REPORT No.: SZ25110073S02

Hearing Aid Compatibility (HAC) RF Emission Test Report

APPLICANT	:	Shenzhen Tinno Mobile Technology Corp.
PRODUCT NAME	:	Smart phone
MODEL NAME	:	U651DS
BRAND NAME	:	N/A
FCC ID	:	XD6U651DS
STANDARD(S)	:	FCC 47 CFR Part 20 (20.19) ANSI C63.19-2019
RECEIPT DATE	:	2025-12-02
TEST DATE	:	2025-12-08
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MORLAB

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DIRECTORY

1. Technical Information 3
1.1. Applicant and Manufacturer Information 3
1.2. Equipment under Test (EUT) Description 3
1.3. Photographs of the EUT 5
1.4. Applied Reference Documents 5
2. Air Interface and Operating Mode 6
3. WD Emission Requirements 8
4. Modulation Interference Factor 9
5. RF Audio Interference Power Level Evaluation 11
Annex A General Information 13
Notes 14

Change History		
Version	**Date**	**Reason for change**
1.0	2026-03-16	First edition

Note: The latest revision of the report supersedes all previous version.

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Shenzhen Tinno Mobile Technology Corp.
Applicant Address:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC
Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Manufacturer Address:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC

1.2. Equipment under Test (EUT) Description

Product Name:	Smart phone
EUT No.:	3#, 14#
Hardware Version:	V1.0
Software Version:	U651DSV01.22_3.10
Frequency Bands:	WCDMA II: 1850 MHz ~ 1910 MHz WCDMA IV: 1710 MHz ~ 1755 MHz WCDMA V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 29 (RX): 717 MHz ~ 728 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n29 (RX): 717 MHz ~ 728 MHz

	5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~13700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3300 MHz ~ 4200 MHz WLAN 2.4GHz: 2412 MHz ~ 2462 MHz WLAN 5.2GHz: 5180 MHz ~ 5240 MHz WLAN 5.3GHz: 5260 MHz ~ 5320 MHz WLAN 5.5GHz: 5500 MHz ~ 5700 MHz WLAN 5.8GHz: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Modulation Mode:	WCDMA: QPSK, 16QAM LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, PI/2 BPSK QPSK, 16QAM, 64QAM, 256QAM 802.11b: DSSS 802.11a/g: OFDM 802.11n-HT20/40: OFDM 802.11ac-VHT20/40/80: OFDM BR+EDR: GFSK (1Mbps), π/4-DQPSK (2Mbps), 8-DPSK (3Mbps) Bluetooth LE: GFSK (1Mbps, 2Mbps) NFC: ASK
VoLTE Mode:	Support
VoNR Mode:	Support
VoWi-Fi Mode:	Support
VoIP Mode:	Support
Hotspot Mode:	Support (WLAN 5G for B1 & B4)
Antenna Type:	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna NFC: Loop Antenna
SIM Cards Description:	WCDMA+LTE+5G NR

Note: For more detailed description, please refer to specification or user manual supplied by the applicant and/or manufacturer.

1.3. Photographs of the EUT

Note: Please refer to the External Photos for the Photos of the EUT

1.4. Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Remark
FCC 47 CFR Part 20 (20.19)	Hearing aid-compatible mobile handsets	/
ANSI C63.19-2019	American National Standard Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids	/
KDB 285076 D01v06r04	HAC Guidance	/
Note: Any additions, deviation, or exclusions from the method shall be noted in the “Remark”.		

2. Air Interface and Operating Mode

Air Interface	Band	Transport Type	ANSI C63.19 Tested	Simultaneous Transmitter	Name of Voice Service	Power State for HAC Compliance
WCDMA (UMTS)	Band II	VO	No (note6)	WLAN, BT	CMRS Voice	Full
	Band IV					Full
	Band V					Full
	HSPA	VD	No (note6)	WLAN, BT	Google Meet	Full
FDD-LTE & TDD-LTE	Band 2	VD	No (note6)	WLAN, BT	VoLTE & Google Meet	Full
	Band 4					Full
	Band 5					Full
	Band 12					Full
	Band 14					Full
	Band 17					Full
	Band 25					Full
	Band 29					Full
	Band 30					Full
	Band 41					Full
	Band 66					Full
	Band 71					Full
5G NR	n2	VD	No (note6)	WLAN, BT	VoLTE & Google Meet	Full
	n5					Full
	n25					Full
	n29					Full
	n30					Full
	n41					Full
	n48					Full
	n66					Full
	n71					Full
	n77					Full
WiFi	2450	VD	No (note6)	UMTS, LTE, 5G NR	VoWiFi & Google Meet	Full
	5200 (U-NII-1)					Full
	5300 (U-NII-2A)					Full
	5500 (U-NII-2C)					Full
	5800 (U-NII-3)					Full
BT	2450	DT	No	UMTS, LTE, 5G NR	N/A	N/A

