near field communication (NFC-A) tag with wakeup-on-field and touch-to-pair capabilities
- 3x 4-channel pulse width modulator (PWM) units with EasyDMA

1.3. Profile & Service Information

Profile & Service are supported by MDBT42V & MDBT42V-P as below:

Profile Description	Service Description
Alert Notification Profile	Alert Notification Service
Blood Pressure Profile	Blood Pressure Service
	Device Information Service
Cycling Speed & Cadence Profile	Cycling Speed & Cadence Service
	Device Information Service
Glucose Profile	Glucose Service
	Device Information Service
Health Thermometer Profile	Health Thermometer Service
	Device Information Service
Heart Rate Profile	Heart Rate Service
	Device Information Service
HID over GATT Profile	HID Service
	Battery Service
Proximity Profile	Link Loss Service
	Immediate Alert Service
	TX Power Service
Running Speed & Cadence Profile	Running Speed & Cadence Service
	Device Information Service
Time Profile	Time Profile Service
Glucose Profile (Central)	

2. Product Dimension

2.1. PCB Dimensions & Pin Indication

・**MDBT42V**

PCB SIZE: (L) 8.4 x (W) 6.4 x (H) 1.75 mm
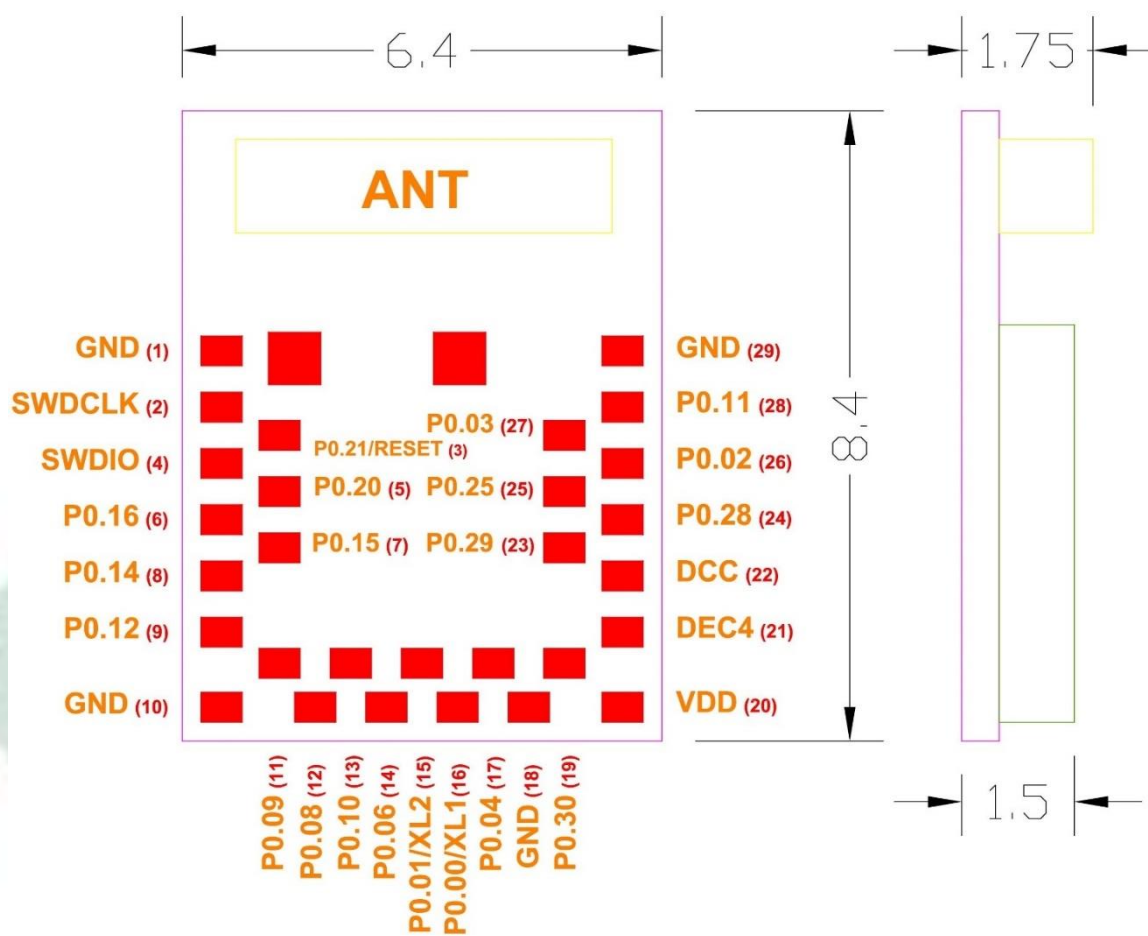
- **MDBT42V-P**

PCB SIZE: (L) 8.4 x (W) 6.4 x (H) 1.5 mm

6.4

ANT

GND (1)	GND (29)
SWDCLK (2)	P0.11 (28)
SWDIO (4)	P0.02 (26)
P0.16 (6)	P0.28 (24)
P0.14 (8)	DCC (22)
P0.12 (9)	DEC4 (21)
GND (10)	VDD (20)

P0.03 (27)
P0.21/RESET (3)
P0.20 (5) P0.25 (25)
P0.15 (7) P0.29 (23)

8.4

1.5

P0.09 (11)
P0.08 (12)
P0.10 (13)
P0.06 (14)
P0.01/XL2 (15)
P0.00/XL1 (16)
P0.04 (17)
GND (18)
P0.30 (19)
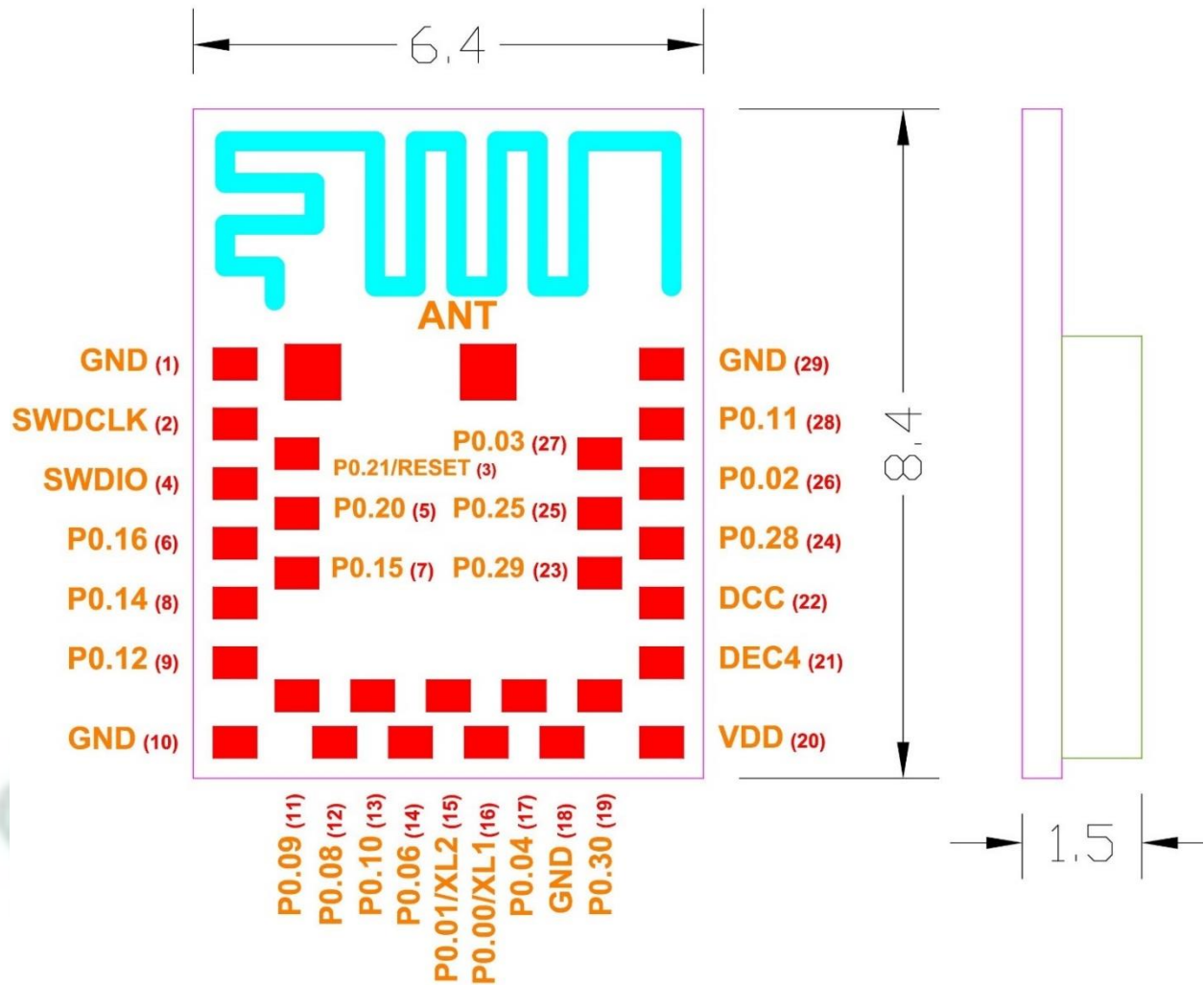
Top 單位:(mm)

2.2. Recommended Layout of Solder Pad

Graphs are all in Top View, Unit in mm.

