14/06/2020 – Linsoul TinHiFi T2 stock wire and foam ear tips

Tools – Scissors, “Klein Tools” wire stripper, “FIX IT!” adjustable pliers, “Mastercraft” utility knife & large pliers

- Wire has 4 individual strands in groups of 2
- Individual strands are wrapped first in pairs in the clockwise direction, and then the 2 pairs of two are wrapped together in the counter-clockwise direction
- Individual wires are too thin to be stripped easily
- Inside of individual wires are comprised of several reflective silver-coloured wires and a larger strand of yellow-coloured wires

- Foam ear tips are sponge-like and very prone to retaining original shape
- Foam ear tips much easier to breakdown due to wax and oils from the ear than common silicone ear tips
- Inner tube made from rubbery material
- Tube completely hollow to allow for sound to pass through effectively; wax grates are integrated into the earbuds/IEMs instead

- Male auxiliary jack components are stored within a large metal cylindrical housing
- Transition out from cylindrical housing softened by plastic protector to avoid unnecessary bending at a critical point
- Cylindrical shell has grooved metal on the inside
- Inside of audio jack connector has multiple rings inside similar to a tree trunk cross section, one of these rings being a thin metal sheet
- Strands are soldiered to the auxiliary jack in pairs, one of which is connected to the base while the other is connected to the side. A cut-out was made in the black portion of the jack connection to accommodate for the latter

- Adjustable and transparent plastic bead allows for easy organisation of audio wire
- Y split in middle of wire length made from metal casing
- Both the L and R MMCX connectors are attached to the wire strands through two spots, the centre directly below the physical connection to IEM drivers and a second to the side, with another prong-like protrusion on the other side of the connector unused by either of the wire strands

15/06/2020 – Tech-1 Wireless Charging Pad

Tools – “Mastercraft” Phillips head screwdriver and utility knife

About this item:

- Input: 5.0V/2A
- Output: 5.0V/1A
- Power: 5W

Observations:

- Foam feet are used to prevent sliding on smooth surfaces
- Feet have glue to ensure they stay attached to the bottom of the charging pad
- Strength of glue moderate, sufficient to keep from falling off

- Feet cover four screws underneath that hold together the plastic casing
- Screws are small, about 7mm in length to accomodate for a thin pad frame

- Paint cheaply and messily coated on the inside border
- Rectangular foam pad placed inside to prevent slipping or movement and strongly adhered to material underneath with glue
- Small motherboard attached directly to micro USB port through soldiering and fastened down by a small screw about 5mm in length
- Standard micro USB port used to supply power to the charger
- Each end of the charging coil is directly attached to the end of the motherboard
- The majority of space inside the plastic casing is unused
- Charging pad is small and circular with a hole directly in the centre

- Top side of charging pad are coils laid tightly together in a circular fashion
- Coils are very strongly adhered to supporting structure underneath
- Coils grouped together using transparent yellow tape
- Coils are made from a copper-like material and wrapped by a fine white thread

- (19) Nineteen Resistors (R1-R17)
- (13) Thirteen Capacitors (C1-C10, C15-C17)
- (4) Four Large Capacitors (C11-C14)
- (4) Four LEDs are attached to motherboard (LED1-LED4)
- (4) Four Integrated Circuits (U1-U4)
    - Codes Printed: 358 MZ840, 4953 1923, 9926
- (2) Two Test Points (TP1-TP2)
- (2) Two Transistors (Q1-Q2)
- (1) One Diode (D1)
- (1) One Micro USB Port (USB1)

- Circular marking near micro-usb port labelled MARK
- Codes on circuit board are RW-JDK-K9-2MDS_V8.0 and the date 20190731

16/06/2020 – Sony MDR-ZX220BT Wireless Stereo Headset

Tools – "STAN" utility knife, Xcelite C-00 Mini Philips Screwdriver

About this item: [1]

- Bluetooth version 4.1
- 30mm closed single dynamic driver unit
- Frequency response: 20Hz – 20000Hz
- Transducer: microphone, dynamic
- Impedance: 24 Ohms
- Battery size: 125mAh (described below)

