



# National Telecommunications Commission

## NATCOM



13 Regent Road, Hill Station, P.O. Box 121, Freetown, Sierra Leone.  
Tel: +232 88 216221/ +232 75 105000/ +232 76 630640  
Email: [info@natcom.gov.sl](mailto:info@natcom.gov.sl) Website: [www.natcom.gov.sl](http://www.natcom.gov.sl)

### **TYPE APPROVAL REGISTER OF TELECOMMUNICATIONS EQUIPMENT IN 2021**

Section 45 (1) of the Telecommunications Act 2006 as amended stipulates “The Commission may prescribe regulations specifying the types of telecommunications equipment (hereinafter referred to as “type approval”) which may be used for providing a telecommunications service or for operating or connecting to a telecommunications network or for terminal equipment”.

Accordingly, the Commission created the Telecommunications (Electronic Communication Equipment Type Approval) Regulations 2020, which gave effect to the provisions of Section 45 (1) of the Telecommunications Act 2006 as amended.

Pursuant to Section 24 (2) of the Telecommunications (Electronic Communication Equipment Type Approval) Regulations 2020, “the Commission shall publish on its website a type approval register containing the models of radio telecommunications transceiver terminal equipment that have been approved by the Commission”.

Consistent with Section 24 (2) of Telecommunications Type Approval Regulations 2020, the Type Approval Register of Telecommunications equipment for **2021** is provided in the Table below and the content therein is subject to review from time to time as the industry evolves.

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Approve-IT Inc.	Fidele Koffie/+22522014979	Automatic Data Processing Machine/Transceiver	E42W	WLAN 2.4GHz : 2412-2472 MHz WLAN 5GHz : 5180-5240 MHz ; 5745-5825 MHz BTLE: 2402-2480 MHz WCDMA: B1/B8 LTE: B1,B3,B8,B20 GPS/GALILEO: 1575.420 MHz(Rx) GLONASS:1602 MHz(Rx) BDS:1561.098MHz(Rx)	WLAN 2.4GHz : 19.63 dBm WLAN 5GHz: 5180-5240 MHz : 22.85 dBm; 5745-5825 MHz :13.79 dBm BTLE: 6.74 dBm WCDMA: 24.35 dBm LTE: 23.22 dBm	WLAN 2.5GHz: DSS, OFDM; WLAN 5GHz, OFDM; BTLE: GFSK; WCDMA; BPSK, QPSK; LTE, QPSK, 16QAM & 64 QAM	2021-002-0029
2	Realtime International	Amine Rachdi/+212661130672	Smartphone Link Display Audio	SDA3XM	BT: [2400-2483.5] MHz; AM: [526,5-1606,5]kHz; FM: [87.5-108]MHz;	1.87dBm(eirp)	BT:GFSK,8DPSK,r/4QDPSK	NTC-TA-21-008
3	Approval Solution	SSERUNJOGI JAMIRU 256755959980	Radar Sensor	R5TR	76-77GHz	30dBm	FMCW	NCT-TA-21-004
4	LG Electronics Inc.	Hadadi Kalinzi Bbaale +256701912466	Premium Magic Remote	PM21GA	2402MHZ - 2480MH	7.221dBm	GFSK	NTC-TA-21-001
5	Continental Automotive GmbH	Carol Wang +886-2-2799-8382	RXI RF Receiver Module	40406557	433.92MHZ	NA	NA	NTC-TA-21-001
6	Panasonic Corporation	Moustapha TUO +234 9024568558	Transceiver	AH2001	BT: 2402-2480 MHz ; WLAN 2.4GHz: 2412-2472 MHz ; WLAN 5GHz: 5180-5320MHz / 5500-5700MHz (with Radar Detection) / 5745-5825MHz ; GPS: 1575.42MHz ; GLONASS: 1598.0625 - 1605.375MHz	BT-LE / BT-EDR: 4 dBm / WLAN 2.4GHz: 19 dBm / WLAN 5GHz: 13.5dBm	BT-LE / BT-EDR: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) WLAN 2.4GHz: DSSS, DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16QAM, 64QAM WLAN 5GHz: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256AM	NTC-TA-21-015

7	Mitsubishi Electric Corporation Sanda Works	Fidele Koffie/+22522014979	Transceiver (Display Audio)	R1LOW	WLAN 2.4 GHz: 2412 – 2472 MHz ; WLAN 5GHz : 5180-5240 MHz; 5260-5320 MHz; 5500-5700 MHz; 5745-5825 MHz; BT/BLE: 2402 -2480 MHz; GPS : 1575.42 MHz; GLONASS:1598.063-1605.375MHz ; Galileo : 1575.42 MHz; BeiDou : 1561.098 MHz AM: 531-1611 kHz ; FM : 87,5-108 MHz; DAB: 174.928-239.2 MHz	BT: 0.61 dBm; BLE: 7.53 dBm; WLAN 2.4GHz: 16.44 dBm; WLAN 5GHz: 7.93 dBm	BT: GFSK, FHSS / WLAN: DSSS/ OFDM; GNSS: BPSK; AM: AM; FM: FM; DAB: OFDM	NTC-TA-21-016
8	7 Layer GmbH	Katharina Kriebus / 0049 2102 749-315	Wireless BLE UWB CAN gateway module for comfort Access function in vehicles;	FBD5	BT: 2400 MHz – 2483.5 MH; UWB:6489.6-7987.2 MHz;	BT: 2400 MHz – 2483.5 MH; UWB:6489.6-7987.2 MHz;	BT: GFSK UWB: Combination of pulse position modulation (PPM) and binary phase shift keying (BPSK)	NTC-TA-21-021
9	7 Layer GmbH	Katharina Kriebus / 0049 2102 749-315	Wireless UWB LIN gateway module for comfort access function in vehicles;	FBD5S	UWB:6489.6-7987.2 MHz;	-7.3 dBm (0.186 mW)	Combination of pulse position modulation (PPM) and binary phase shift keying (BPSK);	NTC-TA-21-022
10	Samsung Electronics Co. ltd.	Fidele Koffie/+22522014979	Wi-Fi/BT Transceiver	WCA731M	BT & BTLE: 2402-2480 MHz; WLAN 2.4 GHz: 2 412-2472 MHz WLAN 5 GHz: 5150-5350 MHz, 5470-5725 MHz, 5 725-5850 MHz	BT :7.22 dBm; BTLE: 7.26 dBm; WLAN 2.4 GHz: 18.06 dBm; WLAN 5GHz (5150-5350 MHz, 5470-5725 MHz): 17.54 dBm; WLAN 5GHz (5725-5850 MHz): 13.38 dBm	BT: GFSK, 8DPSK, /4DQPSK; BT LE: GFSK; WLAN 2.4 GHz: DSSS/OFDM; WLAN 5GHz: OFDM	NCT-TA-21-017
11	Samsung Electronics Co. ltd.	Fidele Koffie/+22522014979	Wi-Fi/BT Transceiver	WCA732M	BT & BTLE: 2402-2480 MHz; WLAN 2.4 GHz: 2 412-2472 MHz WLAN 5 GHz: 5150-5350 MHz, 5470-5725 MHz, 5 725-5850 MHz	BT :11.05 dBm ; BTLE: 6.65 dBm; WLAN 2.4 GHz: 18.50 dBm ; WLAN 5GHz (5150-5350 MHz, 5470-5725 MHz): 17.64 dBm; WLAN 5GHz( 5725-5850 MHz): 12.92 dBm	BT: GFSK, 8DPSK, /4DQPSK; BT LE : GFSK; WLAN 2.4 GHz: DSSS/OFDM; WLAN 5GHz: OFDM	NCT-TA-21/018

12	Samsung Electronics Co. ltd.	Fidele Koffie/+22522014979	Wi-Fi/BT Transceiver	WCA734M	BT & BTLE: 2402-2480 MHz; WLAN 2.4 GHz: 2 412-2472 MHz WLAN 5 GHz: 5150-5350 MHz, 5470-5725 MHz, 5 725-5850 MHz	BT :7.22 dBm; BTLE: 7.26 dBm; WLAN 2.4 GHz: 18.06 dBm; WLAN 5GHz (5150-5350 MHz, 5470-5725 MHz): 17.54 dBm; WLAN 5GHz (5725-5850 MHz): 13.38 dBm	BT: GFSK, 8DPSK, /4DQPSK; BT LE: GFSK; WLAN 2.4 GHz: DSSS/OFDM; WLAN 5GHz: OFDM	NTC-TA-21-019
----	------------------------------	----------------------------	----------------------	---------	--------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
				FEB-21				
1	Real Time International	Amine M.Rachdi/212661130672	Wireless LAN Adapter	AX203D2W	2400-2483.5MHZ, 5150-5350MHz, 5470-5725MHz, 5725-5850MHz	BLE, 10dBm max, BT & Wifi 2.4GHz, 20dBm max, 5150-5350MHz & 5470-5725MHz, 23dBm max, 5725-5850MHz, 13.98dBm max	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM, 1024QAM),GFSK,pi/4-DQPSK,8-DPSK	NTC-TA-21-024
2	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Wifi Transceiver BT	WCA735M	BT/BLE: 2402-2480 MHz, WLAN 2.4 GHz: 2412-2472 MHz WLAN 5GHz : 5 150-5 350 MHz, 5 470-5 725 MHz; 5725-5850 MHz	BT : 12.67 dBm BLE: 9.44 dBm WLAN 2.4 GHz : 19.16 dBm WLAN 5GHz : 5150-5350 MHz & 5470-5725 MHz : 20.04 dBm 5725-5850 MHz : 10.77 dBm	BT/BLE : GFSK/π/4DQPSK /8DPSK WLAN : OFDM, DSSS	TAN:2021-002-0034
3	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Wifi Transceiver BT	WCA942M	BT/BLE: 2402-2480 MHz; WLAN 2.4 GHz: 2412-2472 MHz WLAN 5GHz : 5180-5320 MHz; 5500-5700 MHz; 5755-5795 MHz	BT/BLE: 9.8 dBm; WLAN 2.4 GHz : 17.5 dBm; WLAN 5GHz : 20.7 dBm	BT/BLE : GFSK/DQPSK/8DPSK; WLAN : OFDM, DSSS	TAN-2021-002-0035
4	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Wifi Transceiver BT	WCA943M	BT/BLE: 2402-2480 MHz; WLAN 2.4 GHz: 2412-2472 MHz WLAN 5GHz : 5180-5320 MHz ; 5500-5700 MHz; 5755-5795 MHz	BT/BLE: 9.8 dBm; WLAN 2.4 GHz : 18.7 dBm; WLAN 5GHz : 21.1 dBm	BT/BLE : GFSK/DQPSK/8DPSK; WLAN : OFDM, DSSS	TAN:2021-002-0036
5	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Audio Transceiver	WSA520S	SRD : 5773.35 MHz - 5871.35 MHz	11.16 dBm E.I.R.P	SRD :DQPSK	TAN:2021-002-0037
6	Kostal (Shangai) Management Co. Ltd.	Fidele Koffie/+22522014979	Smart Key (Transceiver)	AB30	Tx 125KHz/433.05-434.79 MHz; Rx: 125KHz	-20.782 dBm	ASK	TAN:2021-002-0039

