BelFone

www.belfone.com

BF-TD526

Digital FM Two-way Radio

THANK YOU!

Founded in 1989, BelFone is a leading technology and solution provider of mission and business-critical communications, dedicated to bringing cut-edge communications technologies and empowering our customers with integrated radio solutions. With outstanding performance and excellent communication capabilities, BelFone products are the proper choices for mastering the overall situation and achieving intelligent dispatching and command delivery.

This manual is applicable to
BF-TD526 series

Instructions before Use

It's important for the operator to be aware of and understand hazards common to the operation of any radios .Please observe the following safety precautions to prevent radio damage and personal injury. The following precautions shall be observed during operation, service and repair of this radio.

◆The recommended usage rate is 1 minute for TX and 4 minutes for RX, when the radio is used in the transmission mode for many hours continuously, the radiator and chassis will become hot, don't allow the rear panel of the radio to contact a surface of low melting point /low Ignition point.

◆Don't expose the radio to direct sunlight for a long periods of time. Also, don't place the radio on sources of extremely heat, humid, dusty area, or unstable surfaces.

◆In areas where the use of radio devices is restricted or warned, please obey the regulation and turn off the radio.

◆Use of the radio while driving may be against traffic laws in some countries, please check local traffic laws before using the radio while driving.

◆If there is any problems with the radio, please turn the radio off immediately. Then contact the local dealer/technician. Do not modify this radio unless instructed by this manual. Please find a certified technician to repair it.

◆ If secondary development is required, please contact with BelFone or the local dealer for technical assistance.

◆Please keep the surface of radio clean and dry. To clean the radio, use a damp fabric soaked in mild washing liquid.

Content

Unpacking and Device Inspection

Note: The following instructions regarding unpacking are only for BelFone's distributors, and service agencies or factories authorized by BelFone.
After carefully unpacking the radio, identify the items listed in the table below. If any items are missing or have been damaged during shipment please contact dealer or BelFone immediately.

Accessories

Items	Quantity
Antenna	1
Strap	1
Belt Clip	1
Charger	1
AC Adapter	1
Li-ion Battery	1
Screws	1
Instruction Manual	1
Warranty Card	1
Certificate	1

Antenna   Strap   Belt Clip   Screws

Charger   AC Adapter   Li-ion Battery

Installation of Accessories

Installing / removing the antenna

Hold the antenna base, then screw it into the connector at the top of the radio until fasten.

Turn the antenna anti-clockwise to remove it.

Attaching/Removing the belt clip

Attach the belt clip using the two supplied 3*7mm binding screws.
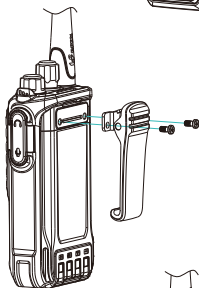
Attaching the Strap

Thread the hand strap to the loop on the back of the radio.
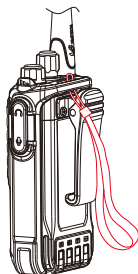
Attaching/Removing the Battery

Warning!

- 1. Don't short-circuit the battery, which may cause damaged or catch fire;
- 2. Never to remove the case of the battery, prevent battery short circuit;
- 3. Battery is flammable and explosive, don't throw it into fire or don't use it in dangerous area，such as gas stations

Match the guides of the battery with the corresponding grooves on the upper rear of the radio, push the battery until a click is heard to lock it in place.
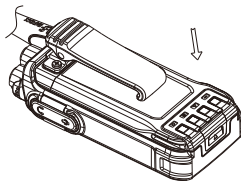
To remove the battery, please turn the power off, then upward push the latch to unlock the battery and pull the battery away from the radio.
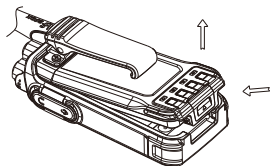
Note: Don't attach / remove the battery if the radio turned on.

Battery Information

The new battery hasn't been fully charged before shipped, please charge more than 5 hours at the first use. The maximum battery capacity and performance is achieved after three full charge/discharge cycles. If the battery power runs lows, please recharge or replace the battery.

Applicable Battery

To reduce the risk of injury, please only use the battery and charger specified by Belfone, other batteries may burst, causing bodily injury and property damage.

Battery Tips

1.When charging battery, keep it at a temperature among 5℃-40℃, Temperature out of the limit may cause battery leakage or damage.
2.Prior to charging a battery with the radio, it is recommended to turn the radio off.
3.Avoid cut off the power supply or remove the battery during charging.
4.Please ensure that the battery is charged in a dry state before charging.
5.Please change the battery when working time is shorten than normal performance even if the battery is fully charged.