No ground pad

Toplayer no ground pad

Toplayer no ground pad
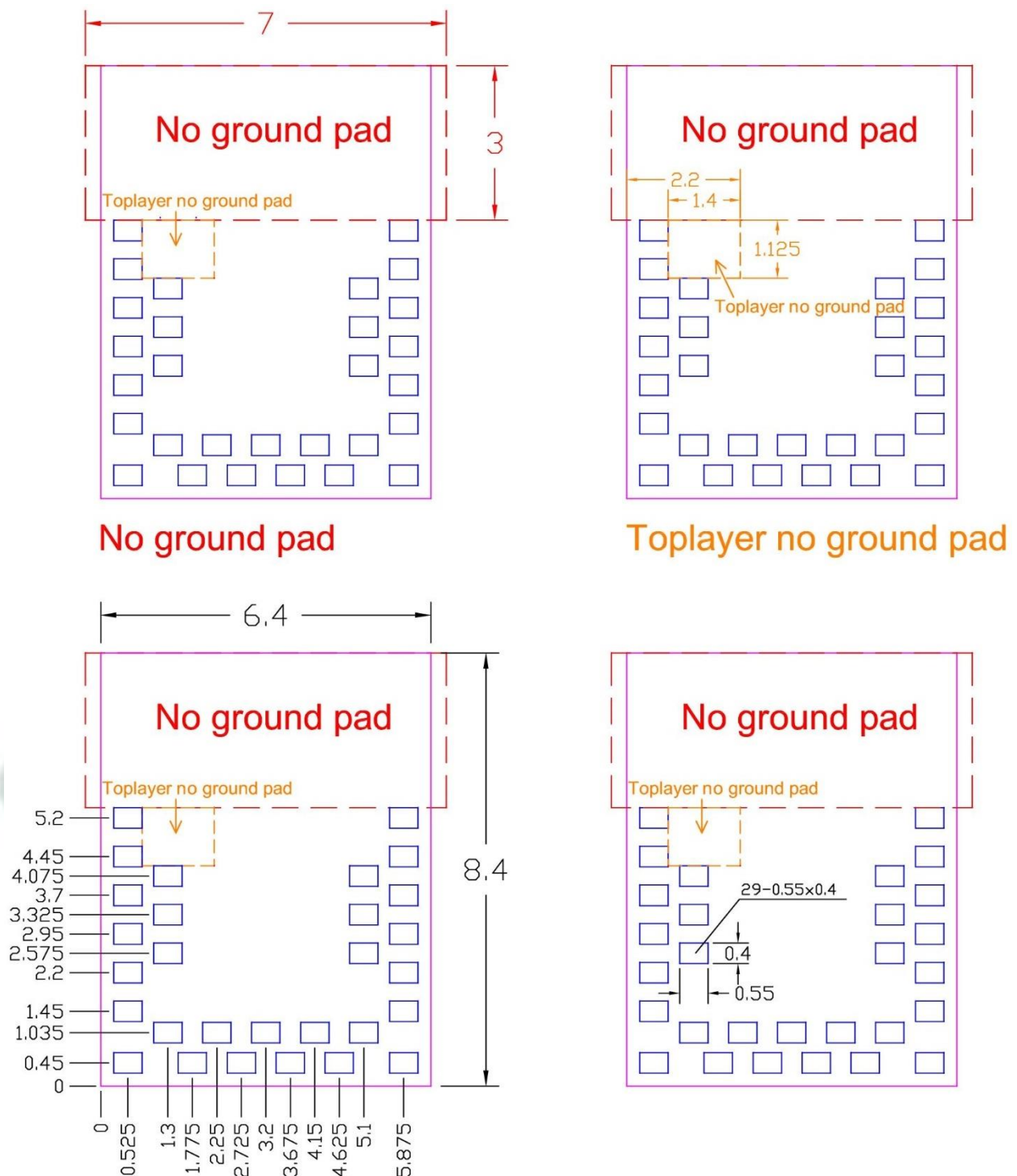
Top View (單位：mm)
recommended solder pad layout

2.3. RF Layout Suggestion (aka Keep-Out Area)

Please follow below instruction to have better wireless performance. Make sure to keep the "No-Ground-Pad" as wider as you can when there is no enough space in your design.

Welcome to send us your layout in PDF for review at service@raytac.com with title "Layout reviewing – MDBT42V/MDBT42V-P – YOUR company's name".
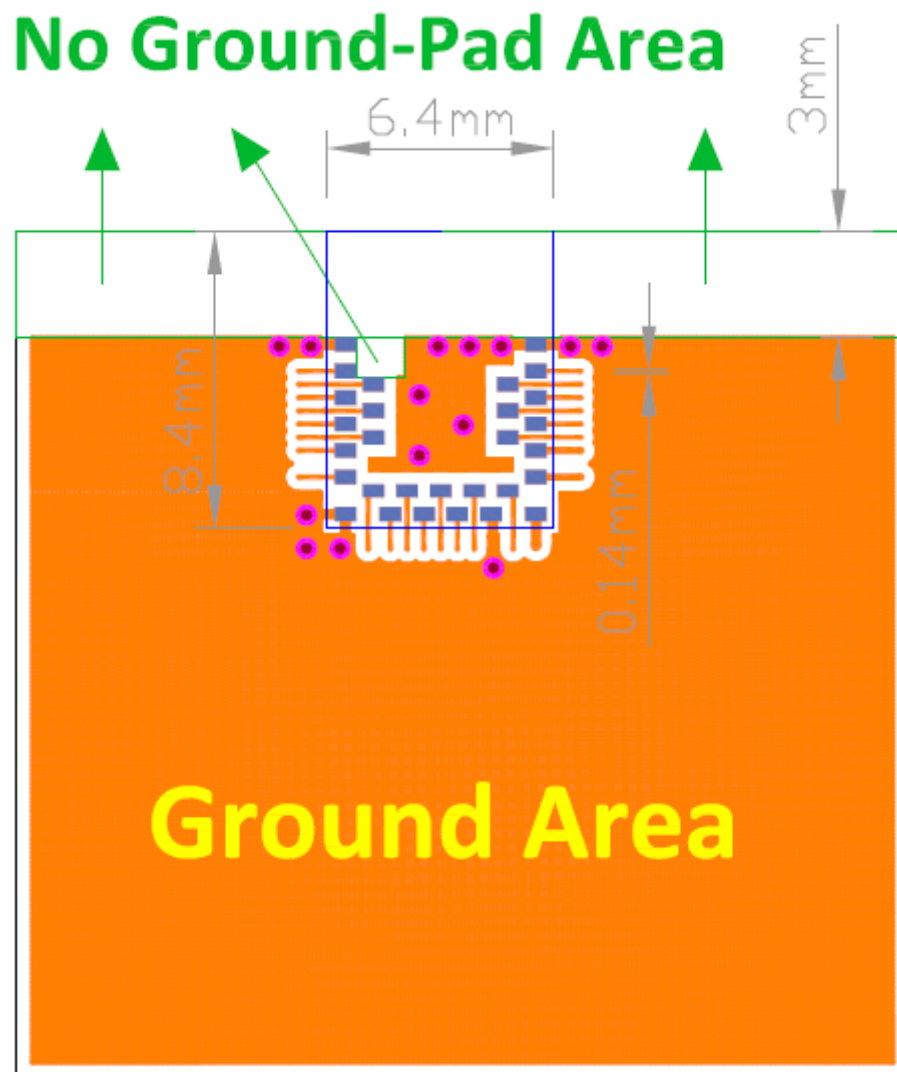
Please add via holes in these areas as many as possible