7	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Smart Control/Transceiver	RMCSA1FP1	BT: (2402-2480) MHz	2.1dBm	Modulation: BT: GFSK	TAN:2021-002-0033
8	Dell Inc.	Fidele Koffie/+22522014979	Automatic Data Processing Machine/Transceiver	E42W	WLAN 2.4GHz: 2412-2472MHz; WLAN 5GHz: 5180-5240MHz,5745-5825MHz; BTLE:2402 - 2480MHz; WCDMA: B1/B8; LTE: B1, B3, B8, B20; GPS/Galileo:1575.420 MHz (Rx); Glonass:1602 MHz (Rx) & BDs:1561.098 MHz (Rx)	WLAN 2.4GHz: 19.63dBm; WLAN 5GHz: 5180-5240MHz:22.85dBm,5745-5825MHz:13.79 dBm; BTLE: 6.74dBm; WCDMA: 24.35dBm; LTE: 23.22dBm	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM,1024QAM),GFSK.pi/4-DQPSK,8-DPSK	TAN:2021-002-0029
9	Kostal (Shangai) Management Co. Ltd.	Fidele Koffie/+22522014979	KBCM (Transceiver)	B30	Tx: 125 kHz/ Rx : 433.05 - 434.79 MHz/ 125KHz	24.059 dBμA/m@10m	ASK	TAN:2021-002-0040
10	Kostal (Shangai) Management Co. Ltd.	Fidele Koffie/+22522014979	KBCM (Transceiver)	A30	Tx: 125 kHz/ Rx: 433.05 - 434.79 MHz/ 125KHz	24.059 dBμA/m@10m	ASK	TAN:2021-002-0038
11	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Smart Control/Transceiver	RMCSA1EP1	BT: (2402-2480) MHz	2.1dBm	GFSK	TAN:2021-002-0032
12	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Smart Control/Transceiver	RMCSA1BP1	BT: (2402-2480) MHz	8.852dBm	GFSK	TAN:2021-002-0031
13	Samsung Electronics Co., Ltd.	Fidele Koffie/+22522014979	Smart Control/Transceiver	RMCSA1AP1	BT: (2402-2480) MHz	8.852dBm	GFSK	TAN:2021-002-0030
14	Real Time International	Amine M.Rachdi/212661130672	Wireless LAN Adapter	AX203NGW	2400-2483.5MHZ, 5150-5350MHz, 5470-5725MHz, 5725-5850MHz	BLE, 10dBm max, BT & Wifi 2.4GHz, 20dBm max, 5150-5350MHz & 5470-5725MHz, 23dBm max, 5725-5850MHz, 13.98dBm max	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM,1024QAM),GFSK.pi/4-DQPSK,8-DPSK	NTC-TA-21-023
15	Continental Automotive/Continental	Heather SEEBOLD/+001 810 229 5123	Keyless Entry Transmitter	A3C054342	Transmit: 433.92 MHz	< 0.00012 W (-9.47 dBm) max ERP	FSK	TAN: 2021-002-0049
16	Continental Advanced	Joanne Laura Cutter/+44 (0)1489 558234	GNSS Roof Antenna	DA01DG42V01	1559 MHz– 1606 MHz	27dB	unknown	TAN: 2021-002-0072
17	Harman Becker	Harman Becker Automotive System GmbH	GNSS receivers	CY17MEU	1559 – 1610 MHz	-103.3 dBm	QPSK, OFDM	TAN: 2021-002-0084

18	Rayence Co.	Koffi Fidele/+225 22 01 49 79	Panel detector	1417WCC	WLAN2.4GHz:2412-2472MHz; WLAN 5GHz:5150-5250MHz;5250-5350MHz;5470-5725MHz & WLAN 5.8 GHz:5725-5825MHz	WLAN2.4GHz:18.02 dBm; WLAN 5GHz:26.01 dBm & WLAN 5.8 GHz:22.99dBm	OFDM; DSSS	TAN: 2021-002-0069
19	Hyundai Mobis / Wifun - Network	Francois Ngama / +243810664760	Unit Assy-FR Corner Radar	MAR320	76GHz-77GHz	35.32 dBm	FMCW	NTC-TA-21-012
20	Hyundai Mobis / Wifun - Network	Francois Ngama / +243810664760	Unit Assy-RR Corner Radar	MAR120	76GHz-77GHz	12.5 dBm	FMCW	NTC-TA-21-011
21	Hyundai Mobis / Wifun - Network	Francois Ngama / +243810664760	Car Radio	LAN5910W R	BT :2402-2480 MHz ; FM : 87.5-108MHz; AM : 526.5-1606.5Mhz ; DAB : 174-240Mhz ; GNSS (Glonass/GPS) :1 559Mhz-1 610Mhz	6.6dBm	GFSK, $\pi/4$ -DQPSK, 8DPSK	NTC-TA-21-010
22	Hyundai Mobis / Wifun - Network	Francois Ngama / +243810664760	Car Radio	LAN5900W R	BT: 2400-2483.5 MHz; WiFi: 2.4G(2412-2462Mhz)/5Ghz(5180-5240,5745-5825Mhz) ; FM : 87.5-108MHz; AM: 526.5-1606.5Mhz; DAB: 174-240Mhz; GNSS (Glonass/GPS) :1 559Mhz-1 610Mhz	6.51dBm	GFSK, $\pi/4$ -DQPSK, 8DPSK	NTC-TA-21-09

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
				MAR-21				
	Real Time International	Amine M.Rachdi/21266113 0672	Wireless LAN Adapter	AX211D2W	2400-2483.5MHZ, 5150-5350MHz, 5470-5725MHz, 5725-5850MHz	BLE, 10dBm max, BT & Wifi 2.4GHz, 20dBm max, 5150-5350MHz & 5470-5725MHz, 23dBm max, 5725-5850MHz, 13.98dBm max	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM,1024QAM),GFSK.pi/4-DQPSK,8-DPSK	TAN:2021-002-0041
	Real Time International	Amine M.Rachdi/21266113 0672	Wireless LAN Adapter	AX211NGW	2400-2483.5MHZ, 5150-5350MHz, 5470-5725MHz, 5725-5850MHz	BLE, 10dBm max, BT & Wifi 2.4GHz, 20dBm max, 5150-5350MHz & 5470-5725MHz, 23dBm max, 5725-5850MHz, 13.98dBm max	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM,1024QAM),GFSK.pi/4-DQPSK,8-DPSK	TAN:2021-002-0042
	Real Time International	Amine M.Rachdi/21266113 0672	TPMS-sensor	TPM-D pro-l	Tx: 433.92 MHz ; Rx : 125 kHz	18.16dBm	FSK & ASK	TAN:2021-002-0043
	Continental Advance	Fidele Koffi/+225 22 01 49 79	Amplifier	AV01DU06V 01	AM: 522KHz-1.71MHz, 5.9 – 6.25 MHz; FM:87.5MHz-108 MHz; DAB: (174-240) MHz	N/A	AM, FM & DAB	TAN:2021-002-0078 / NTC-TA-21-007 (25/01/20 21)
	Visteon Electronics	7layers GmbH/ Katharina Kriebus/0049 2102 749-315	Basic Central Platform (vehicle central control unit)	BCP-01	125KHz±3%	11.1 dBμA/m @10m	ASK proprietary	TAN:2021-002-0048
	Continental Advanced Antenna GmbH	Joanne Laura Cutter / +44 (0)1489 558234	GNSS Roof Antenna	DA01DG42V 01	1559 MHz– 1606 MHz	Amplifier Gain: 27dB	unknown	TAN:2021-002-0072
	Continental Automotive/Continental	Heather SEEBOLD / +001 810 229 5123	Keyless Entry Transmitter Installed at time if vehicle Manufacture	A3C054342	433.92 MHz	< 0.00012 W (-9.47 dBm) max ERP	FSK	TAN:2021-002-0049
	Aptiv Electronics (Suzhou) Co., Ltd/Aptiv	Moustapha Tuo / +2349024568558	Intelligent Connected Infotainment/Transceiver	GWMV3-(B01)	BT: 2400-2483.5MHZ; FM 87.5-108MHz; A: 526.5-1606.5 KHz	BT: -2.8 dBm	BT: FHSS (GFSK, π/4DQPSK, 8DPSK); AM/FM: AM, FM	TAN:2021-002-0045
	Rayenece Co Ltd / Consult IT		Panel Detector	1417 WCC	WLAN2.4GHZ:2412-2472MHZ;WLAN 5GHZ:5150-5250MHZ;5470-5725MHZ & WLAN 5.8GHZ:5725-5825MHZ	WLAN2.4GHZ:18.02dBm; WLAN 5GHZ:26.01dBm & WLAN 5.8GHZ:22.99dBm	OFDM;DSSS	TAN:2021-002-0069