Observations:

General:

- Headband broken. Ear cups are unable to swivel, with the Right ear cup glued in place and the Left ear cup broken off
- Capital "R" and "L" on the each side of the headband for identification
- A label is placed above the L on the inside of the headband, with the information SONY®, MDR-ZX220BT, WIRELESS STEREO HEADSET, FCC ID:AK8MDRZX200BT, IC: 209B-MDRZX220BT, the letters BC^2 inside a circle (standard for battery charging), 5V, a Bluetooth symbol, the code 4102543, and MADE IN CHINA
- Ear pads are very soft, smooth on the outside and textured on the inside, lightly stretchable. Semi-breathable material to prevent excess overheating to the wearer during use

- NFC (near field communication) tag on left earcup for an easier Bluetooth pairing option
- All other physical features are on the right earcup
- Buttons on right earcup are volume control (also used as playback control), power on/off (also used as a play and pause button, start/end call buttons)
- Headphone uses micro-usb port for charging
- A single microphone for calls is placed beside the charging port

- All screws are too small to be accessed by a regular Philips screwdriver`
- Two small screws are placed at each end of the headband, on the inside, above ear cups
- Four screws are placed on each ear pad
- First layer of earcup is the speaker connected to the internals through a thin cable with two wires inside (positive for red and negative for black)
- Thin plastic layer placed between speakers and internals for separation and structure, designed differently for each side

- All circuit boards are blue

Left earcup internals:

- Two separate circuit boards are inside

Smaller Circuit Board:

- The smaller circuit board is the NFC sensor
- The name ZX220BT is labelled on the board

On the smaller board:

- (3) Three Resistors
- (6) Six Capacitors
- (1) One Integrated Circuit labelled with the three lines of text (90030, JAPAN, I H06002)
- (2) connections (one positive, one negative) to the larger circuit board

Larger Circuit Board:

- Larger circuit board has many more components and connections
- Yellow plastic film placed over circuit board front
- The code W1-1L is written underneath where the larger board is placed, L for "left"
- Two main labels on board are a white square with uppercase G, and the other label being PbF written underneath the first
- Codes on back of circuit board are HDX-2852_**L**_V1.0, 160331, and >EP-GW<
- Two symbols are placed on the back of the board above the word "SONY"

- Twelve total connections through wiring
- Six connections BAT+ (battery), GND (ground), TH, NFC, L-, L+ connect through headband to right earcup circuit board
- Two connections NFC+ and NFC- connect to smaller board
- Two connections BAT+ and GND connect to battery on opposite side
- Two connections SL+ and SL- connect to left hand speaker driver

- On the board front (no components on the other side):
- (2) Two Capacitors
- (1) One Large Capacitor
- (4) Four Resistors, one very slightly smaller than the others
- (2) Two Integrated Circuits, one labelled 3C2G and the other labelled 13 with a 2 ninety degrees counter-clockwise in relation to the other digits
- (7) Seven pairs of Jumpers/Shunts[3]

Battery:

- Larger board connected to device battery
- Several lines of text written on battery reads 0.46Wh, 125mAh, SP 491424 3.7V, 1ICP5/14/24, A/S:1588-0911, Springpower Technology (ShenZhen) Co., LTD
- Very small additional circuit board attached to side of battery

Speaker:

- Plastic covering over the left housing has the label L-52 for "left"

- Thin film placed over plastic grill, under which lies the single dynamic driver
- Centre of driver is bronze coloured, surrounded by metal and very thin copper ring
- Driver front is magnetic
- Driver connected to circuit board through single red wire

Right earcup internals:

- One large semi-circular shaped circuit board is inside
- Three blue markings and one red marking at top of board
- The code W1-1R is written above where circuit board is placed, R for "right"
- Several codes are written on the front of the board, the main ones being HDX-2852_**R**_V1.0, 160309, and >EP-GW<, as well as the two symbols seen on the larger circuit board in the left earcup
- Codes on the back of the board are 94V-0 TOPSEARCH, TS-M-8V01C SG, and 22461 as well as the number 17 15 in a different font similar to a digital clock