6.4mm

3mm

8.4mm

0.14mm
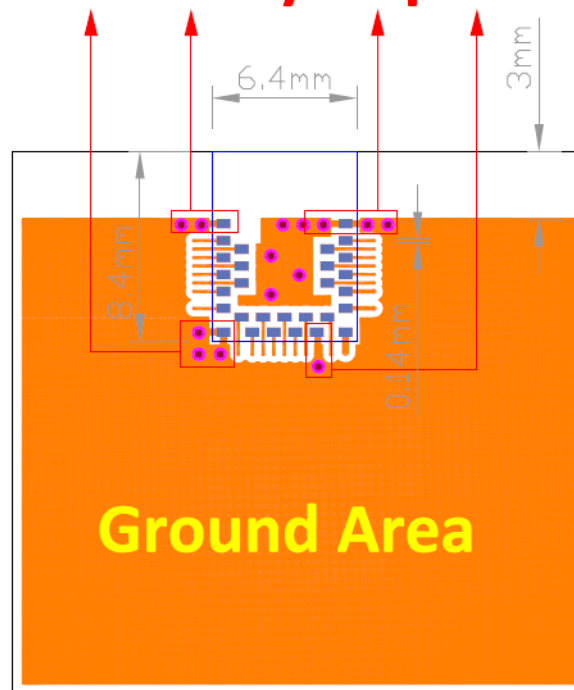
Ground Area

Top layer

No Ground-Pad Area

Ground Area
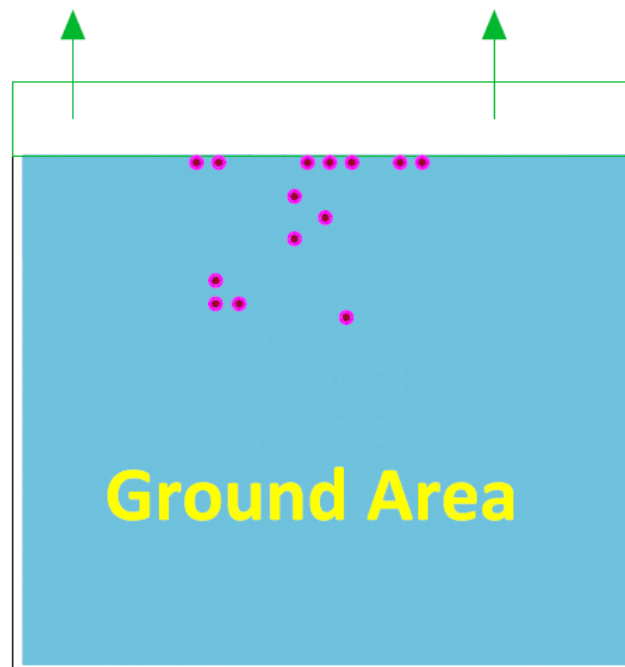
Bottom layer

Examples of "**NOT RECOMMENDED**" layout

where should be NO-GROUND area

Ground Area

where should be NO-GROUND area

Ground Area
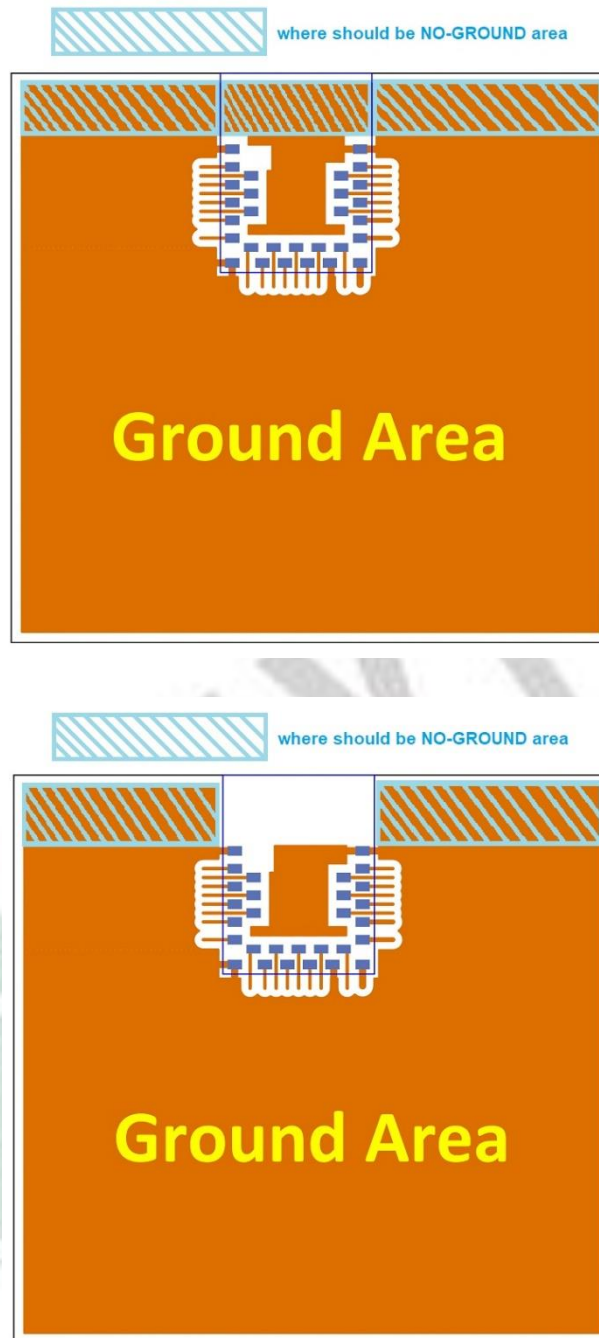
2.4. Footprint & Design Guide

[Click to download from our official website.](#)

2.5. Pin Assignment

Pin No.	Name	Pin function	Description
(1)	GND	Ground	The pad must be connected to a solid ground plane
(2)	SWCLK	Digital input	Serial Wire debug clock input for debug and programming
(3)	P0.21	Digital I/O	General-purpose digital I/O
	RESET		Configurable as system RESET pin
(4)	SWDIO	Digital I/O	Serial Wire debug I/O for debug and programming
(5)	P0.20	Digital I/O	General-purpose digital I/O
	TraceCLK		Trace port clock output
(6)	P0.16	Digital I/O	General-purpose digital I/O
	TraceData(1)		Trace port output
(7)	P0.15	Digital I/O	General-purpose digital I/O
	TraceData(2)		Trace port output
(8)	P0.14	Digital I/O	General-purpose digital I/O
	TraceData(3)		Trace port output
(9)	P0.12	Digital I/O	General-purpose digital I/O
(10)	GND	Ground	The pad must be connected to a solid ground plane
(11)	P0.09	Digital I/O	General-purpose digital I/O
	NFC1	NFC input	NFC antenna connection
(12)	P0.08	Digital I/O	General-purpose digital I/O
(13)	P0.10	Digital I/O	General-purpose digital I/O
	NFC2	NFC input	NFC antenna connection
(14)	P0.06	Digital I/O	General-purpose digital I/O
(15)	P0.01	Digital I/O	General-purpose digital I/O
	XL2	Analog input	Connection to 32.768khz crystal (LFXO)
(16)	P0.00	Digital I/O	General-purpose digital I/O
	XL1	Analog input	Connection to 32.768khz crystal (LFXO)
(17)	P0.04	Digital I/O	General-purpose digital I/O
	AIN2	Analog input	SAADC/COMP/LPCOMP input
(18)	GND	Ground	The pad must be connected to a solid ground plane
(19)	P0.30	Digital I/O	General-purpose digital I/O
	AIN6	Analog input	SAADC/COMP/LPCOMP input
(20)	VDD	Power	Power-supply pin
(21)	DEC4	Power	1V3 regulator supply decoupling.
(22)	DCC	Power	DC/DC converter output pin

Pin No.	Name	Pin function	Description
(23)	P0.29	Digital I/O	General-purpose digital I/O
	AIN5	Analog input	SAADC/COMP/LPCOMP input
(24)	P0.28	Digital I/O	General-purpose digital I/O
	AIN4	Analog input	SAADC/COMP/LPCOMP input
(25)	P0.25	Digital I/O	General-purpose digital I/O
(26)	P0.02	Digital I/O	General-purpose digital I/O
	AIN0	Analog input	SAADC/COMP/LPCOMP input
(27)	P0.03	Digital I/O	General-purpose digital I/O
	AIN1	Analog input	SAADC/COMP/LPCOMP input
(28)	P0.11	Digital I/O	General-purpose digital I/O
(29)	GND	Ground	The pad must be connected to a solid ground plane

2.6.   GPIO Located Near the Radio

Below remarks are extracted from Nordic's nRF52832 Spec. Any updates shall refer to Nordic's official release as final reference.

4.3.1 GPIO located near the radio

Radio performance parameters, such as sensitivity, may be affected by high frequency digital I/O with large sink/source current close to the Radio power supply and antenna pins.

Pin	GPIO	Recommended usage
F2	P0.22	Low drive, low frequency I/O only.
E2	P0.23	
E1	P0.24	
B3	P0.25	
D3	P0.26	
B4	P0.27	
A3	P0.28	
A4	P0.29	
A5	P0.30	
B5	P0.31	

3. Main Chip Solution

RF IC	Crystal Frequency
Nordic NRF52832	32MHZ

32MHz crystal is already inside the module.

4. Shipment Packaging Information

Antenna	Model
Chip/Ceramic Antenna	MDBT42V-512K
PCB/Printed Antenna	MDBT42V-P512K

- Unit Weight of Module: MDBT42V-512K: 0.17g/pc ; MDBT42V-P512K: 0.15g/pc

- Packaging Type: Tray only

- Minimum Package Quantity (MPQ): 160 pcs per Tray

- Carton Contents: 3,200 pcs per carton (20 Full Tray + 1 Empty Tray)

- Dimension of Carton: (L) 37 x (W) 21 x (H) 13 cm

- Gross Weight: approx. 2.20 kgs per full carton (contains 3,200pcs)

4.1. Marking on Metal Shielding

Raytac Corporation
FCC ID: SH6MDBT42V
IC: 8017A-MDBT42V
CMIIT ID: 2017DJ5872
Model No.: MDBT42V

Ⓡ 201-170920

5. Specification

Any technical spec shall refer to Nordic's official documents as final reference.

5.1. Absolute Maximum Ratings

	Note	Min.	Max.	Unit
Supply voltages				
VDD		-0.3	+3.9	V
VSS			0	V
I/O pin voltage				
$V_{I/O}$, VDD ≤3.6 V		-0.3	VDD + 0.3 V	V
$V_{I/O}$, VDD >3.6 V		-0.3	3.9 V	V
NFC antenna pin current				
$I_{NFC1/2}$			80	mA
Radio				
RF input level			10	dBm
Environmental (QFN package)				
Storage temperature		-40	+125	°C
MSL	Moisture Sensitivity Level		2	
ESD HBM	Human Body Model		4	kV
ESD CDM$_{QF}$	Charged Device Model		750	V
	(QFN48, 6x6 mm package)			
Flash memory				
Endurance		10 000		Write/erase cycles
Retention		10 years at 40°C		

5.2. Operation Conditions

Symbol	Parameter	Min.	Nom.	Max.	Units
VDD	Supply voltage, independent of DCDC enable	1.7	3.0	3.6	V
t_{R_VDD}	Supply rise time (0 V to 1.7 V)			60	ms
TA	Operating temperature	-40	25	85	°C

Important: The on-chip power-on set circuitry may not function properly for rise times longer than the specified maximum.

5.3. Electrical Specifications

5.3.1. General Radio Characteristics

Symbol	Description	Min.	Typ.	Max.	Units
f_{OP}	Operating frequencies	2360		2500	MHz
$f_{PLL,PROG,RES}$	PLL programming resolution		2		kHz
$f_{PLL,CH,SP}$	PLL channel spacing		1		MHz
$f_{DELTA,1M}$	Frequency deviation @ 1 Msps		±170		kHz
$f_{DELTA,BLE,1M}$	Frequency deviation @ BLE 1Msps		±250		kHz
$f_{DELTA,2M}$	Frequency deviation @ 2 Msps		±320		kHz
fsk_{SPS}	On-the-air data rate	1		2	Msps

5.3.2. Radio Current Consumption (Transmitter)

Symbol	Description	Min.	Typ.	Max.	Units
$I_{TX,PLUS4dBM,DCDC}$	TX only run current (DCDC, 3V) P_{RF} =+4 dBm		7.5		mA
$I_{TX,PLUS4dBM}$	TX only run current P_{RF} = +4 dBm		16.6		mA
$I_{TX,0dBM,DCDC}$	TX only run current (DCDC, 3V)P_{RF} = 0dBm		5.3		mA
$I_{TX,0dBM}$	TX only run current P_{RF} = 0dBm		11.6		mA
$I_{TX,MINUS4dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -4dBm		4.2		mA
$I_{TX,MINUS4dBM}$	TX only run current P_{RF} = -4 dBm		9.3		mA
$I_{TX,MINUS8dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -8 dBm		3.8		mA
$I_{TX,MINUS8dBM}$	TX only run current P_{RF} = -8 dBm		8.4		mA
$I_{TX,MINUS12dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -12 dBm		3.5		mA
$I_{TX,MINUS12dBM}$	TX only run current P_{RF} = -12 dBm		7.7		mA
$I_{TX,MINUS16dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -16 dBm		3.3		mA
$I_{TX,MINUS16dBM}$	TX only run current P_{RF} = -16 dBm		7.3		mA
$I_{TX,MINUS20dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -20 dBm		3.2		mA
$I_{TX,MINUS20dBM}$	TX only run current P_{RF} = -20 dBm		7.0		mA
$I_{TX,MINUS40dBM,DCDC}$	TX only run current DCDC, 3V P_{RF} = -40 dBm		2.7		mA
Symbol	**Description**	**Min.**	**Typ.**	**Max.**	**Units**
$I_{TX,MINUS40dBM}$	TX only run current P_{RF} = -40 dBm		5.9		mA
$I_{START,TX,DCDC}$	TX start-up current DCDC, 3V, P_{RF} = 4 dBm		4.0		mA
$I_{START,TX}$	TX start-up current, P_{RF} = 4 dBm		8.8		mA