S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Real Time International	Amine M.Rachdi/21266 1130672	Wireless LAN Adapter	AX211D2 WL	2400-2483.5MHz, 5150-5350MHz, 5470-5725MHz, 5725-5850MHz	BLE, 10dBm max, BT & Wifi 2.4GHz, 20dBm max, 5150-5350MHz & 5470-5725MHz, 23dBm max, 5725-5850MHz, 13.98dBm max	DSS (DBPSK, DOPSK, CCK), OFDM/OFDMA (BPSK,QPSK,16QAM,256QAM,1024QAM),GFSK.pi/4-DQPSK,8-DPSK	TAN:2 021-002-0044
2	Clarion Co., Ltd.	Micki Ho/+886 2 2602 6888 ext:1303/micki.ho@dekra.com	Car Audio	7750	Bluetooth: 2402-2480 MHz WLAN: 2412-2472 MHz, 5180-5240 MHz, 5745-5825 MHz/Receiver: AM 531-1629 kHz, FM 87.5-108 MHz, GPS 1575.42 MHz, GLONASS 1598.0625-1605.375 MHz	Bluetooth: 1.2 dBm ; WLAN 2412-2472 MHz: 13.37 dBm ; WLAN 5180-5240 MHz: 11.42 dBm ; WLAN 5745-5825 MHz: 13.5 dBm	GFSK, π/4DQPSK, 8DPSK ; WLAN: DSSS, OFDM	2021-002-0059
3	Panasonic Corporation	Carol Wang/886-2-2799-8382	Car Radio	AT1601	2400-2483.5MHz	5.52dBm	GFSK, π/4-DQPSK, 8DPSK	2021-002-0060
4	Marelli Corporation	Koffi Fidele/+225220 14979	IMMOBILIZER SYSTEM	P55T0	125 kHz	55.97 dBμV/m	ASK	2021-002-0080
5	Apple, Inc	Yaqiang Liu/353 21 4284549	Apple TV / Bluetooth EDR/BDR/HDR,	A2169	Bluetooth EDR/BDR/HDR, Bluetooth LE, 2.4GHz Thread, 802.11b/g/n/ax: 2400-2483.5 MHz; 802.11a/n/ac/ax: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz;	Bluetooth EDR/BDR/HDR: 17.6 dBm EIRP; Bluetooth LE: 7.7 dBm EIRP; 2.4GHz Thread: 7.3 dBm EIRP;802.11b/g/n/ax: 17.3 dBm EIRP; 802.11a/n/ac/ax:20.5 dBm EIRP & WLAN 5.8GHz: 11.8 dBm EIRP	Bluetooth EDR/BDR/HDR: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE:GFSK; 2.4GHz Thread: Q-QPSK ;802.11b/g/n/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	2021-002-0053
6	Apple, Inc	Yaqiang Liu/353 21 4284549	AirTag/Bluetooth, UWB, NFC	A2187	Bluetooth LE: 2400-283.5 MHz, UWB: 6.0-8.5 GHz; NFC: 13.553-13.567 MHz	Bluetooth LE: 0.9 dBm EIRP; UWB: -9.4 dBm/50 MHz	Bluetooth LE: GFSK; NFC: ASK & UWB: BPM-BPSK	2021-002-0057

7	Apple, Inc	Yaqiang Liu/353 21 4284549	iPad/ iPad/ Bluetooth EDR/BDR/HDR, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax , WPT	A2377	Bluetooth EDR/BDR/HDR, Bluetooth LE, 802.11b/g/n/ax: 2400- 2483.5 MHz; 802.11a/n/ac.ax: 5150 – 5350, 5470 - 5725MHz, 5735 - 5825 MHz ; WPT: 127.7 kHz; Bluetooth EDR/BDR/HDR, Bluetooth LE, 802.11b/g/n/ax: 2400- 2483.5 MHz; 802.11a/n/ac.ax: 5150 – 5350, 5470 - 5725MHz, 5735 - 5825 MHz ; WPT: 127.7 kHz;	Bluetooth BDR/EDR/HDR (High Power Mode): 18.3 dBm EIRP; Bluetooth BDR/EDR/HDR (Low Power Mode): 16.6 dBm EIRP; Bluetooth LE (High Power Mode): 18.3 dBm EIRP; Bluetooth LE (Low Power Mode): 8.1 dBm EIRP;802.11b/g/n/ax:16.6 dBm EIRP; 802.11 a/n/ac/ax: 19.8 dBm EIRP; WLAN 5.8GHz:11.1 dBm EIRP; & WPT: -12.5 dBμA/m @ 10m	Bluetooth BDR/EDR/HDR: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK;802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM WPT: FSK	2021- 002- 0057
8	Apple, Inc	Yaqiang Liu/353 21 4284549	iPad/ Bluetooth 5.0 EDR/BDR, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax , WPT	A2378	Bluetooth 5.0 EDR / BDR, Bluetooth LE, 802.11b/g/n/ax: 2400- 2483.5 MHz ; 8- 2.11a/n/ac/ax: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz; WPT: 127.7 kHz	Bluetooth 5.0 EDR/BDR: 18.6 (High Power)/16.3 (Low Power) dBm EIRP; Bluetooth LE: 18.6 (High Power)/8.1 (Low Power) dBm EIRP; 802.11b/g/n/ax:16.6 dBm EIRP; 802.11 a/n/ac/ax: 19.9 dBm EIRP; WLAN 5.8GHz:11.1 dBm EIRP; & WPT: -12.5 dBμA/m @ 10m	Bluetooth 5.0 EDR/BDR: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM & WPT: FSK	2021- 002- 0056
9	Apple, Inc	Yaqiang Liu/353 21 4284549	iPad/ Bluetooth, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax , GPS, GLONASS, Galileo, BDS, WPT, GSM (2G), WCDMA (3G), LTE (4G), 5G	A2459	Bluetooth/Bluetooth LE/WLAN: 2400 - 2483.5 MHz ; WLAN 5GHz: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz; GPS: 1575.42 MHz ; GLONASS 1592-1610 MHz ; Galileo: 1575.42 MHz ; BDS: 1561.098 MHz ; WPT: 127.7 kHz ; GSM(2G): 850, 900, 1800, 1900 ; WCDMA(3G): b1,2,4,5,6,8; LTE(4G): FDD- 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29	Bluetooth: 17.3 (High Power)/12.2 (Low Power) dBm EIRP; Bluetooth LE: 17.2 (High Power)/7.8 (Low Power) dBm EIRP; 802.11b/g/n/ax:16.8 dBm EIRP; 802.11 a/n/ac/ax: 5150-5250 MHz:21.5 dBm EIRP; 802.11 a/n/ac/ax: 5250-5350 MHz: 21.6 dBm EIRP; 802.11 a/n/ac/ax: 5470-5725 MHz: 22.0 dBm EIRP; WLAN 5.8GHz:12.2 dBm EIRP;GSM 800/900:<33 dBm EIRP;GSM	Bluetooth: GFSK, π/4- DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM; GSM GMSK, 8PSK; WCDMA: QPSK; LTE: QPSK, 16QAM; 5G: QPSK, 16QAM, 64QAM	2021- 002- 0054

					(DL only), 30, 32 (DL only), 66, 71 / TDD- 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48 ; 5G: FR1 Bands- FDD- n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n66, n71 / TDD- n38, n40, n41, n77, n78, n79	1800/1900:<30 dBm EIRP; WCDMA:<24 dBm EIRP; LTE:<23 dBm EIRP; 5G:<23 dBm EIRP; WPT: -12.5 dBμA/m @ 10m & GNSS: N/A	and 256QAM; WPT: ASK/FSK & GNSS: BPSK	
10	Apple, Inc	Yaqiang Liu/353 21 4284549	iPad/ Bluetooth, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax , GPS, GLONASS, Galileo, BDS, WPT, GSM (2G), WCDMA (3G), LTE (4G), 5G	A2461	Bluetooth/Bluetooth LE/WLAN: 2400 - 2483.5 MHz ; WLAN 5GHz: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz; GPS: 1575.42 MHz ; GLONASS 1592-1610 MHz ; Galileo: 1575.42 MHz ; BDS: 1561.098 MHz ; WPT: 127.7 kHz ; GSM(2G): 850, 900, 1800, 1900 ; WCDMA(3G): b1,2,4,5,6,8; LTE(4G): FDD- 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29 (DL only), 30, 32 (DL only), 66, 71 / TDD- 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48 ; 5G: FR1 Bands- FDD- n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n66, n71 / TDD- n38, n40, n41, n77, n78, n79	Bluetooth: 17.1 (High Power)/13.2 (Low Power) dBm EIRP; Bluetooth LE: 17.1 (High Power)/7.9 (Low Power) dBm EIRP; 802.11b/g/n/ax:17.5 dBm EIRP; 802.11 a/n/ac/ax: 5150-5250 MHz:22.0 dBm EIRP; 802.11 a/n/ac/ax: 5250-5350 MHz: 22.0 dBm EIRP; 802.11 a/n/ac/ax: 5470-5725 MHz 22.0 dBm EIRP; WLAN 5.8GHz:13.2 dBm EIRP;GSM 800/900:<33 dBm EIRP;GSM 1800/1900:<30 dBm EIRP; WCDMA:<24 dBm EIRP; LTE:<23 dBm EIRP; 5G:<23 dBμA/m @ 10m & GNSS: N/A	Bluetooth: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM;GSM GMSK, 8PSK; WCDMA: QPSK; LTE: QPSK, 16QAM; 5G: QPSK, 16QAM, 64QAM and 256QAM; WPT: ASK/FSK & GNSS: BPSK	2021-002-0055
11	Apple, Inc	Yaqiang Liu/353 21 4284549	Apple TV Remote/ Bluetooth	A2540	2400 - 2483.5 MHz		GFSK	2021-002-0058