Extend Battery Life

1.The battery performance will be decreased under 0℃. Please prepare a spare battery in cold weather. A battery not work properly in a cold environment does not mean that it is damaged. Please keep the battery and reconfirm at room temperature.
2.The dust on the battery contact point may cause battery faulty, please cleaning it by a dry cloth before using.

Battery Storage

1.Fully charge the battery before long-term storage, to avoid battery damage due to over-discharge.
2.Recharge a battery after several months' storage, to avoid battery capacity reduction due to over-discharge.(NI-MH batteries:3 months, Li-Ion& Li-polymer batteries: 6 months)
3.Store your battery in a cool, dry place under room temperature, to reduce self-discharge.

Charging the battery

Use only the charger specified by the manufacturer, the charge indicator indicates the charging progress.

Charger Status	Charger Indicator
Standby(No-load)	Charge Indicator glows green
Battery is charging	Charge Indicator glows red
Battery is fully charged	Charge Indicator glows green

Charge Steps:

1.Plug the AC connector of the switching power into the AC outlet socket.
2.Place the battery or the radio attached with a battery in the charger.
3.Make sure the battery is connected to the charger, the charging process initiates when the charger indicator glows red.
4.The charger indicator glows green when the battery fully charged, please remove the battery then.
Note:While charging the temperature out of the limit the LED indicator of charger will flash red and green; If battery has damaged or battery is not connected to the charger correctly, the LED indicator of charger also will flash red and green.

Attaching the Speaker/Microphone

Open the accessory jack cover, then directly plug the speaker/microphone into the MIC-SP jack.
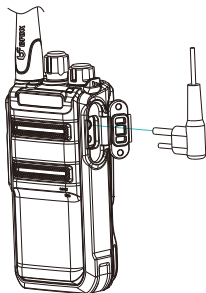
Getting Acquainted
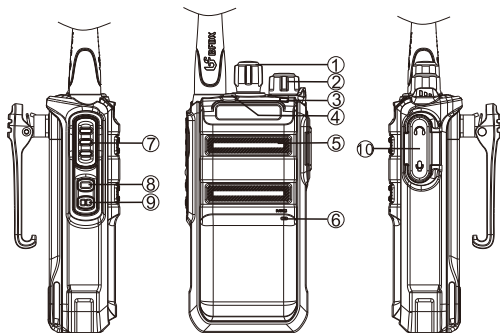
①**Channel Selector Knob**
Turn the knob to select channel 1-16, if the channel is available, a channel number will sound.
②**Power switch/volume adjust keys**
Rotate clockwise to power on, after the radio is powered on, rotate clockwise to increased volume, anti-clockwise to decrease the volume. Rotate anti-clockwise fully to power off.
③**LED Indicator**
When the radio is transmitting, the LED will glow red; when receiving the LED will glow green; when scanning the LED will flash red; when battery gets low, the LED will flash red slowly.
④**Orange Button**
Press to activate the programmable function. (The function can be customized by cps.)
⑤**Speaker**
⑥**Microphone**

⑦**PTT Key**

Press and hold down the PTT key then speak into the microphone to transmit.

⑧**Button 1**

Press to activate the programmable function. (The function can be customized by cps.)

⑨**Button 2**

Press to activate the programmable function. (The function can be customized by cps.)

⑩**MIC-SP Jack**

Connect to optional speaker/MIC and programming cable.

Basic Operation

Power on /off

Rotate the power switch/volume adjusting keys clockwise to power on, a current channel number and current zone number will sound.

Rotate the power switch/volume adjusting keys anti-clockwise to power off.

Adjusting the volume

After the radio is powered on, rotate the power switch/volume adjust keys to adjust the volume level, rotate the knob clockwise to increase the volume, or rotate the knob anti-clockwise to decrease the volume.

Selecting a Channel

Rotate the channel selector knob to select channel 1 to 16, rotate the knob clockwise to increase the channel number, or rotate the knob anti-clockwise to decrease the channel number.

Note: While the channel is un-programmed, the LED will flash red slowly and a prompt tone:" no channel " will sound.

Selecting a Zone

The radio supports up to 2 zones, each zone with a maximum of 16 channels. Set the side buttons to the 【Zone Toggle】function, and press the button to handover zone. While the voice indication is enabled, handover zone and a zone number will sound.