5.3.3. Radio Current Consumption (Receiver)

Symbol	Description	Min.	Typ.	Max.	Units
$I_{RX,1M,DCDC}$	RX only run current (DCDC, 3V) 1Msps / 1Msps BLE		5.4		mA
$I_{RX,1M}$	RX only run current 1Msps / 1Msps BLE		11.7		mA
$I_{RX,2M,DCDC}$	RX only run current (DCDC, 3V) 2Msps		5.8		mA
$I_{RX,2M}$	RX only run current 2Msps		12.9		mA
$I_{START,RX,1M,DCDC}$	RX start-up current (DCDC 3V) 1Msps / 1Msps BLE		3.5		mA
$I_{START,RX,1M}$	RX start-up current 1Msps / 1Msps BLE		7.5		mA

5.3.4. Transmitter Specification

Symbol	Description	Min.	Typ.	Max.	Units
P_{RF}	Maximum output power		4	6	dBm
P_{RFC}	RF power control range		24		dB
P_{RFCR}	RF power accuracy			±4	dB
$P_{RF1,1}$	1st Adjacent Channel Transmit Power 1 MHz (1 Msps)		-25		dBc
$P_{RF2,1}$	2nd Adjacent Channel Transmit Power 2 MHz (1 Msps)		-50		dBc
$P_{RF1,2}$	1st Adjacent Channel Transmit Power 2 MHz (2 Msps)		-25		dBc
$P_{RF2,2}$	2nd Adjacent Channel Transmit Power 4 MHz (2 Msps)		-50		dBc

5.3.5. Receiver Operation

Symbol	Description	Min.	Typ.	Max.	Units
$P_{RX,MAX}$	Maximum received signal strength at < 0.1% PER		0		dBm
$P_{SENS,IT,1M}$	Sensitivity, 1Msps nRF mode[15]		-93		dBm
$P_{SENS,IT,SP,1M,BLE}$	Sensitivity, 1Msps BLE ideal transmitter, <=37 bytes BER=1E-3[16]		-96		dBm
$P_{SENS,IT,LP,1M,BLE}$	Sensitivity, 1Msps BLE ideal transmitter >=128 bytes BER=1E-4 [17]		-95		dBm
$P_{SENS,IT,2M}$	Sensitivity, 2Msps nRF mode[18]		-89		dBm

5.3.6. RX Selectivity

Symbol	Description	Min.	Typ.	Max.	Units
$C/I_{1M,co\text{-}channel}$	1Msps mode, Co-Channel interference		9		dB
$C/I_{1M,-1MHz}$	1 Msps mode, Adjacent (-1 MHz) interference		-2		dB
$C/I_{1M,+1MHz}$	1 Msps mode, Adjacent (+1 MHz) interference		-10		dB
$C/I_{1M,-2MHz}$	1 Msps mode, Adjacent (-2 MHz) interference		-19		dB
$C/I_{1M,+2MHz}$	1 Msps mode, Adjacent (+2 MHz) interference		-42		dB
$C/I_{1M,-3MHz}$	1 Msps mode, Adjacent (-3 MHz) interference		-38		dB
$C/I_{1M,+3MHz}$	1 Msps mode, Adjacent (+3 MHz) interference		-48		dB
$C/I_{1M,\pm6MHz}$	1 Msps mode, Adjacent (≥6 MHz) interference		-50		dB
$C/I_{1MBLE.co\text{-}channel}$	1 Msps BLE mode, Co-Channel interference		6		dB
Symbol	**Description**	**Min.**	**Typ.**	**Max.**	**Units**
$C/I_{1MBLE,-1MHz}$	1 Msps BLE mode, Adjacent (-1 MHz) interference		-2		dB
$C/I_{1MBLE,+1MHz}$	1 Msps BLE mode, Adjacent (+1 MHz) interference		-9		dB
$C/I_{1MBLE,-2MHz}$	1 Msps BLE mode, Adjacent (-2 MHz) interference		-22		dB
$C/I_{1MBLE,+2MHz}$	1 Msps BLE mode, Adjacent (+2 MHz) interference		-46		dB
$C/I_{1MBLE,>3MHz}$	1 Msps BLE mode, Adjacent (≥3 MHz) interference		-50		dB
$C/I_{1MBLE,image}$	Image frequency Interference		-22		dB
$C/I_{1MBLE,image,1MHz}$	Adjacent (1 MHz) interference to in-band image frequency		-35		dB
$C/I_{2M,co\text{-}channel}$	2Msps mode, Co-Channel interference		10		dB
$C/I_{2M,-2MHz}$	2 Msps mode, Adjacent (-2 MHz) interference		6		dB
$C/I_{2M,+2MHz}$	2 Msps mode, Adjacent (+2 MHz) interference		-14		dB
$C/I_{2M,-4MHz}$	2 Msps mode, Adjacent (-4 MHz) interference		-20		dB
$C/I_{2M,+4MHz}$	2 Msps mode, Adjacent (+4 MHz) interference		-44		dB
$C/I_{2M,-6MHz}$	2 Msps mode, Adjacent (-6 MHz) interference		-42		dB
$C/I_{2M,+6MHz}$	2 Msps mode, Adjacent (+6 MHz) interference		-47		dB
$C/I_{2M,\geq12MHz}$	2 Msps mode, Adjacent (≥12 MHz) interference		-52		dB

5.3.7. RX Intermodulation

Symbol	Description	Min.	Typ.	Max.	Units
$P_{IMD,1M}$	IMD performance, 1 Msps, 3rd, 4th, and 5th offset channel		-33		dBm
$P_{IMD,1M,BLE}$	IMD performance, BLE 1 Msps, 3rd, 4th, and 5th offset channel		-30		dBm
$P_{IMD,2M}$	IMD performance, 2 Msps, 3rd, 4th, and 5th offset channel		-33		dBm

5.3.8. Radio Timing Parameters

Symbol	Description	Min.	Typ.	Max.	Units
t_{TXEN}	Time between TXEN task and READY event after channel FREQUENCY configured		140		us
$t_{TXEN,FAST}$	Time between TXEN task and READY event after channel FREQUENCY configured (Fast Mode)		40		us
$t_{TXDISABLE}$	Time between DISABLE task and DISABLED event when the radio was in TX and mode is set to 1Msps		6		us
$t_{TXDISABLE,2M}$	Time between DISABLE task and DISABLED event when the radio was in TX and mode is set to 2Msps		4		us
t_{RXEN}	Time between the RXEN task and READY event after channel FREQUENCY configured in default mode		140		us
$t_{RXEN,FAST}$	Time between the RXEN task and READY event after channel FREQUENCY configured in fast mode		40		us
t_{SWITCH}	The minimum time taken to switch from RX to TX or TX to RX (channel FREQUENCY unchanged)		20		us
$t_{RXDISABLE}$	Time between DISABLE task and DISABLED event when the radio was in RX		0		us
$t_{TXCHAIN}$	TX chain delay		0.6		us
$t_{RXCHAIN}$	RX chain delay		9.4		us
$t_{RXCHAIN,2M}$	RX chain delay in 2Msps mode		5		us

5.3.9. RSSI Specifications

Symbol	Description	Min.	Typ.	Max.	Units
$RSSI_{ACC}$	RSSI Accuracy Valid range -90 to -20 dBm		±2		dB
$RSSI_{RESOLUTION}$	RSSI resolution		1		dB
$RSSI_{PERIOD}$	Sample period		8		us

5.3.10. CPU

Symbol	Description	Min.	Typ.	Max.	Units
W_{FLASH}	CPU wait states, running from flash, cache disabled	0		2	
$W_{FLASHCACHE}$	CPU wait states, running from flash, cache enabled	0		3	
W_{RAM}	CPU wait states, running from RAM			0	
$I_{DDFLASHCACHE}$	CPU current, running from flash, cache enabled, LDO		7.4		mA
$I_{DDFLASHCACHEDCDC}$	CPU current, running from flash, cache enabled, DCDC 3V		3.7		mA
$I_{DDFLASH}$	CPU current, running from flash, cache disabled, LDO		8.0		mA
$I_{DDFLASHDCDC}$	CPU current, running from flash, cache disabled, DCDC 3V		3.9		mA
I_{DDRAM}	CPU current, running from RAM, LDO		6.7		mA
$I_{DDRAMDCDC}$	CPU current, running from RAM, DCDC 3V		3.3		mA
$I_{DDFLASH/MHz}$	CPU efficiency, running from flash, cache enabled, LDO		125		µA/ MHz
$I_{DDFLASHDCDC/MHz}$	CPU efficiency, running from flash, cache enabled, DCDC 3V		58		µA/ MHz

Symbol	Description	Min.	Typ.	Max.	Units
CM_{FLASH}	CoreMark[3], running from flash, cache enabled		215		CoreM
$CM_{FLASH/MHz}$	CoreMark per MHz, running from flash, cache enabled		3.36		CoreM MHz
$CM_{FLASH/mA}$	CoreMark per mA, running from flash, cache enabled, DCDC 3V		58		CoreM mA