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Robert Bosch GmbH	Fidèle KOFFI/0711 811-0	BCM RF-Receiver	BR11	433.050 MHz-434.790 MHz	N/A	ASK	TAN: 2021-002-79
2	Marelli Corporation/ Marelli Corporation	Fidèle KOFFI / +22522014979	IMMOBILIZER SYSTEM	P55T0	125 kHz	55.97 dBμV/m	ASK	TAN: 2021-002-80
3	Continental Advanced Antenna GmbH/Continental	Fidèle KOFFI / +22522014979	Amplifier	AV01DU06V01	AM: 522KHz-1.71MHz, 5.9 – 6.25 MHz; FM:87.5MHz-108 MHz; DAB: (174-240) MHz	N/A	AM, FM & DAB	TAN: 2021-002-0078
4	Panasonic Corporation	Carol Wang/886-2-2799-8382	Car Radio	AT1901	2400-2483.5MHz, 531-1602kHz (AM), 87.5-108MHz (FM)	2.80dBm	GFSK, π/4-DQPSK, 8DPSK, AM, FM	TAN: 2021-002-0063
5	Panasonic Corporation	Carol Wang/886-2-2799-8382	Car Radio	CR-YT45G04D	531-1602kHz (AM)	N/A	AM	TAN: 2021-002-0065
6	MediaTek Inc	MediaTek Inc./+886-3-5600868	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card	MT7922A22M	2402~2480MHz, 2412~2472MHz. 5180~5320MHz, 5500~5700MHz, 5745~5825MHz	15.50 dBm (BT), 19.96 dBm(2.4GHz), 22.99 dBm(5GHz)	GFSK, π/4-DQPSK, 8DPSK, DSSS, OFDM, OFDMA	TAN: 2021-002-0066
7	Clarion Co., Ltd./Clarion	Micki Ho / +886 2 2602 6888 ext:1303	Car Audio featuring WLAN, Bluetooth and receiving functions for AM/FM radio, GPS, GLONASS	7750	Bluetooth: 2402-2480 MHz ; WLAN: 2412-2472 MHz, 5180-5240 MHz, 5745-5825 MHz ; Receiver: AM 531-1629 kHz, FM 87.5-108 MHz, GPS 1575.42 MHz, GLONASS 1598.0625-1605.375 MHz	Bluetooth: 1.2 dBm ; WLAN 2412-2472 MHz: 13.37 dBm ; WLAN 5180-5240 MHz: 11.42 dBm ; WLAN 5745-5825 MHz: 13.5 dBm	GFSK, π/4DQPSK, 8DPSK ; WLAN: DSSS, OFDM	TAN: 2021-002-0059
8	Continental Automotive GmbH	ERNEST MAFUTA / +260971102939	Immobilizer	REN_X52_20_IMSY-1	125KHz	<10dBm	ASK	TAN: 2021-002-0046
9	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	iPad/ Bluetooth, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax, GPS, GLONASS,	A2461	Bluetooth/Bluetooth LE/WLAN: 2400 - 2483.5 MHz ; WLAN 5GHz: 5150 – 5350,	Bluetooth: 17.1 (High Power)/13.2 (Low Power) dBm EIRP; Bluetooth LE: 17.1 (High Power)/7.9	Bluetooth: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK,	TAN: 2021-002-0055

			Galileo, BDS, WPT, GSM (2G), WCDMA (3G), LTE (4G), 5G		5470 - 5725MHz, 5725 - 5875 MHz; GPS: 1575.42 MHz ; GLONASS 1592-1610 MHz ; Galileo: 1575.42 MHz ; BDS: 1561.098 MHz ; WPT: 127.7 kHz ; GSM(2G): 850, 900, 1800, 1900 ; WCDMA(3G): b1,2,4,5,6,8; LTE(4G): FDD- 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29 (DL only), 30, 32 (DL only), 66, 71 / TDD- 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48 ; 5G: FR1 Bands- FDD- n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n66, n71 / TDD- n38, n40, n41, n77, n78, n79	(Low Power) dBm EIRP; 802.11b/g/n/ax:17.5 dBm EIRP; 802.11 a/n/ac/ax: 5150-5250 MHz:22.0 dBm EIRP; 802.11 a/n/ac/ax: 5250-5350 MHz: 22.0 dBm EIRP; 802.11 a/n/ac/ax: 5470-5725 MHz 22.0 dBm EIRP; WLAN 5.8GHz:13.2 dBm EIRP;GSM 800/900:<33 dBm EIRP;GSM 1800/1900:<30 dBm EIRP; WCDMA:<24 dBm EIRP; LTE:<23 dBm EIRP; 5G:<23 dBm EIRP; WPT: -12.5 dBμA/m @ 10m & GNSS: N/A	QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM;GSM GMSK, 8PSK; WCDMA: QPSK; LTE: QPSK, 16QAM, 5G: QPSK, 16QAM, 64QAM and 256QAM; WPT: ASK/FSK & GNSS: BPSK	
10	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	AirTag/Bluetooth, UWB, NFC	A2187	Bluetooth LE: 2400-283.5 MHz, UWB: 6.0-8.5 GHz; NFC: 13.553-13.567 MHz	Bluetooth LE: 0.9 dBm EIRP; UWB: -9.4 dBm/50 MHz	Bluetooth LE: GFSK; NFC: ASK & UWB: BPM-BPSK	TAN: 2021-002-0057
11	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	iPad/ iPad/ Bluetooth EDR/BDR/HDR, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax, WPT	A2377	Bluetooth EDR/BDR/HDR, Bluetooth LE, 802.11b/g/n/ax: 2400-2483.5 MHz; 802.11a/n/ac/ax: 5150 - 5350, 5470 - 5725MHz, 5735 - 5825 MHz ; WPT: 127.7 kHz;	Bluetooth BDR/EDR/HDR (High Power Mode): 18.3 dBm EIRP; Bluetooth BDR/EDR/HDR (Low Power Mode): 16.6 dBm EIRP; Bluetooth LE (High Power Mode): 18.3 dBm EIRP; Bluetooth LE (Low Power Mode): 8.1 dBm EIRP;802.11b/g/n/ax:16.6 dBm EIRP; 802.11 a/n/ac/ax: 19.8 dBm EIRP; WLAN 5.8GHz:11.1 dBm EIRP; & WPT: -12.5 dBμA/m @ 10m	Bluetooth BDR/EDR/HDR: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK;802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM WPT: FSK	TAN: 2021-002-0052
12	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	iPad/ Bluetooth 5.0 EDR/BDR,	A2378	Bluetooth 5.0 EDR / BDR, Bluetooth LE,	Bluetooth 5.0 EDR/BDR: 18.6 (High Power)/16.3	Bluetooth 5.0 EDR/BDR: GFSK, π/4-	TAN: 2021-002-0056

			Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax, WPT		802.11b/g/n/ax: 2400-2483.5 MHz ; 8-2.11a/n/ac/ax: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz; WPT: 127.7 kHz	(Low Power) dBm EIRP; Bluetooth LE: 18.6 (High Power)/8.1 (Low Power) dBm EIRP; 802.11b/g/n/ax:16.6 dBm EIRP; 802.11 a/n/ac/ax: 19.9 dBm EIRP; WLAN 5.8GHz:11.1 dBm EIRP; & WPT: -12.5 dBμA/m @ 10m	DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM & WPT: FSK	
13	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	iPad/ Bluetooth, Bluetooth LE, 802.11b/g/n/ax, 802.11a/n/ac/ax, GPS, GLONASS, Galileo, BDS, WPT, GSM (2G), WCDMA (3G), LTE (4G), 5G	A2459	Bluetooth/Bluetooth LE/WLAN: 2400 - 2483.5 MHz ; WLAN 5GHz: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz; GPS: 1575.42 MHz ; GLONASS 1592-1610 MHz ; Galileo: 1575.42 MHz ; BDS: 1561.098 MHz ; WPT: 127.7 kHz ; GSM(2G): 850, 900, 1800, 1900 ; WCDMA(3G): b1,2,4,5,6,8; LTE(4G): FDD- 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29 (DL only), 30, 32 (DL only), 66, 71 / TDD- 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48 ; 5G: FR1 Bands- FDD- n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n66, n71 / TDD- n38, n40, n41, n77, n78, n79	Bluetooth: 17.3 (High Power)/12.2 (Low Power) dBm EIRP; Bluetooth LE: 17.2 (High Power)/7.8 (Low Power) dBm EIRP; 802.11b/g/n/ax:16.8 dBm EIRP; 802.11 a/n/ac/ax: 5150-5250 MHz:21.5 dBm EIRP; 802.11 a/n/ac/ax: 5250-5350 MHz: 21.6 dBm EIRP; 802.11 a/n/ac/ax: 5470-5725 MHz: 22.0 dBm EIRP; WLAN 5.8GHz:12.2 dBm EIRP;GSM 800/900:<33 dBm EIRP;GSM 1800/1900:<30 dBm EIRP; WCDMA:<24 dBm EIRP; LTE:<23 dBm EIRP; 5G:<23 dBm EIRP; WPT: - 12.5 dBμA/m @ 10m & GNSS: N/A	Bluetooth: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE: GFSK; 802.11b/g/n/ax: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11 a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM; GSM GMSK, 8PSK; WCDMA: QPSK; LTE: QPSK, 16QAM; 5G: QPSK, 16QAM, 64QAM and 256QAM; WPT: ASK/FSK & GNSS: BPSK	TAN: 2021-002-0054
14	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	Apple TV Remote/ Bluetooth	A2540	2400 - 2483.5 MHz	3 dBm EIRP	GFSK	TAN: 2021-002-0058
15	Apple, Inc./Apple	Yaqiang Liu / +353 21 4284549	Apple TV / Bluetooth EDR/BDR/HDR, Bluetooth LE,	A2169	Bluetooth EDR/BDR/HDR, Bluetooth LE, 2.4GHz	Bluetooth EDR/BDR/HDR: 17.6 dBm EIRP; Bluetooth LE: 7.7 dBm EIRP; 2.4GHz Thread: 7.3 dBm	Bluetooth EDR/BDR/HDR: GFSK, π/4-DQPSK, 8DPSK; Bluetooth LE:GFSK;	TAN: 2021-002-0053

