

Annex: Product Specification of Equipment Under Test

Product Specification	
Brand Name	NOKIA
Model Name	TA-1038
GSM Operating Band(s)	GSM 850/1900 MHz
GPRS Multi-Slot Class	GPRS Class 12, EGPRS Class 12
WCDMA Operating Band(s)	FDD Band 2 / 4 / 5
WCDMA Release, Category	HSDPA Rel. 8, Cat. 24 / HSUPA Rel. 6, Cat. 6
LTE Operating Band(s)	FDD Band 2, Bandwidth: 1.4 M/3 M/5 M/10 M/15 M/20 M FDD Band 4, Bandwidth: 1.4 M/3 M/5 M/10 M/15 M/20 M FDD Band 7, Bandwidth: 5 M/10 M/15 M/20 M FDD Band 12, Bandwidth: 1.4 M/3 M/5 M/10 M FDD Band 17, Bandwidth: 5 M/10 M TDD Band 38, Bandwidth: 5 M/10 M/15 M/20 M
LTE Release, Category	Rel. 9, Cat. 3
Wi-Fi Specification	802.11b/g/n HT20 802.11a/n HT20/HT40
Bluetooth Version	Bluetooth BR/EDR/LE
NFC	Type A/B/F
Antenna Type / Gain	<p>GSM: IFA Antenna GSM 850: -0.63 dBi GSM 1900: 3.04 dBi</p> <p>WCDMA: IFA Antenna FDD Band 2: 3.04 dBi FDD Band 4: 2.65 dBi FDD Band 5: -0.63 dBi</p> <p>LTE: IFA Antenna FDD Band 2: 3.04 dBi FDD Band 4: 2.65 dBi FDD Band 7: 1.90 dBi FDD Band 12: -1.14 dBi FDD Band 17: -0.18 dBi TDD Band 38: 1.22 dBi</p> <p>WLAN: Loop Antenna 2400~2483.5MHz: 0.75 dBi 5150~5250MHz: -2.10 dBi 5250~5350MHz: -2.10 dBi 5470~5725MHz: -2.30 dBi 5725~5850MHz: -2.30 dBi</p> <p>Bluetooth: Loop Antenna / 0.75 dBi GPS: Loop Antenna NFC: Loop Antenna</p>
Type of Modulation	<p>GSM / GPRS: GMSK EGPRS: GMSK for MCS 0 ~ 4 & 8PSK for MCS5 ~9 WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) / HSUPA : QPSK (Uplink) LTE: QPSK / 16QAM Bluetooth: GFSK, $\pi/4$-DQPSK, 8-DPSK WLAN 802.11b: DSSS (DBPSK / DQPSK / CCK) WLAN 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) GPS: BPSK NFC : ASK</p>

Transmitter Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band 2: 1852.4 MHz ~ 1907.6 MHz WCDMA Band 4: 1712.4 MHz ~ 1752.6 MHz WCDMA Band 5: 826.4 MHz ~ 846.6 MHz LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz LTE Band 38 : 2572.5 MHz ~ 2617.5 MHz WLAN 802.11b/g/n: 2412 MHz ~ 2462 MHz WLAN 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Receiver Frequency Range	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band 2: 1932.4 MHz ~ 1987.6 MHz WCDMA Band 4: 2112.4 MHz ~ 2152.6 MHz WCDMA Band 5: 871.4 MHz ~ 891.6 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz LTE Band 38 : 2572.5 MHz ~ 2617.5 MHz WLAN 802.11b/g/n: 2412 MHz ~ 2462 MHz WLAN 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS: 1.57542 GHz NFC : 13.56 MHz

Note: The WLAN operation in 5600 MHz ~ 5650 MHz is notched.