5.3.11. Power Management

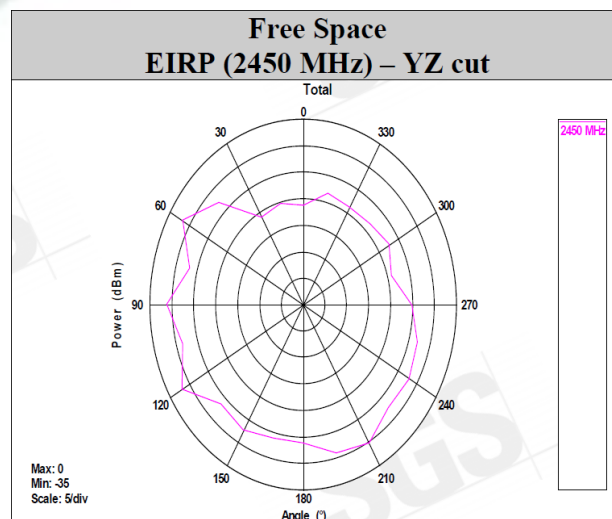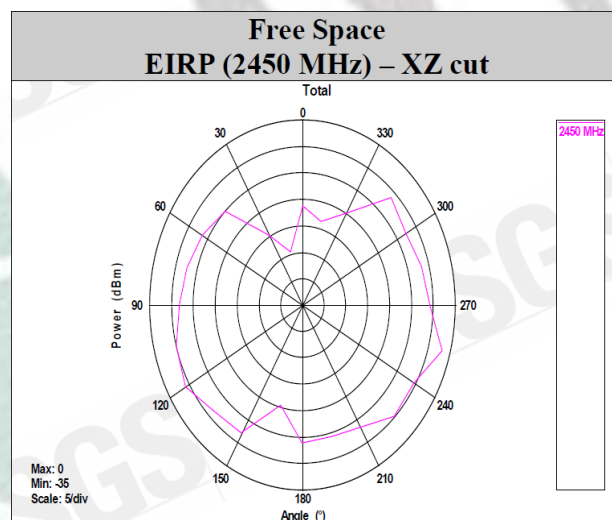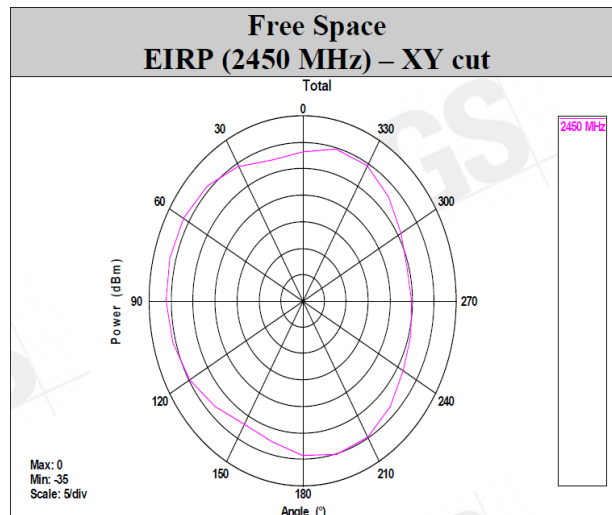| Symbol	Description	Min.	Typ.	Max.	Units
$I_{ON\_RAMOFF\_EVENT}$	System ON, No RAM retention, Wake on any event		1.2		µA
$I_{ON\_RAMON\_EVENT}$	System ON, Full RAM retention, Wake on any event		1.5		µA
$I_{ON\_RAMOFF\_RTC}$	System ON, No RAM retention, Wake on RTC		1.9		µA
$I_{OFF\_RAMOFF\_RESET}$	System OFF, No RAM retention, Wake on reset		0.7		µA
$I_{OFF\_RAMOFF\_GPIO}$	System OFF, No RAM retention, Wake on GPIO		1.2		µA
$I_{OFF\_RAMOFF\_LPCOMP}$	System OFF, No RAM retention, Wake on LPCOMP		1.9		µA
$I_{OFF\_RAMOFF\_NFC}$	System OFF, No RAM retention, Wake on NFC field		0.7		µA
$I_{OFF\_RAMON\_RESET}$	System OFF, Full RAM retention, Wake on reset		1.0		µA

6. Block Diagram
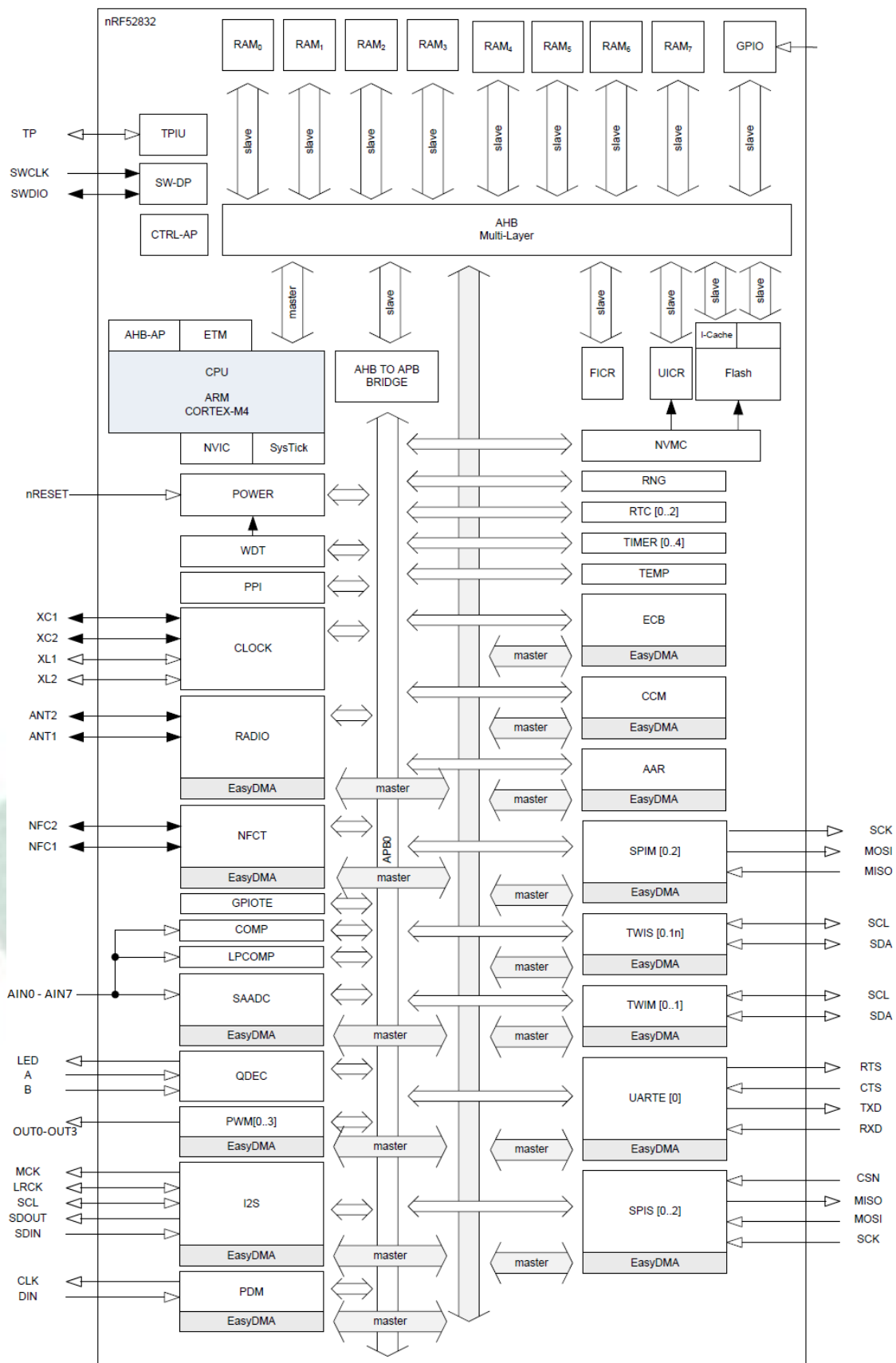
7. Antenna

7.1. MDBT42V

Test Result

Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain (dBi)	-1.26	-1.12	-1.13	-1.29	-1.55	-1.89	-2.32	-2.81	-3.39	-3.88	-4.59
Peak EIRP (dBm)	-1.26	-1.12	-1.13	-1.29	-1.55	-1.89	-2.32	-2.81	-3.39	-3.88	-4.59
Directivity (dBi)	4.81	4.87	4.91	4.96	4.99	5.01	4.99	4.98	4.92	4.88	4.95

Free Space
EIRP (2450 MHz) – XY cut

Free Space
EIRP (2450 MHz) – XZ cut

Free Space
EIRP (2450 MHz) – YZ cut

7.2. MDBT42V-P

Test Result

Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain (dBi)	-3.85	-3.81	-3.92	-4.00	-4.07	-4.14	-4.22	-4.32	-4.46	-4.63	-5.13
Peak EIRP (dBm)	-3.85	-3.81	-3.92	-4.00	-4.07	-4.14	-4.22	-4.32	-4.46	-4.63	-5.13
Directivity (dBi)	5.29	5.36	5.36	5.43	5.51	5.49	5.45	5.37	5.33	5.31	5.30