			2.4GHz Thread, 802.11b/g/n/ax, 802.11a/n/ac/ax		Thread, 802.11b/g/n/ax: 2400-2483.5 MHz; 802.11a/n/ac/ax: 5150 – 5350, 5470 - 5725MHz, 5725 - 5875 MHz;	EIRP;802.11b/g/n/ax: 17.3 dBm EIRP; 802.11a/n/ac/ax:20.5 dBm EIRP & WLAN 5.8GHz: 11.8 dBm EIRP	2.4GHz Thread: Q- QPSK ;802.11b/g/n/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM; 802.11a/n/ac/ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	
16	LG Electronics/Alliance-RNM	Sungyong Kim / +82-10-5589-5727	Navigation Radio/RF Module with BT and WIFI	LANR21	Bluetooth 2402-2480 MHz , WIFI 2.4G 2412-2472 MHz; WIFI (5G): 5150~5250 MHz , WIFI (5G): 5725~5875 MHz	Bleutooth -> 1.46 dBm / WIFI -> 15.22 dBm	GFSK, QPSK, DPSK, DSSS, OFDM	TAN: 2021-002-0050
17	LG Electronics/Alliance-RNM	Sungyong Kim / +82-10-5589-5727	Navigation Radio/RF Module with BT and WIFI	LANR22	Bluetooth 2402-2480 MHz, WIFI 2.4G 2412-2472 MHz; WIFI (5G): 5150~5250 MHz , WIFI (5G): 5725~5875 MHz	Bleutooth -> 2.02 dBm / WIFI -> 15.19 dBm	GFSK, QPSK, DPSK, DSSS, OFDM	TAN: 2021-002-0051
18	Shenzhen Wings Technology Co. Ltd	Philip D. Mbu / 074960913	Cellular Signal Booster	WT23 6DW-75	GSM 900MHz, GSM 1800MHz & UMTS 2100MHz	24dBm+/-2dBm (uplink) & 27dBm+/-2dBm (downlink)	N/A	TAN: 2021-002-0098
19	Intel Corporation SAS / Intel / Realtime International	Amine M.Rachdi / +212661130672	Wireless LAN Adapter	AX411E2W	2400-2483.5MHZ, 5150-5350MHz, 5470-5725MHz, 5725-5875MHz	BT, Wifi 2.4GHz: 20 dBm max , BLE: 10dBm max, 5150-5350MHz, 5470-5725MHz:23 dBm max, 5725-5875 MHz:13.98 dBm max	DSSS(DBPSK, DQPSK, CCK), OFDM/OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM), GFSK, pi/4-DQPSK, 8-DPSK	TAN: 2021-002-0101
20	LG Electronics USA	Heather Seebold / 1 201 266 2215	Wireless Charger	WCFDM00N2A	Transceive: 123.7 – 131.7 kHz	-6.5dBm	N/A	TAN: 2021-002-0099

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Panasonic Corporation	Carol Wang/886-2-2799-8382	Car Audio System	AT1607	TX: 2400-2483.5MHz, RX: 87.5-108MHz(FM), 522-	3.69dBm(BT) , 16.72dB(WLAN)	ODFM, DSSS & CCK	TAN: 2021-002-0061

					1611kHz(AM), BandIII:167.3- 240.6MHz, L- Band: 1.452- 1.492GHz(DAB)			
2	Panasonic Corporation	Carol Wang/886-2-2799-8383	Car Display with Blu-ray Player	AT1805	2400-2483.5MHz	13.48 dBm	ODFM & DSSS	TAN: 2021-002-0062
3	Panasonic Corporation	Carol Wang/886-2-2799-8384	Seat Back ECU	AT2002	2400-2483.5MHz	11.54dBm	DSSS & OFDM	TAN: 2021-002-0064
4	Panasonic Corporation	Carol Wang/886-2-2799-8384	Car Radio	AT1901	2400-2483.5MHz	5.52dBm	GFSK, $\pi/4$ -DQPSK, 8DPSK	TAN: 2021-002-0060
5	Panasonic Corporation	Carol Wang/886-2-2799-8384	Car Radio	AT1901	2400-2483.5MHz, 531-1602kHz (AM), 87.5-108MHz (FM)	2.80dBm	GFSK, $\pi/4$ -DQPSK, 8DPSK, AM, FM	TAN: 2021-002-0063
6	Panasonic Corporation	Carol Wang/886-2-2799-8384	Car Radio	CR-YT45G04D	531-1602kHz (AM)	N/A	AM	TAN: 2021-002-0065
7	Hyundai Mobis Co.	BBAALE HADADI KALINZI	Unit Assy-FR Radar	MAR320A	76-77GHz	32.58 dBm	FMCW	TAN: 2021-002-0067
8	ALPS ALPINE EUROPE GMBH	ALPS ALPINE EUROPE GMBH of Ohmstrasse 4, 85716 Unterschleißheim	Automotive infotainment System	MGU21 APN	2.400-2483.5 MHz, 5.15-5.25 GHz and 5.725-5875 GHz	20 dBm	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	TAN: 2021-002-0085
9	Harman Becker Automotive System/Harman	Lazarus Paulus / +264814401162	Automotive Infotainment Unit	MGU 21	2.4GHz & 5GHz	14 dBm	QPSK	TAN: 2021-002-0090
10	Harman Becker Automotive System/Harman	Lazarus Paulus / +264814401162	Automotive Infotainment Unit	RAM 21	531 - 1602 kHz; 87, 5 – 108MHz & 170 – 240MHz	N/A	AM, FM	TAN: 2021-002-0089
11	Harman Becker Automotive System/Harman	Lazarus Paulus / +264814401162	Automotive Infotainment Unit	RAM21 BASIS	531 - 1602 kHz & 87, 5 – 108MHz	N/A	AM, FM	TAN: 2021-002-0088
12	Apple, Inc	Yaqiang Liu/353 21 4284549	Wireless Headphone/Headphone	A2512	Bluetooth/BT LE: 2400-2483.5 MHz	4.98 dBm EIRP / Bluetooth LE: 2.94 dBm EIRP	GFSK, $\pi/4$ -DQPSK, 8DPSK / Bluetooth LE: GFSK	TAN:2021-002-0070
13	Apple, Inc	Yaqiang Liu/353 21 4284549	Wireless Headphone	A2513	Bluetooth/BT LE: 2400-2483.5 MHz	4.29 dBm EIRP / Bluetooth LE: 2.22 dBm EIRP	GFSK, $\pi/4$ -DQPSK, 8DPSK / Bluetooth LE: GFSK	TAN: 2021-002-0071
14	Marelli Corporation	Marelli Corporation of 2-1917 Nisshin-	Sw Assy-Smart Keyless	R55T0	Tx:433.92MHz & Rx:125KHz	-23.6 dBm	FSK	TAN: 2021-002-0077



		cho,Kita-ku, Saitama-shi, Saitama 331-8501 Japan						
15	Denso International America,Inc./Denso	Mahmut Dag /+1- 408-852 7179	Passive Entry Passive Start System (LF Transmitter and LF Transceiver)	B1NA5	125kHz	86.78 dBμV/m or less at 10 m, 1.58 mW or less at 10 m, 1.58 mW (EIRP), 2.01 dBm (EIRP)	OOK/ASK (A1D)(Tx), ASK (A1D)(Rx)	TAN: 2021-002- 0076
16	Harman Becker Automotive System GmbH		GNSS receivers	CY17MEU	1559 – 1610 MHz	-103.3 dBm	QPSK, OFDM,	TAN: 2021-002- 0084
17	Kostal (Shangai) Management Co. Ltd/Kostal	Amine M.Rachdi / +212661130672	Body Control Module	BCM3.0	Tx: 119 - 140 KHz	108.125dBuV/m @3m	ASK	TAN: 2021-002- 0073
18	Kostal (Shangai) Management Co. Ltd/Kostal	Amine M.Rachdi / +212661130672	Smart Key	RKE3.0	Tx: 433.050 - 434.790 MHz Rx: 119 - 140 KHz	-29.15dBm	ASK , FSK	TAN: 2021-002- 0074
19	Kostal (Shangai) Management Co. Ltd/Kostal	Amine M.Rachdi / +212661130672	RTM	RTM3.0	Rx: 433.050 - 434.790 MHz	N/A	FSK	TAN: 2021-002- 0075

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Mediatek	MediaTek Inc./+ 886-3- 5600868	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card	MT7922A12L	2402-2480MHz, 2412-2472MHz. 5180- 5320MHz,5500- 5700MHz, 5745-5825MHz	15.59dBm (BT); 19.80dBm(2.4GHz); 22.85dBm(5GHz)	GFSK, π/4- DQPSK, 8DPSK, DSSS, OFDM, OFDMA	TAN: 2021- 002-0083

August-21								
S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Approval Solutions	Sserunjogi Jamiru	In-car Entertainment audio head unit	AHU001	FM: 87.5-108MHz; AM: 531-1602KHz	Transmit Power: 4dBm (2.5mW)	OFDM	TAN:2021-002-0086
2	Mediatek/MediaTek	Carol Wang / +886-3-5600868	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card	MT7922A12L	2402-2480MHz, 2412-2472MHz, 5180-5320MHz, 5500-5700MHz, 5745-5825MHz	15.59dBm (BT); 19.80dBm(2.4GHz); 22.85dBm(5GHz)	GFSK, $\pi/4$ -DQPSK, 8DPSK, DSSS, OFDM, OFDMA	TAN:2021-002-0083
3	VALEO Schalter & Sensoren GmbH		Radar sensor module	MHBL2	24.05-24.25GHz	19.2 dBm	FMCW	TAN:2021-002-0082
4	Apple Inc/Apple	Yaqiang Liu / +353 21 4284549	MagSafe Battery Pack/Wireless Accessories Operating Frequency: NFC: 13.56MHz, WPT: 127.7kHz, WPT: 360.0kHz	A2384	127.7kHz: -14.3 dBuA/m @ 10m & 360kHz: -23.2 dBuA/m @ 10m	127.7kHz: -14.3 dBuA/m @ 10m & 360kHz: -23.2 dBuA/m @ 10m	NFC: ASK, WPT: FSK	TAN:2021-002-0087
5	Samsung Electronics Co., Ltd./Samsung	Fidèle KOFFI /+225 27 22 01 49 79	Wi-Fi/BT Transceiver	WCA736M	BT/BLE: 2402-2480 MHz WLAN 2.4 GHz: 2412-2472 MHz WLAN 5GHz: 5 150-5 350 MHz, 5 470-5 725 MHz; 5725-5850MHz	BT: 12.36 dBm; BLE: 8.77 dBm; WLAN 2.4 GHz: 19.82 dBm WLAN 5GHz: 5150-5350 MHz & 5470-5725 MHz: 17.89 dBm ;5725-5850 MHz: 13.44 dBm	BT/BLE: GFSK/ $\pi/4$ DQPSK /8DPSK ; WLAN 2.4 GHz: DSSS/OFDM ;WLAN 5GHz: OFDM	TAN:2021-002-0091
6	LG Electronics Inc / LG	KyuSuk, Lee / +82-1040493133	Magic Remote	MR22GA	2402MHz-2480MHz	0.001 W	GFSK	TAN:2021-002-0096
7	LG Electronics Inc / LG	KyuSuk, Lee / +82-1040493133	Magic Remote	MR22GN	2402MHz-2480MHz	0.001 W	GFSK	TAN:2021-002-0097