A/D Modes Switching

The 【AD Switch】 buttons can be switched AD mode and DA mode each other. If the current channel is D/A mode , press the programmed 【AD Switch】button to switch to A/D mode; If the current channel is A/D mode, press the programmed 【AD Switch】button to switch to D/A mode.

Note: AD Switch function only switches the channel mode temporarily. Restart the radio or rotate channel selector knob, the current channel will return to its default channel mode.

A/D mode is analog compatible digital mode.

D/A mode is digital compatible analog mode.

Call

Each digital channel may initiate a private call, a group call or an all call. On analog channel press and hold down the PTT key to directly initiate call. On digital compatible analog channel press PTT key, if is not within hang time to set up digital call, within the hang time to call back. On analog compatible digital channel press PTT key, if is not within hang time to set up analog call, within the hang time period to call back. To transmit press and hold down the PTT key, LED indication glows red, speak into the microphone, hold the palm microphone approximately 3 to 4 centimeters away from mouth.

1.)Group Call

● When the default communication address of the current digital channel is set to the group call ID, press the PTT button to initiate a group call;

● When the one-touch call is set to a group call, a group call can also be initiated by one-touch function.

2.)Private Call

If the "private call ACK" feature is enabled, the radio will confirm whether the called is activated on the current channel before setting up a private call.

● When the default communication address of the current digital channel is set to the private call ID, press the PTT button to initiate a private call;

● When the one-touch call is set to a private call, a private call can also be initiated by one-touch function.

3.)All Call

When the default communication address of the current digital channel is set to the all call ID, press the PTT button to initiate all call

Note: While talk permit indication feature is enabled, and the channel is available, press PTT key to transmit a tone will sound.

Receiving and responding to a call

On digital channel, while a private call is received, press the PTT key within the hang time to set up the private call. On digital compatible analog channel or analog compatible digital channel, the radio will detect digital and analog signal (must attach to CTCSS/CDCSS) simultaneously when receiving, and if matching signal is detected, the current call can be called back within the hang time.

Note: While channel free indication feature is enabled, the transmitter releases PTT key, a tone will sound.

Button Setting

For enhanced convenience, orange button, button1, and button2 can be programmed, short and long press of a key can be assigned with different functions.

Programmable keys include functions

NO.	Defined Name	Function Description
1	Unassigned	No function is assigned to the programmable button.
2	One Touch Call 1~6	Quickly initiate digital group call, digital private call, send preset message or send call alert via the one touch call function.
3	Emergency On	Turn on the emergency alarm, (can only be set as a short press of the orange key).
4	Emergency Off	Turn off the emergency alarm, (can only be set as a long press of the orange key).
5	Monitor	Enable monitor function.
6	Scan on/off	Enable or disable the scan function.
7	All alert tone on/off	Enable or disable all alert tones.
8	Battery Indicator	Quickly detect the remaining battery level with voice prompts " Power High ", " Power Middle ", and "I Power Low "
9	Zone Toggle	Quickly handover zones.
10	AD Switch	Temporarily switch channel mode to AD or DA
11	Power Switch	Switch the TX power level among high, middle and low power.
12	Repeater/talk around	Allow radio connect through repeater or achieve standalone communication in talk around mode.
13	VOX on/off	Enable or disable the VOX feature. ((When the VOX is closed, it cannot be enabled by the side button).
14	Nuisance Delete	Temporarily delete unwanted active channels received during scanning.
15	Permanent Monitor	Enable or disable permanent monitor function.
16	Channel Lock:	Enable or disable channel lock function
17	Bluetooth on/off	Enable or disable bluetooth function
18	Bluetooth search and connect	Search for Bluetooth devices.
19	De-noise on/off	Enable or disable noise reduction quickly.

Functions and Operations

Scan

For scanning to work, the current channel must be added to the scan list and the list must contain 2 channels at least. Set the side button to [Scan On/Off], then press the button to enable scanning, a "Scan On" prompt will sound and the LED indicator will flash red. While scanning, the radio checks for a signal on each channel and only stops on the channel if a signal is active, the LED indicator will glow green. If receiving an unwanted call, press the side button [Nuisance Delete] to temporarily remove the current channel from the scan list. Press the programmed [Scan on/off] button again to disable scanning, and a "Scan off" prompt will sound.

Note:If Auto Scan feature is enabled for a channel, the radio will automatically enter scan mode when switching to this channel.