Free Space
EIRP (2450 MHz) – XY cut

Free Space
EIRP (2450 MHz) – XZ cut

Free Space
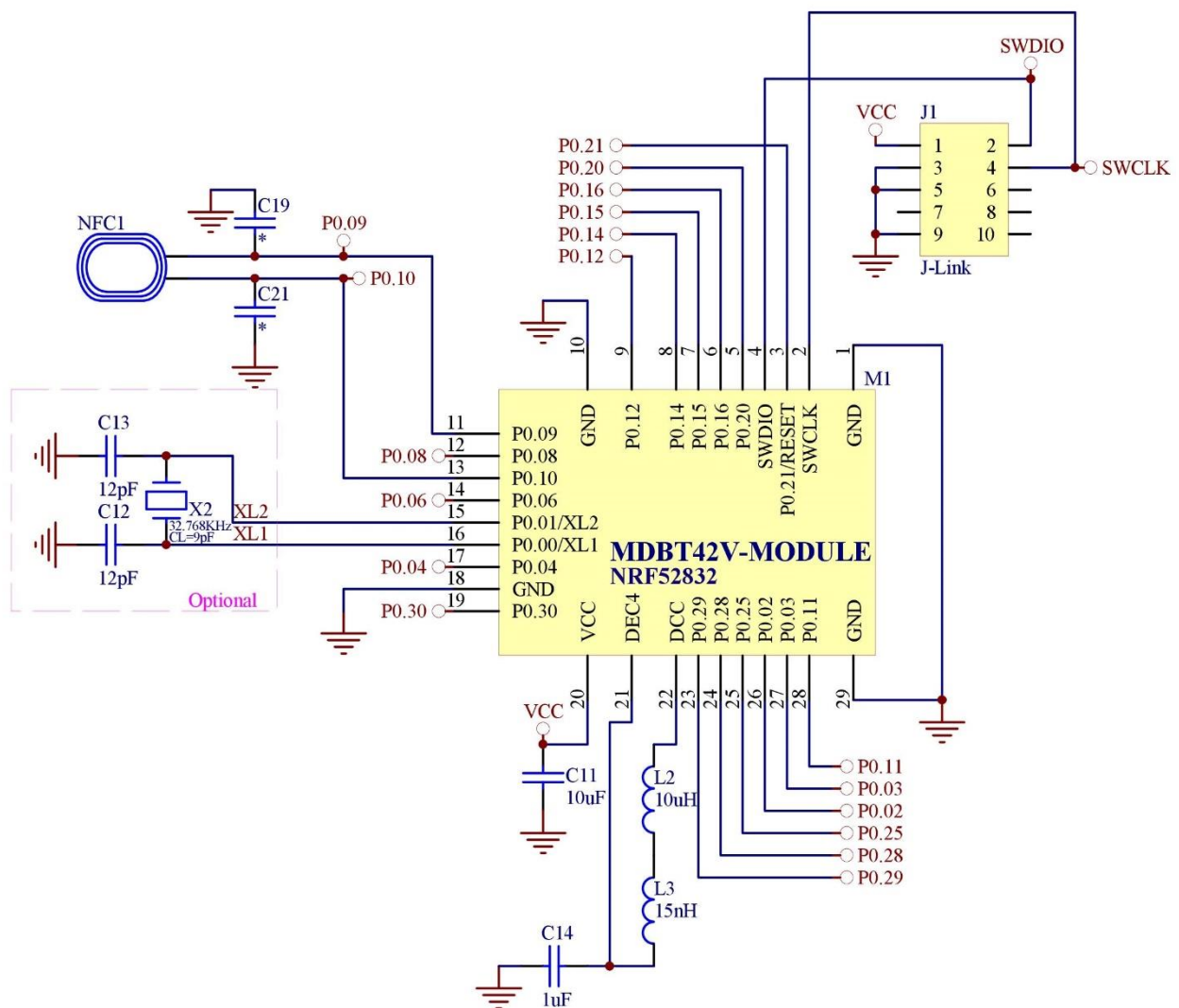EIRP (2450 MHz) – YZ cut
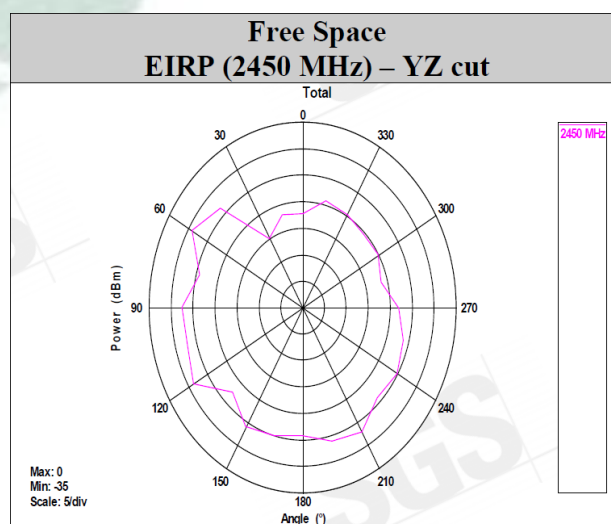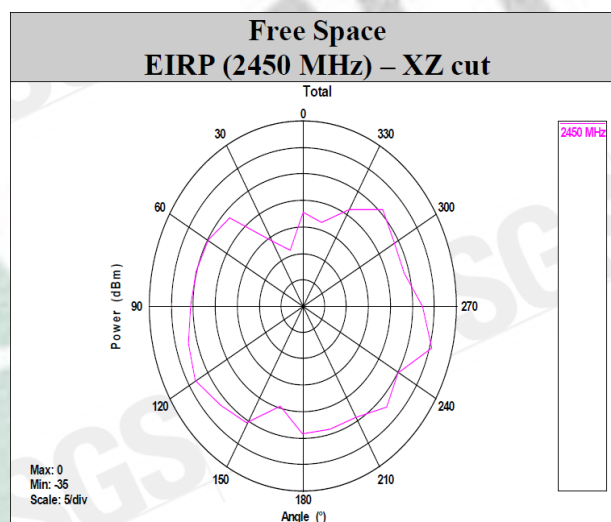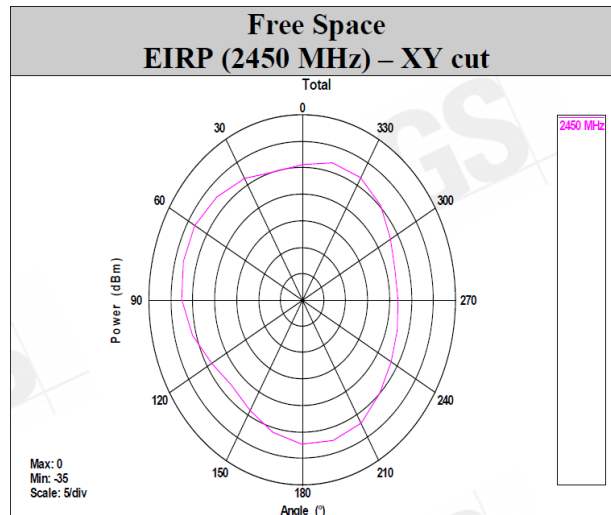
8. Reference Circuit

Module's default is using "DC-DC mode", and must connect it to external 32.768khz to work.

REMARK:

** When **NOT** using DC-DC mode, please remove L2 / L3 / C14. **

** When **NOT** using NFC, please remove NFC1 / C19 / C21. **

** When using internal 32.768khz RC oscillator, please remove X2 / C12 / C13. **

9. Certification

9.1. Declaration ID

QDL Bluetooth® qualified design listing

The Bluetooth SIG Hereby Recognizes

Raytac Corporation
Member Company

nRF52xxx Bluetooth Module
Qualified Design Name

Declaration ID: D036781
Qualified Design ID: 100551
Specification Name: 5.0
Project Type: End Product
Model Number: MDBT42/MDBT42-P/MDBT42Q/MDBT42Q-P/MDBT42V/MDBT42V-P

Listing Date: 30 August 2017   Assessment Date: 30 August 2017
Hardware Version Number: 1   Software Version Number: 2

This certificate acknowledges the *Bluetooth*® Specifications declared by the member are achieved in accordance with
the Bluetooth Qualification Process as specified within the Bluetooth Specifications and as required within the current PRD

❂ Bluetooth®

9.2. FCC Certificate (USA)

telefication

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

TCB

Telefication B.V.
Edisonstraat 12a
Zevenaar, NL-6902 PK
Netherlands

Date of Grant: 09/07/2017

Application
Dated: 09/05/2017

Raytac Corp.
5F., No.3, Jiankang Rd., Zhonghe Dist.,
New Taipei City,, 23586
Taiwan

Attention: Venson Liao , R&D Manager

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named
GRANTEE, and is VALID ONLY for the equipment identified hereon for
use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: SH6MDBT42V
Name of Grantee: Raytac Corp.
Equipment Class: Digital Transmission System
Notes: BT 4.2 Module
Modular Type: Single Modular

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15C	2402.0 - 2480.0	0.0029		

Modular Approval. Power output listed is conducted. This grant is valid only when the module is sold to OEM integrators and must be installed by the OEM or OEM integrators. The antennas used for this transmitter as shown in this filing must be installed to provide a separation distance of at least 5 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users may not be provided with the module installation instructions.OEM integrators and end-users must be provided with transmitter operating conditions for satisfying RF exposure compliance.

Certificate No.: 172181318/AA/00	George Lo Product Assessor	George Lo

9.3. TELEC Certificate (Japan)

telefication bv
The Netherlands
Chamber of Commerce
51565536
www.telefication.com

telefication

Certificate
of
Radio Equipment in JAPAN

No: 201-170920 / 00

Telefication, operating as Conformity Assessment Body (CAB ID Number: 201) with respect to Japan, declares that the listed product complies with the Technical Regulations Conformity Certification of Specified Radio equipment (ordinance of MPT N° 37,1981)

Product description: **BT 4.2 Module**
Trademark: **Raytac**
Type designation: **MDBT42V**
Hardware / Software version: **1 / 1**
Variants: **See Annex 3**

Manufacturer: **Raytac Corporation**
Address: **5F, No. 3, Jiankang Rd., Zhonghe Dist.**
City: **23586 New Taipei City**
Country: **Taiwan**

This statement is granted to:

Name: **Raytac Corporation**
Address: **5F, No. 3, Jiankang Rd., Zhonghe Dist.**
City: **23586 New Taipei City**
Country: **Taiwan**

This statement has THREE Annexes.