8	LG Electronics Inc / LG / Timeless Technology	Bbaale Hadadi Kalinzi / +256701912466	Wireless Power Charger	WC500M-NM	144.89 KHz	37.7 dBuA/m	N/A	TAN:2021-002-0094
9	LG Electronics Inc. / SGLOBAL	Sungyong Kim / +82-10-5589-5727	Car Navigation	MIB3 OI VR-E	Bluetooth 2402~2480 MHz, WIFI 2.4G 2412~2472 MHz WIFI 5G 5150~5250 MHz, WIFI 5G 5725~5875 MHz	BT: 0.8 dBm,2.4 GHz WLAN: 14.80 dBm & 5GHz WLAN: 10.87 dBm	OFDM, DSSS, FSK	TAN:2021-002-0092

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Intel Corporation SAS/Intel	Harvey Nanianga / +243976251455	WLAN and Bluetooth Network Card	AX210N GW	2400 – 2483.5 MHz, 5150 – 5350 MHz, 5470 – 5725 MHz, 5725 – 5850 MHz	10 dBm (BLE), 20 dBm (wifi & BLE), 23dBm, 13,98 dBm.	DSSS, OFDM/OFDMA, GFSK, pi/4-DQPSK, 8-DPSK	NTC-TA-21-013
2	Apple Inc	Yaqiang Liu / + 353 21 4284549	iPad	A2602	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n : 2400~2483.5MHz, 802.11a/n/ac : 5150~5350, 5470~5725MHz, SRD : 5725~5850MHz	Bluetooth : 17.56 dBm EIRP, Bluetooth LE: 17.63 dBm EIRP, 802.11b/g/n : 16.93 dBm EIRP, 802.11a/n/ac 5150 - 5350 MHz : 19.15 dBm EIRP, 802.11a/n/ac 5470 - 5725 MHz : 18.40 dBm EIRP, 802.11a/n/ac 5725 - 5850 MHz : 11.24 dBm EIRP	Bluetooth : GFSK, pi/4-DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac : BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	TAN: 2021-002-0109

3	Apple Inc	Yaqiang Liu / + 353 21 4284549	iPad	A2567	2400~2483.5MHz, Bluetooth LE: 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725, 5725~5850MHz, WPT : 127.7kHz	Bluetooth: 17.4 dBm EIRP, Bluetooth LE: 17.4 dBm EIRP, 802.11b/g/n : 18.4 dBm EIRP, 802.11a/n/ac 5150 - 5350 MHz : 20.7 dBm EIRP, 802.11a/n/ac 5470 - 5725 MHz : 20.8 dBm EIRP, 802.11a/n/ac 5725 - 5850 MHz : 11.8 dBm EIRP, WPT : -18.1 dBuA/m @ 10m	Bluetooth: GFSK, $\pi/4$ - DQPSK, 8DPSK, Bluetooth LE: GFSK, 802.11b/g/n : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac : BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	TAN: 2021-002- 0107
4	Apple Inc	Yaqiang Liu / + 353 21 4284549	iPhone	A2628	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725MHz, SRD : 5725~5875MHz, GSM : 850/900/1800/1900, CDMA : BC0, BC1, BC10, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 25, 26, 28, 30, 32 (DL only), 66, LTE : TDD 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48, 5G : FR1 Bands FDD n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n30, n66; TDD n38, n40, n41, n77, n78, n79, GPS : 1575.42MHz, GLONASS : 1592~1610MHz, 13.56MHz NFC : 13.553~13.567MHz, WPT : 127.7kHz, WPT :	Bluetooth : 15.7 dBm EIRP, Bluetooth LE : 15.7 dBm EIRP, 802.11b/g/n/ax : 18.3 dBm EIRP, 802.11a/n/ac/ax 5150 - 5350 MHz : 20.8 dBm EIRP, 802.11a/n/ac/ax 5470 - 5725 MHz : 20.8 dBm EIRP, WLAN 5.8GHz : 13 dBm EIRP, GSM 800/900 : <33 dBm EIRP, GSM 1800/1900 : <30 dBm EIRP, WCDMA : <24 dBm EIRP, LTE : <23 dBm EIRP, 5G : <23 dBm EIRP, NFC : -6.8 dBuA/m @ 10m, WPT : - 20.5 dBuA/m @ 10m, UWB : -8.6 dBm / 50 MHz	Bluetooth : 1M00F1D, 1M40G1D, Bluetooth LE : 1M00F1D, 2M00F1D, 802.11b/g/n/ax : 20M0GXD, 802.11a/n/ac/ax : 20M0GXD, 40M0GXD, 80M0GXD, GSM : 248KG7W, WCDMA : 5M00F9W, LTE : various, 5G : various	TAN: 2021-002- 0111

5	Apple Inc	Yaqiang Liu /+ 353 21 4284549	iPhone	A2633	Bluetooth 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725MHz, SRD : 5725~5850MHz, GSM : 850/900/1800/1900, CDMA : BC0, BC1, BC10, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 25, 26, 28, 30, 32 (DL only), 66, LTE : TDD 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48, 5G : FR1 Bands FDD n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n30, n66; TDD n38, n40, n41, n77, n78, n79, GPS : 1575.42MHz, GLONASS : 1592~1610MHz, 13.56MHz NFC : 13.553~13.567MHz, WPT : 127.7kHz, WPT : 360kHz, UWB : 6~8.5GHz	Bluetooth : 16.2 dBm EIRP, Bluetooth LE : 16 dBm EIRP, 802.11b/g/n/ax : 18.8 dBm EIRP, 802.11a/n/ac/ax 5150 - 5350 MHz : 20.6 dBm EIRP, 802.11a/n/ac/ax 5470 - 5725 MHz : 20.0 dBm EIRP, WLAN 5.8GHz : 12.2 dBm EIRP, GSM 800/900 : <33 dBm EIRP, GSM 1800/1900 : <30 dBm EIRP, WCDMA : <24 dBm EIRP, LTE : <23 dBm EIRP, 5G : <23 dBm EIRP, NFC : -5 dBμA/m @ 10m, WPT (360kHz) : -17.6 dBμA/m @ 10m, UWB : -8 dBm / 50 MHz	Bluetooth : GFSK, π/4-DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n/ax : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac/ax : BPSK, QPSK, 16QAM, 64QAM, 256QAM, GNSS : BPSK, WPT : ASK/FSK, NFC : ASK, UWB : BPM, BPSK, GSM : GMSK, 8PSK, WCDMA : QPSK, LTE : QPSK, 16QAM, 5G : QPSK, 16QAM, 64QAM, 256QAM	TAN: 2021-002- 0112
6	Apple Inc	Yaqiang Liu /+ 353 21 4284549	iPhone	A2638	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725MHz, SRD : 5725~5875MHz, GSM : 850/900/1800/1900, CDMA : BC0, BC1, BC10, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 25, 26, 28, 30, 32 (DL only), 66, LTE : TDD 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48, 5G : FR1 Bands FDD n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n30, n66; TDD n38, n40, n41, n77, n78, n79, GPS : 1575.42MHz, GLONASS : 1592~1610MHz, 13.56MHz NFC : 13.553~13.567MHz, WPT : 127.7kHz, WPT : 360kHz, UWB : 6~8.5GHz	Bluetooth : 16.3 dBm EIRP, Bluetooth LE : 16.3 dBm EIRP, 802.11b/g/n/ax : 17.4 dBm EIRP, 802.11a/n/ac/ax 5150 - 5350 MHz : 19.8 dBm EIRP, 802.11a/n/ac/ax 5470 - 5725 MHz : 19.6 dBm EIRP, WLAN 5.8GHz : 12.5 dBm EIRP, GSM 800/900 : <33 dBm EIRP, GSM 1800/1900 : <30 dBm EIRP, WCDMA : <24 dBm EIRP, LTE : <23 dBm EIRP, 5G : <23 dBm EIRP, WPT : -17.2 dBμA/m @ 10m, NFC : -4.3 dBμA/m @ 10m, UWB : -8.6 dBm / 50 MHz	GFSK, π/4-DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n/ax : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac/ax : BPSK, QPSK, 16QAM, 64QAM, 256QAM, GNSS : BPSK, NFC : ASK, WPT : ASK/FSK, UWB : BPM, BPSK, GSM : GMSK, 8PSK, WCDMA : QPSK, LTE : QPSK, 16QAM, 5G : QPSK, 16QAM, 64QAM, 256QAM	TAN: 2021-002- 0113