Emergency

The digital channel and AD compatible channel support emergency alarm. In case of an emergency the user can enter emergency mode to ask for help. Only when the current channel is associated with an emergency alarm system can an emergency alarm be initiated. Set the orange button to [emergency on/off], short press the button to send emergency information, long press the key to exit emergency mode. On regular type alarm, when ACK command is received or the maximum number of alarm times is reached, the radio will exit the emergency mode automatically. On silent type alarm, press PTT key to exit emergency mode.

Lone Worker

This function is useful for persons who work alone situation. When the user encounters an incident and doesn't press any keys or transmit audio within the preset period time, the radio will alarm automatically to ask help.

Buletooth

The radio supports Bluetooth feature and can connect to Bluetooth earphones or Bluetooth PTT for calls. Set the side button to [Bluetooth on/off], press the button to enable the Bluetooth function, a "Bluetooth on" prompt will sound.

1.Earphone pairing

When using Bluetooth earphones for the first time, pairing is required to connect them. The operation steps are as follows:

1) Turn on the Bluetooth earphones and automatically enter a state of waiting for connection and pairing. At this time, the LED indicator lights will flash alternately in red and blue;

2) Press the side button 【Bluetooth Search and Connect】, and the LED indicator of the radio will flash alternately. The Bluetooth signal will be searched and automatically connected, and the Bluetooth earphones will sound a prompt "Bluetooth earphones connected". Press the PTT button on the Bluetooth earphones to speak and transmit, or release the PTT button to receive voice.

2.PTT pairing

When using Bluetooth PTT for the first time, pairing is required to connect them. The operation steps are as follows:

1) Turn on the Bluetooth PTT and automatically enter a state of waiting for connection and pairing. At this time, the LED indicator lights will flash alternately in red and blue;

2) Press the side button 【Bluetooth Search and Connect】, and the LED indicator of the radio will flash alternately. The Bluetooth signal will be searched and automatically connected, and the Bluetooth PTT will sound a prompt "Bluetooth PTT connected". Press the PTT button to speak and transmit, or release the PTT button to receive voice.

Note: Bluetooth is an optional feature.

Noise Reduction

The noise reduction function can filter out environmental noise, accurately obtain human voices in noisy environments, so that the receiver can hear a clear and loud voice.

Note: Noise reduction is an optional feature.

Voice Encryption

The voice encryption can encrypt the audio to guarantee the privacy of the communication. The radio supports the encryption type of static or dynamic. If the encrypt feature is enabled, the transmitter and receiver must be set as the same encryption type and voice encryption key, otherwise the receiver cannot get the normal audio .

Note: This feature is effective on digital channel. The encryption key must be 10 characters, including uppercase and lowercase letters and numbers.

VOX

If VOX feature is enabled, the radio will automatically begin transmitting when speaking, and terminate transmitting when stopping talking with no need of PTT press. When the environment is too much noise, VOX level can be higher, when the environment is quiet, VOX level can be lower. If the VOX level is set as off via the programming software, pressing programmed [VOX on/off] button can't enable VOX feature, if the VOX level is set as 1 to 8, pressing programmed [VOX on/off] button can enable or disable VOX feature.

Note: The VOX feature can be activated without headphones, but it becomes ineffective when headphones are plugged in .

Reject Stranger Call

On digital mode, if reject strange call feature is enabled, and the call ID is not exist in the contacts list, the call will be unable to transmit or receive. On group call or all call, the caller's ID and group call ID or all call ID must be preset on address list.

Warning Tones

Voice Indication

If voice indication feature is enabled, the radio will give tone indication for channel change, zone change, power level switch, A/D switch, scan feature enable or disable, VOX on or off, low battery alert, repeater mode or talk around mode switch, channel lock switch, bluetooth switch and etc.

Channel Free Indication

On digital mode, if Channel Free Indication feature is enabled, the receiver will give a high-pitched tone indication while the transmitter releases PTT key to stop transmitting.

Talk Permit Indication

There are four options available for Talk Permit Indication feature: None (the radio does not give any tone indication for transmission on analog and digital channel), Analog (the radio gives tone indication for transmission on analog channel), Analog& Digital (the radio gives tone indication for transmission on analog and digital channel), Digital (the radio gives tone indication for transmission on digital channel).

Battery Saver

This feature allows an idler radio to automatically enter battery saver mode, which will extend battery service life, but response time may be delayed. Battery saver time ratio can be set, the smaller the time rate is, the more obvious the power saving.