Zevenaar, 12 September 2017

CAB

Ramy Nabod
Product Assessor

PRODUCTS
RvA C 224

9.4. NCC Certificate (Taiwan)

MDBT42V Series

SGS 台灣檢驗科技股份有限公司
電信管制射頻器材型式認證證明

一、申　　　請　　者：勁達國際電子有限公司
二、地　　　　　　址：新北市中和區建康路 3 號 5 樓
三、製　造　廠　商：勁達國際電子有限公司
四、器　材　名　稱：BT 4.2 Module
五、廠　　　　　　牌：Raytac
六、型　　　　　　號：MDBT42V
七、發　射　功　率：BT V4.2 single mode LE (GFSK): 4.57dBm
　　（電場強度）　　(Peak)
八、工　作　頻　率：2402-2480MHz
九、審　驗　日　期：106 年 09 月 12 日
十、審驗合格標籤式樣：　CCAM17LP1390T5

台灣檢驗
科技股份
有限公司
電信設備
審驗印章

十一、警語或標示要求：
　1.應依審驗合格標籤或符合性聲明標籤式樣自製標籤黏貼或印鑄於電信管制射頻器材本體明顯處，並於包裝盒標示本會標章，始得公開陳列或販賣。
　2.電信管制射頻器材應依本會或相關技術規範規定於指定位置標示中文警語。
　3.使用原審驗合格標籤者，應於說明書及包裝盒提供充分與正確之資訊。
　4.於網際網路販賣取得審驗證明之電信管制射頻器材者，應於該國際網路網頁提供審驗合格標籤或符合性聲明標籤資訊。
　5.使用手冊應揭示下列資訊：
　　(1)經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

十二、特殊記載事項：
　1.本案審驗模組為完全模組，適用於任何平臺。
　2.「平臺」指不組裝射頻模組（組件），仍具備該平臺主要功能之器材。
　3.經取得審驗證明之電信管制射頻器材或射頻模組（組件），如變更其廠牌、型號、技術規格或射頻性能時，除電信管制射頻器材審驗辦法另有規定外，應重新申請審驗。
　4.經取得審驗證明之電信管制射頻器材或射頻模組（組件），於電信管制射頻器材相關技術規範修訂審驗相關章節時，應依下列規定辦理：
　　(1)修訂後之技術規範定有實施期限者，依實施期限，申請重新審驗。
　　(2)修訂後之技術規範未明定實施期限者，應於技術規範修訂後二年內，申請重新審驗。經取得審驗證明之電信管制射頻器材，於電信管制射頻器材相關技術規範修訂審驗相關章節時，修訂後之技術規範未明定實施期限者，應於技術規範修訂後二年內，申請重新審驗。未依規定重新審驗者，原取得機關（構）得廢止其審驗證明。
　5.取得型式認證證明、符合性聲明證明及簡易符合性聲明證明者，應妥善保管申請審驗器材樣品、測試所需之特殊測試軟體及特殊治具至器材停止生產或停止輸入後五年。
　6.取得型式認證證明或符合性聲明證明授權他人於同廠牌同型號之電信管制射頻器材或射頻模組（組件）使用審驗合格標籤或符合性聲明標籤，應由取得審驗證明者於本會指定位置登錄。
　7.以取得審驗證明之射頻模組（組件）組裝於最終產品後，取得審驗證明者，應於該最終產品輸入、販賣或公開陳列前，檢具該最終產品廠牌、型號及外觀照片之電子檔，向原驗證機關（構）登錄；以射頻模組（組件）取得審驗證明者，授權他人使用其審驗合格標籤，該射頻模組（組件）組裝於最終產品後，取得審驗證明者應檢具該最終產品廠牌、型號及外觀照片之電子檔，向原驗證機關（構）登錄。

說明：
　1.本公司/中心係經國家通訊傳播委員會委託之驗證機構（證書號碼：NCC-RCB-13、機構地址：台灣檢驗科技股份有限公司、電話：02-2299 3279)，核發本型式認證。
　2.請依上列標籤式樣自製標籤，標貼或印鑄於器材本體明顯處，始得販賣或公開陳列。
　3.本設備之製造、輸入、販賣、使用等均需遵守相關電信法規之規定。

備註：
　1.本器材符合低功率射頻電機技術規範(3.10.1)之規定。
　2.本公司僅射無線射頻特性技術規範測理型式認證，其他仍須依本國相關法規測理。
　3.本器材使用天線型號：Chip Antenna，天線廠牌：Raytac，Model No.: MDBT42V，增益：-1.12dBi。
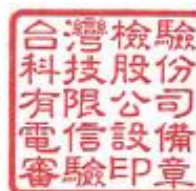　4.本公司係經國家通訊傳播委員會委託之驗證機構，核發本型式認證證明。

SGS 台灣檢驗科技股份有限公司
電信管制射頻器材型式認證證明

一、申　　請　者：勁達國際電子有限公司
二、地　　　　址：新北市中和區建康路3號5樓
三、製　造　廠　商：勁達國際電子有限公司
四、器　材　名　稱：BT 4.2 Module
五、廠　　　　牌：Raytac
六、型　　　　號：MDBT42V-P
七、發　射　功　率　BT V4.2 single mode LE (GFSK): 4.57dBm
　　（電場強度）　（Peak）
八、工　作　頻　率：2402-2480MHz
九、審　驗　日　期：106 年 09 月 12 日
十、審驗合格標籤式樣：　《《《 CCAM17LP1391T7

台灣檢驗
科技股份
有限公司
電信設備
審驗印章

十一、警語或標示要求：
　1. 應依審驗合格標籤或符合性聲明標籤式樣自製標籤黏貼或印鑄於電信管制射頻器材本體明顯處，並於包裝盒標示本會標章，始得公開陳列或販賣。
　2. 電信管制射頻器材應依本會或相關技術規範規定於指定位置標示中文警語。
　3. 使用原審驗合格標籤者，應於說明書及包裝盒提供充分與正確之資訊。
　4. 於網際網路販賣取得審驗證明之電信管制射頻器材者，應於該網際網路網頁提供審驗合格標籤或符合性聲明標籤資訊。
　5. 使用手冊應標示下列資訊：
　　（1）經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。
十二、特殊記載事項：
　1. 本案審驗模組為完全模組，適用於任何平臺。
　2. 「平臺」指不組裝射頻模組（組件），仍具備輔平臺主要功能之器材。
　3. 經取得審驗證明之電信管制射頻器材或射頻模組（組件），如變更廠牌、型號、技術規格或射頻性能時，除電信管制射頻器材審驗辦法另有規定外，應重新申請審驗。
　4. 經取得審驗證明之電信管制射頻器材或射頻模組（組件），於電信管制射頻器材相關技術規範修訂審驗相關章節時，應依下列規定辦理：
　　（1）修訂後之技術規範明定實施期限者，依實施期限，申請重新審驗。
　　（2）修訂後之技術規範未明定實施期限者，應於技術規範修訂後二年內，申請重新審驗。經取得審驗證明之電信管制射頻器材，於電信管制射頻器材相關技術規範修訂審驗相關章節時，修訂後之技術規範未明定實施期限者，應於技術規範修訂後二年內，申請重新審驗。未依規定重新審驗者，原審驗機關（構）得廢止其審驗證明。
　5. 取得型式認證證明、符合性聲明證明及簡易符合性聲明證明者，應妥善保管申請審驗器材樣品、測試所需之特殊測試軟體及特殊治具至該器材停止生產或停止輸入後五年。
　6. 取得型式認證證明或符合性聲明證明者授權他人於同廠牌同型號之電信管制射頻器材或射頻模組（組件）使用審驗合格標籤或符合性聲明標籤，應由取得審驗證明者於本會指定位置登錄。
　7. 以取得審驗證明之射頻模組（組件）組裝於最終產品後，取得審驗證明者，應於該最終產品輸入、販賣或公開陳列前，檢具標註最終產品廠牌、型號及外觀照片之電子檔，向原審驗機關（構）登錄；以射頻模組（組件）取得審驗證明者，授權他人使用其審驗合格標籤，核射頻模組（組件）組裝於最終產品後，取得審驗證明者應檢具標註最終產品廠牌、型號及外觀照片之電子檔，向原審驗機關（構）登錄。

說明：
　1. 本公司/中心係經國家通訊傳播委員會委託之驗證機構（證書號碼：NCC-RCB-13、機構地址：台灣檢驗科技股份有限公司、電話：02-2299 3279）核發本型式認證證明。
　2. 請依上列標籤式樣自製標籤，標貼或印鑄於器材本體明顯處，始得販賣或公開陳列。
　3. 本設備之製造、輸入、販售、使用等均需遵守相關電信法規之規定。

備註：
　1. 本器材符合低功率射頻電機技術規範(3.10.1)之規定。
　2. 本公司僅對無線射頻特性技術規範辦理型式認證，其他仍須依本國相關法規辦理。
　3. 本器材使用天線型號：PCB Antenna，天線廠牌：Raytac，Model No.: MDBT42V-P，增益: -3.81dBi。
　4. 本公司係經國家通訊傳播委員會委託之驗證機構，核發本型式認證證明。

9.5. CE Test Report (EU)

SGS

SGS Reference No: E1/2017/80007C

VERIFICATION OF EMC COMPLIANCE

Verification No.	:	E1/2017/80007C
Representative Model No.	:	MDBT42V
Added Model(s)	:	MDBT42V-P
Product Name	:	BT 4.2 Module
Brand Name	:	Raytac
Applicant	:	Raytac Corporation
Address of Applicant	:	5F, No.3, Jiankang Rd., Zhonghe Dist., New Taipei City , 23586, Taiwan
Test Report Number	:	E1/2017/80007
Date of Issue	:	Sep. 04, 2017
Applicable Standards	:	EN 301 489 −1 $_{v2.2.0}$ 2017-03 (Draft)
		EN 301 489 −17 $_{v3.2.0}$ 2017-03 (Draft)
		EN 55032 : 2015+AC:2016-07
		EN 61000-4-2 : 2009, EN 61000-4-3 : 2006+A1:2008+A2:2010

Conclusion
The apparatus meets the requirements of the above standards and hence compliance the essential requirements under article 3.1b of the RED (2014/53/EU) Directive.

*This verification is only valid for the equipment and configuration described, and in conjunction with the test report as detailed above.