7	Apple Inc	Yaqiang Liu /+ 353 21 4284549	iPhone	A2643	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725MHz, SRD : 5725~5875MHz, GSM : 850/900/1800/1900, CDMA : BC0, BC1, BC10, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 25, 26, 28, 30, 32 (DL only), 66, LTE : TDD 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48, 5G : FR1 Bands FDD n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n30, n66; TDD n38, n40, n41, n77, n78, n79, GPS : 1575.42MHz, GLONASS : 1592~1610MHz, 13.56MHz NFC : 13.553~13.567MHz, WPT : 127.7kHz, WPT : 360kHz, UWB : 6~8.5GHz	Bluetooth : 16 dBm EIRP, Bluetooth LE : 16 dBm EIRP, 802.11b/g/n/ax : 18.0 dBm EIRP, 802.11a/n/ac/ax 5150 - 5350 MHz : 21.6 dBm EIRP, 802.11a/n/ac/ax 5470 - 5725 MHz : 21.5 dBm EIRP, WLAN 5.8GHz : 12.1 dBm EIRP, GSM 800/900 : <33 dBm EIRP, GSM 1800/1900 : <30 dBm EIRP, WCDMA : <24 dBm EIRP, LTE : <23 dBm EIRP, 5G : <23 dBm EIRP, NFC : -4.1 dBμA/m @ 10m, WPT : -18.4 dBμA/m @ 10m, UWB : - 9.1 dBm / 50 MHz	Bluetooth : GFSK, π/4-DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n/ax : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac/ax : BPSK, QPSK, 16QAM, 64QAM, 256QAM, GNSS : BPSK, NFC : ASK, WPT : ASK/FSK, UWB : BPM, BPSK, GSM : GMSK, 8PSK, WCDMA : QPSK, LTE : QPSK, 16QAM, 5G : QPSK, 16QAM, 64QAM, 256QAM	TAN: 2021-002- 0114
8	Apple Inc	Yaqiang Liu /+ 353 21 4284549	iPhone	A2568	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n/ax : 2400~2483.5MHz, 802.11a/n/ac/ax : 5150~5350, 5470~5725, 5725~5850MHz, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29 (DL only), 30, 32 (DL only), 66, 71, LTE : TDD 34, 38, 39, 40, 41, 42, XGP, 46 (DL only), 48, 5G : FR1 FDD n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n30, n66, n71, 5G : FR1 TDD n38, n40, n41, n48, n77, n78, n79, GPS : 1575.42MHz, GLONASS : 1592~1610MHz, WPT : 127.7kHz	Bluetooth : 16.0 dBm EIRP, Bluetooth LE: 16.0 dBm EIRP, 802.11b/g/n : 17.6 dBm EIRP, 802.11a/n/ac 5150 - 5350 MHz : 20.7 dBm EIRP, 802.11a/n/ac 5470 - 5725 MHz : 21.5 dBm EIRP, 802.11a/n/ac 5725 - 5850 MHz : 11.8 dBm EIRP, WCDMA : 24 dBm, LTE : 23 dBm, 5G : 23 dBm, WPT : -18.1 dBμA/m @ 10m	Bluetooth : GFSK, π/4-DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n/ax : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac/ax : BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, GNSS : BPSK, WPT : ASK/FSK, WCDMA : QPSK, LTE : QPSK, 16QAM, 5G : QPSK, 16QAM, 64QAM, 256QAM	TAN: 2021-002- 0108

9	Apple Inc	Yaqiang Liu / + 353 21 4284549	iPad	A2604	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz, 802.11b/g/n : 2400~2483.5MHz, 802.11a/n/ac : 5150~5350, 5470~5725MHz, SRD : 5725~5875MHz, TD-SCDMA : TDD 34,39, UMTS : FDD I, II, IV, V, VI, VIII, LTE : FDD 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29 (DL only), 30, 66, LTE : TDD 34, 38, 39, 40, 41, XGP, GPS : 1575.42MHz, GLONASS : 1592~1610MHz	Bluetooth : 17.56 dBm EIRP, Bluetooth LE: 17.63 dBm EIRP, 802.11b/g/n : 16.93 dBm EIRP, 802.11a/n/ac 5150 - 5350 MHz : 19.15 dBm EIRP, 802.11a/n/ac 5470 - 5725 MHz : 18.40 dBm EIRP, 802.11a/n/ac 5725 - 5850 MHz : 11.24 dBm EIRP	Bluetooth : GFSK, $\pi/4$ -DQPSK, 8DPSK, Bluetooth LE : GFSK, 802.11b/g/n : DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 802.11a/n/ac : BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	TAN: 2021-002- 0110
10	Schrader Electronics Ltd. / Sensata / CONSULT IT SARL	Fidèle Koffi / +225 25 22 01 49 79	Transmitt er	ATFPG4	433.92 MHz	0.014 mW (-18.4 dBm ERP)	FSK	TAN: 2021-002- 0106
11	Intel Corporation SAS / Intel / Realtime International	Amine M.Rachdi / +212661130 672	Wireless LAN Adapter	AX411N GW	2400-2483.5MHZ, 5150-5350MHZ, 5470-5725MHZ, 5725-5875MHZ	BT, Wifi 2.4GHz: 20 dBm max , BLE: 10dBm max, 5150-5350MHZ, 5470- 5725MHZ:23 dBm max, 5725-5875 MHz:13.98 dBm max	DSSS(DBPSK, DQPSK, CCK), OFDM/OFDMA(BPS K, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM), GFSK, $\pi/4$ -DQPSK, 8-DPSK	TAN: 2021-002- 0100
12	LG Electronics Inc / LG / Timeless Technology	Bbaale Hadadi Kalinzi / +256701912 466	Premium Magic Remote	PM22G N	(BLE) 2402 MHz - 2480 MHz & (NFC) 13.56 MHz	6.40 dBm	GFSK and NFC: ASK	TAN: 2021-002- 0095
13	CPAC System / CONSULT IT SARL	Andreas Gebershage n / +49 681 598 8735	Telematic Unit	W- ECU4	GSM: 880 - 915 MHz, 1710 - 1785 MHz; UMTS: 880 - 915 MHz, 1920 - 1980 MHz; LTE: 703 – 748 MHz, 832 - 862 MHz, 880 - 915 MHz, 1710 - 1785 MHz, 1920 - 1980 MHz, 2500 - 2570 MHz	10 W	GSM - GMSK, 8PSK; UMTS – QPSK 16QAM(DL); LTE - QPSK, 16QAM(DL), 64QAM	TAN: 2021-002- 0081

14	Faurecia Clarion Electronics (Xiamen) Co., Ltd./ Ford / Realtime International	Amine M.Rachdi / +212661130672	Car Audio	PU-1760	AM/FM/DAB: 526.5-1606.5 kHz, 87.5-108 MHz, 174-240 MHz, GPS: 1559-1610 MHz, BT: 2402-2480 MHz, WLAN 2.4GHz: 2412-2472 MHz, WLAN 5GHz: 5150-5250 MHz, 5745- 5825 MHz	BT/Wifi 2.4GHz: 20 dBm max, 5150-5250MHz:23 dBm max, 5745-5825MHz:13.98 dBm max	AM, FM, GFSK, ( $\pi/4$ ) DQPSK, 8DPSK, DSSS(DBPSK/DQPSK/CCK), OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	TAN: 2021-002-0093
15	DENSO TEN Limited	Hisayuki Kioka / +81 596 63 8558	Car Audio with Bluetooth, WLAN (2.4GHz & 5GHz) & GPS	TN0002 A	BT: 2402 - 2480 MHz, WLAN: 2412 - 2472 MHz, 5735 - 5835 MHz, AM: 531 - 1629 kHz, FM: 87.5 - 108.0 MHz, GPS: 1575.42MHz, DAB: 174.928 - 239.2 MHz	Max 19.87 dBm	DSSS/OFDM/FHSS	TAN: 2021-002-0117

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Clarion Co., Ltd.	Micki Ho / +886 2 2602 6888 ext:1303	Car Audio WLAN, Bluetooth and receiving functions for AM/FM/DAB/GPS/GLONASS	55T0	Bluetooth: 2402-2480 MHz; WLAN: 2412-2472 MHz, 5180-5240 MHz, 5745-5825 MHz; Receiver: AM 522-1710 kHz, FM 87.5-108 MHz, DAB 174-240 MHz, GPS 1575.42 MHz, GLONASS 1598.0625-1605.375 MHz	Bluetooth: 1.2 dBm; WLAN 2412-2472 MHz: 13.21 dBm; WLAN 5180-5240 MHz: 10.75 dBm; WLAN 5745-5825 MHz: 13.54 dBm	Bluetooth: GFSK, $\pi/4$ DQPSK, 8DPSK; WLAN: DSSS (DBPSK, DQPSK, CCK), OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	TAN: 2021-002-0118
2	Marelli Corporation / Nissan Motor co., Ltd / CONSULT IT	2-1917 Nisshincho, Kita-ku, Saitama-shi, Saitama-ken 331-8501, Japan	BCM (Body Control Module) System	BN009	125 kHz	68.0dBu V/m @10m	ASK	TAN: 2021-002-0102
3	Marelli Europe S.p.A.	Lazarus Paulus / +264814401162	Cluster for Automotive	MQBS01	125 KHz	40 dBuA/m	ASK	TAN: 2021-002-0068



4	SGLOBAL /LG Electronics Inc/LG	Lazarus Paulus / +264814401162	RF Module	LGSBWAX12	2402MHz to 2480MHz (Bluetooth, 40 and 79 Channels);2412MHz to 2472 MHz (WLAN 2.4GHz) (9 and 13 Channels) & 5180MHz to 5320 MHZ (WLAN 5.2GHz) (2.4 and 8 channels) 5 500MHz to 5700 MHz (WLAN 5.6 GHz) (2,5 and 11 channels)5745 MHz to 5825 MHz(SRD 5.8GHz)1,2 and 5 channels)	19.9dBm	OFDM, GFSK, FHSS & DSSS	NTC-TA-21-014
5	Apple Inc.	Charlotte Hall / +44(0)1844 273277	AirPods/wireless headphones	A2564	Bluetooth: 2400~2483.5MHz, Bluetooth LE: 2400~2483.5MHz	Bluetooth: 7.3 dBm EIRP, Bluetooth LE: 3.6 dBm EIRP	ASK	TAN: 2021-002-0105
6	Apple Inc.	Charlotte Hall / +44(0)1844 273277	AirPods/wireless headphones	A2565	Bluetooth: 2400~2483.5MHz, Bluetooth LE: 2400~2483.5MHz	Bluetooth: 8.4 dBm EIRP, Bluetooth LE: 4.7 dBm EIRP	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK, Bluetooth LE: GFSK	TAN: 2021-002-0104
7	Apple Inc.	Charlotte Hall / +44(0)1844 273277	Air Pods Charging Case/headphone charging case	A2566	WPT: 127.7 kHz (receiver-only)	WPT: N/A	WPT: ASK/FSK	TAN: 2021-002-0103