Note:

1) Air Interface/Band MHz: List of all air interfaces and bands supported by the handset.
2) Type: For each air interface, indicate the type of voice transport mode:
   i. VO = legacy Cellular Voice Service, from ANSI C63.19-2019.
   ii. DT = Digital Transport only (no voice) (e.g., Bluetooth), not subject to C63.19 HAC testing.
   iii. VD = IP Voice Service over Digital Transport.
3) Simultaneous Transmitter: Indicate any air interface/bands that operate in simultaneous or concurrent service transmission mode.
4) Name of Voice Service: See Q4 in 285076 D03 HAC FAQ for further clarification.
5) Set device to highest device transmit power in a held to the ear mode.
6) The RF Emission for UMTS, FDD-LTE, TDD-LTE and WLAN measurement is not required and the exemption was evaluated in section 5.

3. WD Emission Requirements

According to ANSI C63.19-2019, the WD's conducted power must be at or below either the stated RF_{AIPL} (Table 4.1) or the stated peak power level (Table 4.2), or the average near-field emissions over the measurement area must be at or below the stated RF_{AIL} (Table 4.3), or the stated peak field strength (Table 4.4). The WD may demonstrate compliance by meeting any of these four requirements, but it must do so in each of its operating bands at its established worst-case normal speech-mode operating condition.

Table 4.1—Wireless device RF audio interference power level	
Frequency Range (MHz)	**RF_{AIPL} (dBm)**
<960	29
960–2000	26
>2000	25

Table 4.2—Wireless device RF peak power level	
Frequency Range (MHz)	**$RF_{Peak\ Power}$ (dBm)**
<960	35
960–2000	32
>2000	31

Table 4.3—Wireless device RF audio interference level	
Frequency Range (MHz)	**RF_{AIL} (dBm)**
<960	39
960–2000	36
>2000	35

Table 4.4—Wireless device RF peak near-field level	
Frequency Range (MHz)	**RF_{Peak} [dB(V/m)]**
<960	45
960–2000	42
>2000	41

4. Modulation Interference Factor

For any specific fixed and repeatable modulated signal, a Modulation Interference Factor (MIF, expressed in decibels) may be developed that relates its interference potential to its steady state rms signal level or average power level. This factor is a function only of the audio frequency amplitude modulation characteristics of the signal and is the same for field strength or conducted power measurements. It is important to emphasize that the MIF is valid only for a specific repeatable audio frequency amplitude modulation characteristic. Any change in modulation characteristic requires determination and application of a new MIF.

MIF may be determined using a radiated RF field, a conducted RF signal, or, in a preliminary stage, a mathematical analysis of a modeled RF signal.

1. Verify the slope accuracy and dynamic range capability over the desired operating frequency band of a fast probe or sensor, square-law detector, as specified in D.3, and weighting system as specified in D.4 and D.5. For the probe and instrumentation included in the measurement of MIF, additional calibration and application of calibration factors are not required.
2. Using RF illumination, or conducted coupling, apply the specific modulated signal in question to the measurement system at a level within its confirmed operating dynamic range.
3. Measure the steady-state rms level at the output of the fast probe or sensor.
4. Measure the steady-state average level at the weighting output.
5. Without changing the square-law detector or weighting system, and using RF illumination, or conducted coupling, substitute for the specific modulated signal a 1 kHz, 80% amplitude-modulated carrier at the same frequency and adjust its strength until the level at the weighting output equals the Step d) measurement.
6. Without changing the carrier level from Step e), remove the 1 kHz modulation and again measure the steady-state rms level indicated at the output of the fast probe or sensor.
7. The MIF for the specific modulation characteristic is given by the ratio of the Step 6 measurement to the Step 3 measurement, expressed in decibels (20*log(step 6/step 3).

In practice, Step 5 and Step 6 need not be repeated for each MIF determination if the relationship between the two measurements has been pre-established for the measurement system over the operating frequency and dynamic ranges. In such cases, only the modulation characteristic being tested needs to be available during WD testing.

MIF values applied in this test report were provided by the HAC equipment provider of SPEAG, and the worst values for all air interface are listed below to be determine the Low-power Exemption.