Authorized Signatory:

Eddy Cheng

SGS TAIWAN LTD.
Eddy Cheng
Technical Asst. Supervisor

9.6. IC Certificate (Canada)

telefication

telefication bv
The Netherlands

Chamber of Commerce
51565536
www.telefication.com

TECHNICAL ACCEPTANCE CERTIFICATE	CERTIFICAT D'ACCEPTABILITÉ TECHNIQUE

CERTIFICATION No. No. DE CERTIFICATION	8017A-MDBT42V
TELEFICATION No. No. DE TELEFICATION	172170518/AA/00
TEST SITE No. No. DE LABORATOIRE	4620A-5
ISSUED TO DÉLIVRÉ A	Raytac Corporation
TYPE OF EQUIPMENT GENRE DE MATÉRIEL	Bluetooth device
TRADE NAME AND MODEL MARQUE ET MODELE	Raytac / MDBT42V Raytac / MDBT42V-P

CERTIFIED TO CERTIFIÉ SELON LE	SPECIFICATION CAHIER DES CHARGES			
		RSS-102	ISSUE	5
		RSS-247	EDITION	2

Certification of equipment means only that the equipment has met the requirements of the above-noted specification. Licence applications, where applicable to use certified equipment, are acted on accordingly by the ISED issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by ISED. The equipment for which this certificate is issued shall not be manufactured, imported, distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by ISED.

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'ISDE et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'ISDE. Le matériel à l'égard duquel le présent certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicables publiées par ISDE.

ISSUED BY TELEFICATION BV (NL0001), RECOGNIZED CERTIFICATION BODY BY INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA
DÉLIVRÉ PAR TELEFICATION BV (NL0001), ORGANISME DE CERTIFICATION RECONNU PAR INNOVATION, SCIENCES ET DÉVELOPPEMENT ÉCONOMIQUE CANADA

I hereby attest that the subject equipment was tested and found in compliance with the above-noted specification.
J'atteste, par la présente, que le matériel a fait l'objet d'essai et a été jugé conforme à la spécification ci-dessus

DATE 07 Sep 2017 BY

George Lo
Product Assessor

This certificate has one annex.

George Lo

PRODUCTS
RvA C 224

9.7. SRRC Certificate (China)

无线电发射设备

Radio Transmission Equipment

型号核准证

Type Approval Certificate

劲达国际电子有限公司（台湾）：

根据《中华人民共和国无线电管理

In accordance with the provisions on the Radio

条例》，经审查，下列无线电发射设备

Regulations of the People's Republic of China , the following

符合中华人民共和国无线电管理规定和

radio transmission equipment , after examination , conforms

技术标准，其核准代码为 CMIIT ID: 2017DJ5872

to the provisions with its CMIIT ID:

（发证机关）

Sealed by issuing authority

有效期：

Validity 五年

2017 年 9 月 14 日

Year Month Date

9.8. RoHS & REACH Report

Please click link below to download full report.

- [RoHS Report for MDBT42V & MDBT42V-P](#)

- [REACH Report for MDBT42V & MDBT42V-P](#)

9.9. End-Product Label

It is suggested using following content adding to package or user manual or label to obey the regulation. Any rules of end-product label shall refer to each certification for final reference.

9.9.1. FCC (USA)

The FCC statement should be included in the user manual when there is no enough space on label. Otherwise, it should be included on the label.

"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. (2) This device must accept any interference received, including interference that may cause undesired operation."

The final end product must be labeled in a visible area with the following: "Contain FCC ID: SH6MDBT42V".

9.9.2. TELEC (Japan)

When manufacturer is placing the product on the Japanese market, the product must be affixed with the following Specified Radio Equipment marking:

9.9.3. NCC (Taiwan)

請依下列標籤式樣自製標籤，標貼或印鑄於器材本體明顯處，始得販賣或公開陳列。

MDBT42V Series   (((CCAM17LP1390T5

MDBT42V-P Series   (((CCAM17LP1391T7

平台廠商必須於平台上標示字樣「本產品內含射頻模組：ID 編號 CCAM17LP1390T5」或「本產品內含射頻模組：ID 編號 CCAM17LP1391T7」。

「平台」定義如下：若器材組裝本案模組，消費者仍能正常使用該器材主要功能，該器材得視為平台。若器材不組裝本案模組，消費者不能正常使用該器材主要功能，該器材不能視為平台。該類不同廠牌型號器材組裝本案審驗模組後，須分別申請型式認證。
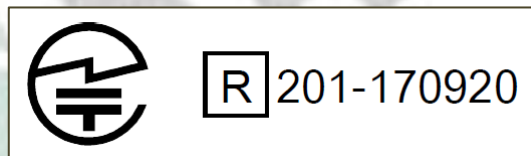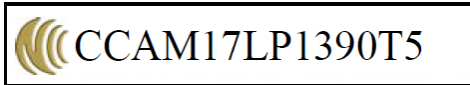
9.9.4. IC (Canada)

The IC statement should be included in the user manual when there is no enough space on label. Otherwise, it should be included on the label.

"This device complies with Industry Canada license-exempt RSS Standard(s). Operation is subject to the following two conditions. (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

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."

The final end product must be labeled in a visible area with the following: "Contain IC ID: 8017A-MDBT42V".

10. Basic Facts for nRF52 Chip

Below is the comparison chart between nRF52840, nRF52832 and nRF52810. Any discrepancy shall refer to Nordic's technical document as final reference.

	nRF52840	nRF52832	nRF52810
RAYTAC Model No.:	Click to see "Full List of Raytac's BLE Modules"		
Bluetooth 5 Long Range (x4)	V		
Bluetooth 5 High Speed	V	V	V
Bluetooth 5 Advertisement Extension (x8)	V	V	V
Flash (kBytes)	1024	512	192
RAM (kBytes)	256	64	24
ANT	V	V	V
IEEE 802.15.4	V		
ARM® TrustZone® Cryptocell	V		
USB	V		
QSPI	V		
NFC	V	V	
I2S	V	V	
SPI, TWI, UART, PWM	V	V	V
PDM	V	V	V
ADC, Comparators	V	V	V
Supply Range (V)	1.7 to 5.5	1.7 to 3.6	1.7 to 3.6

Full List of Raytac's BLE Modules
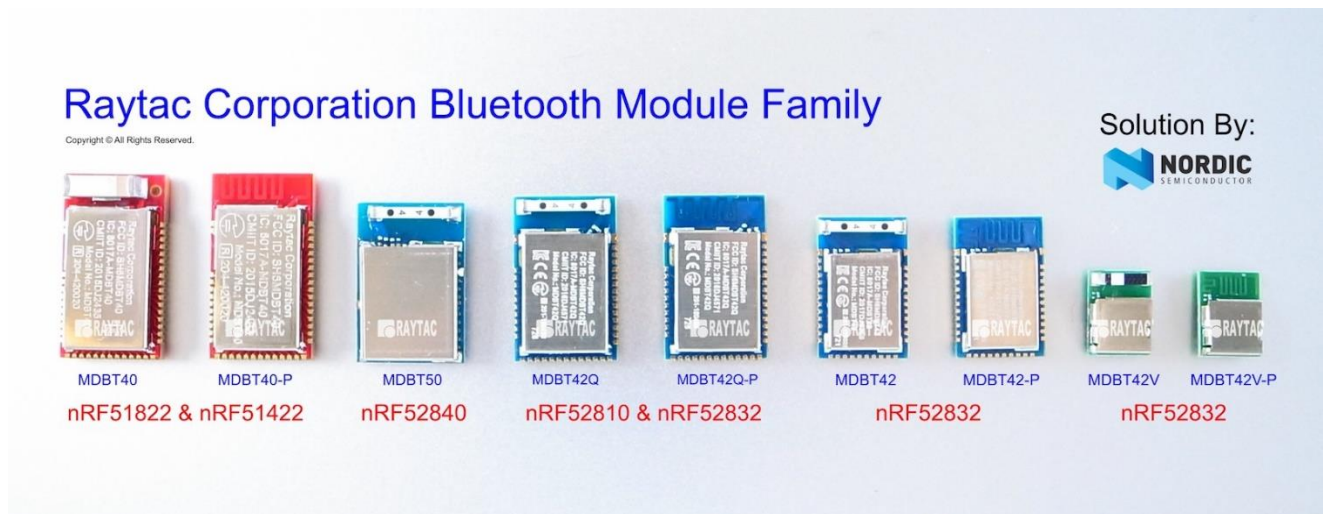
MDBT40 & MDBT40-P Series

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40	nRF51822	MDBT40-256V3	3	Chip Antenna	16 kb	256 K
		MDBT40-256RV3			32 kb	256 K

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40-P	nRF51822	MDBT40-P256V3	3	PCB Antenna	16 kb	256 K
		MDBT40-P256RV3			32 kb	256 K

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40 - ANT	nRF51422	MDBT40-ANT -256V3	3	Chip Antenna	16 kb	256 K
		MDBT40-ANT -256RV3			32 kb	

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40 - ANT-P	nRF51422	MDBT40-ANT -P256V3	3	PCB Antenna	16 kb	256 K
		MDBT40-ANT -P256RV3			32 kb	

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40 Nano	nRF51822	MDBT40-n256V3	3	N/A	16 kb	256 K

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT40 - ANT-Nano	nRF51422	MDBT40-ANT -n256V3	3	N/A	16 kb	256 K

MDBT42 Series

QFN Package IC

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT42Q	nRF52832	MDBT42Q-512K	1	Chip Antenna	64 kb	512 K
	nRF52810	MDBT42Q-192K			24 kb	192 K

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT42Q-P	nRF52832	MDBT42Q-P512K	1	PCB Antenna	64 kb	512 K
	nRF52810	MDBT42Q-P192K			24 kb	192 K

WLCSP Package IC

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT42	nRF52832	MDBT42-512K	1	Chip Antenna	64 kb	512 K
MDBT42-P		MDBT42-P512K	1	PCB Antenna		

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT42V	nRF52832	MDBT42V-512K	1	Chip Antenna	64 kb	512 K
MDBT42V-P		MDBT42V-P512K	1	PCB Antenna		

MDBT50 Series

Series	Nordic Solution	Raytac No.	IC Version	Antenna	RAM	Flash Memory
MDBT50	nRF52840	MDBT50-1M	1	Chip Antenna	256 kb	1MB
MDBT50-P		MDBT50-P1M		PCB Antenna		

Release Note

- 2017/05/05   Version A: 1st release

- 2017/10/06   Version B:

    (1) Update Chapter 2.3, Chapter 4 and list of model no.

    (2) Added Chapter 7 (antenna info), Chapter 9 (certificates info), Chapter 10.