Direct Mode Operation

If DMO function is enabled users can transmit with different frequency directly. Only the transmitter and receiver are set direct mode simultaneously and the TX frequency of the transmitter is the same as the RX frequency of the receiver, can the radio directly communicate in DMO mode.

Low Battery Warning

When the battery gets low, LED indicator will glow red and there will be a warning tone: "Please Charge", please replace the battery or charge the battery in time, otherwise the radio will turn off automatically while battery is too low.

Monitor and Permanent Monitor

Monitor: Both analog and digital channel support to monitor current channel activities and receive weak signals. Press the programmed [Monitor] button to activate the monitor function. If a signal is detected, the radio will immediately exit the monitoring mode as soon as the signal disappears.

Permanent Monitor: Permanent monitor feature is the same as monitor, but once Permanent Monitor is enabled, the radio will remain on monitor mode until long press [Permanent Monitor] button again to exit the feature.

One Touch Call

On digital channel and AD compatible channel, one touch call feature contains: send messages or set up a call to a group contact, send messages, send call alert or set up a call to a private contact. Set the side button to 【One touch call】 function and press this button to initiate the corresponding service.

Talk Around

When repeater malfunctions, or the radio is out of repeater's range, communications can be continued in talk around mode. While talk around feature is enabled, TX frequency will be set the same as RX frequency. Press the programmed [Repeater/Talk Around] button to switch between repeater modes and talk around mode. Switch to talk around, a "talk around" prompt will sound; switch to repeater mode, a "repeater" prompt will sound.

Note：**To enable this function, TX frequency should be different from RX frequency, and the channel will set as allowing talk around on the programming software.**

TX Power

Power levels can be switched to Low, Middle or High. If communicating with radios located at a distant place please select High power; if communicating with radios located at a close place please select Low power to save battery. Press the programmed [Power switch] button to switch from high power to low power. Switch to high power, a "high power" sounds; switch to middle power, a "middle power" sounds; switch to low power, a "low power" sounds.

Time out Timer (TOT)

The purpose of TOT is to prevent any user from occupying a channel for an extended period. If a channel is busy, the time will glow shorter. If the preset time expires, the radio will generate beep and terminate transmission automatically.

TX Permission

Digital Channel

This feature can restrict the channel to transmit if it is already in use. If "always" is set, whenever pressing PTT key the radio can transmit directly; If "color code free" is set, the radio will be unable to transmit on the channel when a radio with the color code is already in using the channel. If "channel free" is set, the radio will be unable to transmit on the channel when the channel is already in use. If the channel is busy, press PTT key a warning tone will sound.

Analog Channel

This feature is available in the analog mode and can restrict the channel to transmit if it is already in use. If "Off" is set, whenever pressing PTT key the radio can transmit directly; If "carrier" is set, the radio will be unable to transmit on the channel when the channel is being used by others; If "CTCSS/CDCSS" is set, the radio will be unable to transmit on the channel when a radio with the same the CTCSS/CDCSS code is in using the channel. If the channel is busy, press PTT key a warning tone will sound.

Bandwidth

On analog mode, the channel bandwidth can be set to wide (25 KHz) or narrow (12.5 kHz). The channel bandwidth of both the transmitter and receiver must be consistent, otherwise the call quality will be affected.

Squelch Level

On analog mode, this feature can adjust the squelch threshold for the radio to receive audio. High level requires stronger signal for the radio to un-mute.

CTCSS/CDCSS

On analog channel, unique CTCSS/CDCSS can be set to guarantee the privacy of the communication, on digital compatible analog channel or analog compatible digital channel, CTCSS/CDCSS must be set. If CTCSS/CDCSS has been set on the current channel, CTCSS/CDCSS match from the transmitting radio is required for the radio to receive an incoming signal.

●**Decode:** Only when the received call containing matching the decode, can it be heard.

●**Encode:** The CTCSS/CDCSS will be attached to the signal before transmitting. The transmitted signal will only be heard by parties whose CTCSS/CDCSS signaling matches .