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Apple Inc. /Apple	Charlotte Hall / +44(0)1844 273277	Beats Fit Pro/wireless earphones	A2576	Bluetooth : 2400~2483.5MHz, Bluetooth LE : 2400~2483.5MHz	Bluetooth : 3.8 dBm EIRP, Bluetooth LE : 0.1 dBm EIRP	Bluetooth : GFSK, $\pi/4$ -DQPSK, 8DPSK, Bluetooth LE : GFSK	TAN: 2021-002-0115
2	Apple Inc. /Apple	Charlotte Hall / +44(0)1844 273277	Beats Fit Pro/wireless earphones	A2577	Bluetooth: 2400~2483.5MHz, Bluetooth LE: 2400~2483.5MHz	Bluetooth: 3.1 dBm EIRP, Bluetooth LE: -0.5 dBm EIRP	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK, Bluetooth LE: GFSK	TAN: 2021-002-0116

3	Robert Bosch GmbH	Maggie Chen +886 2 2602 6888 ext:2111 / +36 1 879-6276	Automotive radar sensor	MRRRevo14F	76.0 – 77.0 GHz	Max. 32dBm	FMCW	TAN: 2021-002-0120
4	Harman International Industries Inc.	Silue Aly +2250758599955/+2250708886687/+12487852361	Automotive Infotainment Unit with Bluetooth/Wi-Fi/GPS	R1 EXT RW 2B MY22	2402-2480 MHz WLAN: 2412-2472MHz, 5150-5350 MHz, 5470-5725 MHz, 5725-5875 MHz GPS: 1575.42 MHz (RX)	<10dBm WLAN: <20dBm	DSSS, OFDM BT: GFSK, $\pi/4$ -DQPSK, 8DPSK	TAN: 2021-002-0126
5	Harman International Industries Inc.	Silue Aly +2250758599955/+2250708886687/+12487852361	Automotive Infotainment Unit with Bluetooth/Wi-Fi/GPS	R1 EXT RW 3B MY22	2402-2480 MHz WLAN: 2412-2472MHz, 5150-5350 MHz, 5470-5725 MHz, and 5725-5875 MHz GPS: 1575.42 MHz (RX)	<10dBm WLAN: <20dBm	DSSS, OFDM BT: GFSK, $\pi/4$ -DQPSK, 8DPSK	TAN: 2021-002-0125
6	Caterpillar Inc.	Silue Aly +2250758599955/+2250708886687/+12487852361	Telematics Radio	PL444 (EU)	BLE: 2400-2483.5 MHz; LTE: FDD Band 1,3,8,20,28; UMTS: Band 1,3,8; GSM: Band 3,8 LTE: 703 - 748 MHz, 832 - 862 MHz, 880 - 915 MHz, 1710 - 1785 MHz, 1920 - 1980 MHz UMTS: 880 - 915 MHz, 1920 - 1980 MHz GSM: 880 - 915 MHz, 1710 - 1785 MHz, 1920 - 1785 MHz	BLE: max 5.8 dBm; Cellular: max 27 dBm	BLE: GFSK; Cellular: $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM	TAN: 2021-002-0127
7	Visteon Corporation/ FoMoCo	CONSULT IT / +225 25 22 01 49 79	Car Audio/AM, FM	AHUA001	AM: 531 – 1602 kHz /FM: 87.5 – 108 MHz	N/A	AM: AM; FM: FM	TAN: 2021-002-0121
8	Visteon Corporation/ FoMoCo	CONSULT IT / +225 25 22 01 49 79	Car Audio/AM, FM	AHUB001	AM: 531 – 1602 kHz /FM: 87.5 – 108 MHz	N/A	AM: AM; FM: FM	TAN: 2021-002-0122
9	Marelli Corporation / Marelli Corporation	Fidèle Koffi / +2252522014979	Transmitter of Keyless Start System for vehicle/SRD	K67T0	TX: 125 kHz, Rx: 433.92MHz	63.47 dBuV/m@10m (EN)	TX: ASK, Rx: FSK	TAN: 2021-002-0123
10	Marelli Corporation/ ORTEK	CONSULT IT / +225 25 22 01 49 79	Car Audio/ BT, AM, FM	TD-68	BT/BLE: 2400-2483.5 MHz /FM:	BT: 4.12dBm; BLE: 3.54dBm	BT/BLE: GFSK, $\pi/4$ DQPSK,	TAN: 2021-002-0124

						87.5-108 MHz / AM: 522-1629 kHz		8DPSK; AM: AM; FM: FM	
11	Marelli Corporation / Marelli Corporation	CONSULT IT / +225 25 22 01 49 79	Receiver	K67TA		433.84 - 434.00MHz	N/A	FSK	TAN: 2021-002-0128
12	Illumina Inc.	Lenovo Ltd / TeleApproval Aylona Consulting / +962790994326	ThinkSmart Bar XL	L10TSS2M		2402 MHz ~ 2480 MHz	< 20 dBm	GFSK / $\pi$ /4-DQPSK / 8DPSK	TAN: 2021-002-0129
13	Illumina Inc.	Illumina, Inc. / Illumina / TeleApproval Aylona Consulting / +962790994326	Next Generation Sequencer	iSeq™100		RFID: 13.56 MHz WLAN (IEEE 802.11 a/b/g/n/ac): 2412-2472 MHz 5170-5350 MHz 5725-5825 MHz BT: 2402-2480 MHz (BT 2.1 + EDR + BT4.2)	WLAN (IEEE 802.11 a/b/g/n/ac) 2412-2472 MHz: 19.98dBm 5170-5350 MHz: 22.95 dBm 5725-5825 MHz: 21.11 dBm (FCC) 5725-5825 MHz: 21.11 dBm (FCC) BT 2402-2480 MHz (EDR): 9.65 dBm 2402-2480 MHz (LE): 9.80 dBm RFID 13.56 MHz: -78.02dBm	RFID: OOK WLAN: DSSS, OFDM, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM BT: GFSK (1Mbps), $\pi$ /4 DQPSK (2Mbps), and 8DPSK (3Mbps)	TAN: 2021-002-0130

S/N	NAME OF COMPANY	CONTACT PERSON & NUMBER	PRODUCT	MODEL/TYPE NUMBER	OPERATING FREQUENCY	OUTPUT POWER	MODULATION TECHNIQUE	TAN NUMBER
1	Robert Bosch GmbH	Maggie Chen / +886-286013788*211	Human Machine Interface with Bluetooth, WLAN and GPS for mounting into GM vehicles	NG 2.5 HMI	BLUETOOTH: 2402~2480 MHz; WLAN: 2412-2472 MHz; GPS: Rx ONLY	Bluetooth: 2.30 dBm (1.698 mW); WLAN: 17.8 dBm (60 mW); GPS: none (only receiving)	BLUETOOTH (FHSS: GFSK, $\pi$ /4DQPSK & 8DPSK) WLAN; 802.11b: BPSK/QPSK/(DBPSK/DQPSK) 802.11g: OFDM, DSSS 802.11n: QAM, OFDM	TAN: 2022/002/0010

2	Robert Bosch GmbH	Maggie Chen / +886-286013788*2111	Car Radio with Bluetooth	1-DIN TCC MID	2402MHz~2480MHz	+4 dBm Max	GFSK BbT=0.5; $\pi$ /4-DQPSK; 8DPSK	TAN: 2022/002/0015
3	Robert Bosch GmbH	Maggie Chen / +886-286013788*2111	Multimedia Device with Bluetooth and WLAN	AIVIP32R0	GPS Receiver: 1,227/1,575GHz; BT: 4.1 ind. LE:2.4GHz; WLAN: 2.4 GHz; 5GHz	WLAN (5.15-5.25 GHz), (5.25-5.35 GHz), (5.47-5.72 GHz): 14.3dBm, WLAN 5.8GHz: 10.42dBm; WLAN 2.4 GHz: 16.1 EIRP in dBm &BT: -1.49 dBm (max. EIRP)	GFSK, DSSS, OFDM	TAN: 2022/002/0011
4	Robert Bosch GmbH	Maggie Chen / +886-286013788*2111	Multimedia Navigation System	AIVIL42P0	BT: 2400-2483.5MHz; WLAN: 2400-2483.5MHz; 5150-5250MHz, 5250-5350MHz, 5470-5725 MHz; 5725-5850 MHz; GNSS/GPS: 1559-1610 MHz; FM 87.5-108 MHz; AM 144-288 kHz, 531-1629 kHz	BT/WLAN 2.4GHz: 17.29 dBm; WLAN 5GHz: 14.49 dBm	BT: FHSS (GFSK, 4-DQPSK, 8-DPSK), WIFI: DSSS, OFDM; GPS: BPSK; FM; AM	TAN: 2022/002/0012
5	Robert Bosch GmbH	Maggie Chen / +886-286013788*2111	Car Multimedia Radio Navigation system	AIVICMFBO	2400MHz~2483.5MHz ; Wifi(802.11b/g/n): 2400 MHz~2483.5 MHz; Wifi (802.11a/n/ac): 5150MHz~5250MHz; 5250MHz~5350MHz; 5470MHz~5725MHz; 5725MHz~5850MHz & GNSS Receiver: 1559~1610MHz	4.7dBm EIRP; Wifi (802.11b/g/n):16.3dBm EIRP; Wifi (802.11a/n/ac){5150MHz~5350MHz} 12.3dBm EIRP; Wifi (802.11a/n/ac) (5470~5725MHz):10.3dBm EIRP & Wifi {802.11a/n/ac}{5725MHz~5850MHz}:13.45dBm EIRP	GFSK, $\pi$ /4-DQPSK, 8-DPSK; Wifi (802.11b/g/n): BPSK/QPSK/16-QAM/64-QAM; Wifi (802.11a/n/ac):BPSK/QPSK/16-QAM/64-QAM/256-QAM	TAN: 2022/002/0014
6	Robert Bosch GmbH	Maggie Chen / +886-286013788*2111	Multimedia Navigation System	AIVIH60A0	BT: 2400-2483.5MHz; WLAN: 2400-2483.5MHz; 5150-5250MHz, 5250-5350MHz, 5470-5725 MHz; 5725-5850 MHz; GNSS/GPS: 1559-1610 MHz; FM 87.5-108 MHz; AM 144-288 kHz, 531-1629 kHz	BT: -1.20 dBm, WIFI: 8.79 dBm	BT: FHSS (GFSK, 4-DQPSK, 8-DPSK), WIFI: DSSS, OFDM	TAN: 2022/002/0013