- Ten total connections through wiring
- Six connections NFC (bronze), LP (red, positive), LN (green, negative), TH (black), BAT (red), and GND (black) connect through headband to right earcup circuit board
- Two connections RN (bronze) and RP (red) connect to right hand speaker driver
- Two connections MIC_N (black, negative) and MIC_P (red, positive) connect to microphone

On circuit board front:

- (7) Seven Capacitors
- (6) Six Large Capacitors
- (12) Twelve Resistors
- (3) Three White Components[4] (weaker resistors?)
- (2) Two Integrated Circuits, one labelled DAS
- (20) Twenty Pairs of Jumpers/Shunts
- (13) Thirteen Metal Contact Points (including the four mentioned above) labelled 1V35, 1V8, TP1, TP2, and VBAT.
  The first group of codes are MOSI MISO bordered by a white square, each labelling one of
  CLK CSB
  four metal contact points.
  The second group of codes are VBUS bordered by a white square, each
  DN DP UGND
  labelling one of four metal contact points
- (3) Three Physical Buttons labelled VOL +, VOL -, and POWER (clicky)
- (1) Small Microphone

On circuit board back:

- One logo symbol printed similar to a 5U or a backward UR
- Small, yellow brick of metal with the label B00 followed by a white square on the top
- A donut shaped piece of foam is attached by the edge to increase stability

- (8) Capacitors
- (2) Three Large Capacitors
- (8) Resistors
- (3) White Components (weaker resistors?)
- (1) Large Green Component[4] (capacitor?)
- (6) Seven Integrated Circuits varying in size and number of pins.
  2 three pin IC's, both labelled N with a 1 ninety degrees counter-clockwise in relation to the N, as well as a dot underneath the N and two dots to the left of the 1.
  2 six pin IC's, one labelled 13 with a 4 ninety degrees CC in relation to the other digits, and the second labelled 7C with an N ninety degrees CC.
  2 unlabelled two pin IC's
- (2) Two Larger Integrated Circuits, the largest with the code CSR 8675 C N707NVW20, and the second largest with the code P26 00M R H43 C
- (1) Unlabelled Metal Block beside the two larger IC's

Microphone:

- Speaker is surrounded by removable rubber casing and covered by thin film similar to that of the speaker driver
- Circular and simple in design

Speaker:

- Plastic layer over the left housing has the label R-52 for "right"
- Right speaker driver is identical to left driver

Additional Information:

[1]https://www.amazon.ca/MDR-ZX220BT-Black-Bluetooth-Headphones-MDRZX220BT/dp/B01NBXWPLU

[2]https://www.quora.com/What-does-the-safety-symbol-with-the-letters-BC-inside-a-circle-mean

[3]https://www.digikey.ca/en/resources/connectors/shunts-and-jumpers

[4]Additional research will be done, and this component name will be updated.

https://www.rtings.com/headphones/reviews/sony/mdr-xb950b1-wireless

https://www.sony.com/electronics/support/res/manuals/W001/W0014653M.pdf

Works Cited / Additional Sources

REFERENCE DESIGNATOR	COMPONENT TYPE
ATT	Attenuator
BR	Bridge rectifier
BT	battery
C	Capacitor
D	Diode
F	Fuse
IC	Integrated circuit - an alternative widely used non-standard abbreviation
J	Connector jack (normally but not always refers to female contact)
L	Inductor
LS	Loudspeaker
P	Plug
PS	Power supply
Q	Transistor
R	Resistor
S	Switch
SW	Switch - an alternative widely used non-standard abbreviation
T	Transformer
TP	Test point
TR	Transistor - an alternative widely used non-standard abbreviation
U	Integrated circuit
VR	Variable resistor
X	Transducer
XTAL	Crystal - an alternative widely used non-standard abbreviation
Z	Zener diode
ZD	Zener diode - an alternative widely used non-standard abbreviation

https://www.electronics-notes.com/articles/analogue_circuits/circuits-symbols-diagrams/electronics-circuit-symbols-overview.php