CTCSS Standard Frequency Table

CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]
1	67.0	11	94.8	21	131.8	31	186.2
2	69.3	12	97.4	22	136.5	32	192.8
3	71.9	13	100.0	23	141.3	33	203.5
4	74.4	14	103.5	24	146.2	34	210.7
5	77.0	15	107.2	25	151.4	35	218.1
6	79.7	16	110.9	26	156.7	36	225.7
7	82.5	17	114.8	27	162.2	37	233.6
8	85.4	18	118.8	28	167.9	38	241.8
9	88.5	19	123.0	29	173.8	39	250.3
10	91.5	20	127.3	30	179.9		

CDCSS Standard Code Table

NO	Normal	Inverted	NO	Normal	Inverted	NO	Normal	Inverted
1	D023N	D023I	29	D174N	D174I	57	D445N	D445I
2	D025N	D025I	30	D205N	D205I	58	D464N	D464I
3	D026N	D026I	31	D223N	D223I	59	D465N	D465I
4	D031N	D031I	32	D226N	D226I	60	D466N	D466I
5	D032N	D032I	33	D243N	D243I	61	D503N	D503I
6	D043N	D043I	34	D244N	D244I	62	D506N	D506I
7	D047N	D047I	35	D245N	D245I	63	D516N	D516I
8	D051N	D051I	36	D251N	D251I	64	D532N	D532I
9	D054N	D054I	37	D261N	D261I	65	D546N	D546I
10	D065N	D065I	38	D263N	D263I	66	D565N	D565I
11	D071N	D071I	39	D265N	D265I	67	D606N	D606I
12	D072N	D072I	40	D271N	D271I	68	D612N	D612I
13	D073N	D073I	41	D306N	D306I	69	D624N	D624I
14	D074N	D074I	42	D311N	D311I	70	D627N	D627I
15	D114N	D114I	43	D315N	D315I	71	D631N	D631I
16	D115N	D115I	44	D331N	D331I	72	D632N	D632I
17	D116N	D116I	45	D343N	D343I	73	D654N	D654I
18	D125N	D125I	46	D346N	D346I	74	D662N	D662I
19	D131N	D131I	47	D351N	D351I	75	D664N	D664I
20	D132N	D132I	48	D364N	D364I	76	D703N	D703I
21	D134N	D134I	49	D365N	D365I	77	D712N	D712I
22	D143N	D143I	50	D371N	D371I	78	D723N	D723I
23	D152N	D152I	51	D411N	D411I	79	D731N	D731I
24	D155N	D155I	52	D412N	D412I	80	D732N	D732I
25	D156N	D156I	53	D413N	D413I	81	D734N	D734I
26	D162N	D162I	54	D423N	D423I	82	D743N	D743I
27	D165N	D165I	55	D431N	D431I	83	D754N	D754I
28	D172N	D172I	56	D432N	D432I			

Specifications

General	
Frequency range	VHF:136-174 MHz UHF:350-400 MHz UHF:400-480 MHz UHF:450-520 MHz
Channel Capacity	32
Zones	2
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC7.4V (±20%)
Battery Capacity	1800 mAh
Battery Life（5/5/90）	Digital 18 Hours；Analog 13 Hours
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions (L×W×H)	59.7（L）*35 (W) *114 (H)mm
Weight	242g(include battery)
Bluetooth (optional)	Bluetooth 2.1+EDR+BT5.0(BLE)
Transmitter	
RF Output Power	< 5W
4FSK Modulation	112.5kHz only data:7K60FXD 12.5kHz data and audio:7K60FXE
FM Modulation	112.5 kHz：8K50F3E；25 kHz：16KΦF3E；
Modulation Limiting	+/- 2.5kHz @ 12.5kHz ; +/- 5kHz @ 25kHz
FM Noise	-40dB
Conducted Emission	36 dBm≤1GHz/-30 dBm≥1GHz
Adjacent Channel Power	≤-60dB
Audio Response	+1/-3 dB
Audio Distortion	3%
Digital Voice Coder Type	AMBE

Receiver	
Digital Sensitivity	5% BER: 0.25 uV
Analog Sensitivity	0.25 uV (12 dB SINAD)
Intermodulation	65dB
Adjacent Channel Selectivity	60dB
Spurious Response Rejection	70dB
FM Noise	–40dB
Audio Response	+1/-3 dB
Rated Audio output power	0.5W
Max Audio output power	2W
Audio Distortion	3%
Conducted Spurious Emission	-36dBm
Environmental Specifications	
Operating Temperature	-20℃—+60℃
Storage Temperature	-30℃—+85℃
Vibration & Shock	MIL-STD-810C/D/E/F
Dustproof & waterproof	IP54

Statement

This manual is compiled to be accurate and complete for operator's use. For any doubt, please contact Belfone. We will give you professional answers. As radio communication technologies develop rapidly, Belfone reserves the right to change product design and specification without prior notice to consumers.

RECYCLABLE PACKAGING