UID	Communication System Name	MIF (dB)
10460	UMTS-FDD (WCDMA, AMR)	-25.43
10225	UMTS-FDD (HSPA+)	-20.39
10081	CDMA2000 (1xRTT, RC3 Full Rate)	-19.71
10295	CDMA2000 (1xRTT, RC1 SO3, 1/8th Rate 25 fr.)	3.26
10403	CDMA2000 (1xEV-DO)	-17.67
10169	LTE-FDD (SC-FDMA,1RB,20MHz,QPSK)	-15.63
10170	LTE-FDD (SC-FDMA,1RB,20MHz,16-QAM)	-9.76
10179	LTE-FDD (SC-FDMA,1RB,20MHz,64-QAM)	-9.93
10181	LTE-FDD (SC-FDMA,1RB,15MHz,QPSK)	-15.63
10175	LTE-FDD (SC-FDMA,1RB,10MHz,QPSK)	-15.63
10177	LTE-FDD (SC-FDMA,1RB,5MHz,QPSK)	-15.63
10184	LTE-FDD (SC-FDMA,1RB,3MHz,QPSK)	-15.62
10187	LTE-FDD (SC-FDMA,1RB,1.4MHz,QPSK)	-15.62
10172	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	-1.62
10173	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-1.44
10174	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	-1.54
10240	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	-1.62
10237	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	-1.62
10234	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	-1.62
10231	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	-1.62
10228	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	-1.62
10931	NR-FDD(DFT-s-OFDM,1RB,20MHz, QPSK)	-15.06
10930	NR-FDD(DFT-s-OFDM,1RB,15MHz, QPSK)	-15.06
10929	NR-FDD(DFT-s-OFDM,1RB,10MHz, QPSK)	-15.06
10928	NR-FDD(DFT-s-OFDM,1RB,5MHz, QPSK)	-15.06
10866	NR-TDD(DFT-s-OFDM,1RB, 100MHz, QPSK)	-16.69
10906	NR-TDD(DFT-s-OFDM,1RB,80MHz, QPSK)	-16.69
10905	NR-TDD(DFT-s-OFDM,1RB,60MHz, QPSK)	-16.68
10903	NR-TDD(DFT-s-OFDM,1RB,40MHz, QPSK)	-16.68
10902	NR-TDD(DFT-s-OFDM,1RB,30MHz, QPSK)	-16.68
10900	NR-TDD(DFT-s-OFDM,1RB,20MHz, QPSK)	-16.68
10061	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	-2.02
10077	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	0.12
10427	IEEE 802.11n (HT Greeneld, 150 Mbps, 64-QAM)	-13.44
10069	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	-3.15

10616	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	-5.57

5. RF Audio Interference Power Level Evaluation

➢ **General Guidance**

1. The maximum conducted power including tune-up limit of each air interface will be used to plusing the MIF and evaluating whether it complies with the RF_{AIPL} requirements defined in ANSI C63.19-2019 section 4.7 Table 4.1, or the RF Emission should be measured and the test results complies with RF audio interference level requirements of Table 4.3.
2. The EDGE mode is not required since it is less than the GSM Voice mode for the conducted power including tune-up limit.
3. When the results that the maximum conducted power each air interface plus MIF complies with the RF_{AIPL} requirements, means it complies with the WD emission requirements per ANSI C63.19-2019.
4. The maximum power of higher frequency bands of FDD-LTE and TDD-LTE will be used to determining the RF_{AIPL}.
5. The maximum power including tune-up limit of each air interface was recorded in SAR report SZ25110073S01.

➢ RF_{AIPL} Evaluation

<WWAN>

Air Interface	Max Tune-up Limit (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	Lowest RF_{AIPL} (dBm)	C63.19 Test Required
UMTS	24.00	-25.43	-1.43	26	No
UMTS-HSPA	22.50	-20.39	2.11	26	No
FDD - LTE	25.00	-9.76	15.24	25	No
TDD - LTE	24.00	-1.62	22.38	25	No
5G NR - FDD	25.00	-9.76	15.24	25	No
5G NR - TDD	27.80	-16.69	11.11	25	No

<WLAN>

Air Interface	Max Tune-up Limit (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	Lowest RF_{AIPL} (dBm)	C63.19 Test Required
802.11b	19.50	-2.02	17.48	25	No
802.11g	19.50	0.12	19.62	25	No
802.11n-HT20	18.00	-13.44	4.56	25	No
802.11n-HT40	19.00	-13.44	5.56	25	No
802.11a	19.00	-3.15	15.85	25	No
802.11n-HT20	19.00	-13.44	5.56	25	No
802.11n-HT40	18.00	-13.44	4.56	25	No
802.11ac-VHT20	19.00	-5.57	13.43	25	No
802.11ac-VHT40	18.00	-5.57	12.43	25	No
802.11ac-VHT80	16.00	-5.57	10.43	25	No

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

The FCC designation number is CN1192, the test firm registration number is 226174.

Notes

1. The report shall have report stamp or our company stamp.
2. The report shall be invalid without all the signatures of the editor and approver.
3. The report shall not be changed.
4. Any objections must be raised to Morlab within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.
5. Conformity declaration:
   ☑ Morlab issues a statement of conformity based on the corresponding standards（default）
   ☐ Morlab issues a statement of conformity based on the applicant requirement
6. Use of uncertainty of measurement for decisions on conformity (decision rule):
   No decision rule is specified by the testing standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule).

****** END OF MAIN REPORT ******