

RF EXPOSURE Test Report

Product: 10.1 Inch Outdoor Intercom System

Trade Mark:  ASSURED
SYSTEMS

Model Number: ASL-101ODCTPC-PCAP-V3.1

FCC ID: 2BL59ASL101ODC

Prepared for

Assured Systems (UK) Ltd

Unit A5, Douglas Park, Opal Way, Stone Business Park, Stone, Staffs, ST15
0YJ, UK

Prepared by

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TEST RESULT CERTIFICATION

Applicant's Name..... : Assured Systems (UK) Ltd
Address : Unit A5, Douglas Park, Opal Way, Stone Business Park, Stone,
Staffs, ST15 0YJ, UK
Manufacturer's Name : Assured Systems (UK) Ltd
Address : Unit A5, Douglas Park, Opal Way, Stone Business Park, Stone,
Staffs, ST15 0YJ, UK

Product description

Product name : 10.1 Inch Outdoor Intercom System
Model Number : ASL-101ODCTPC-PCAP-V3.1

Standards : FCC CFR 47 PART 1 , 1.1310

Test procedure..... : KDB 447498 D01 General RF Exposure Guidance v06

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

Date of Test..... :

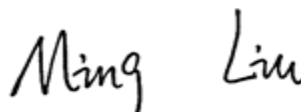
Date (s) of performance of tests..... : Oct. 22, 2024~ Nov. 07, 2024

Test Result..... : **Pass**

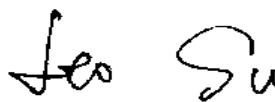
Testing Engineer :


(Z o e S u)

Technical Manager :


(M i n g L i u)

Authorized Signatory :


(L e o S u)

[illegible]

1 General Description

1.1 Description of EUT

Product name:	10.1 Inch Outdoor Intercom System
Model name:	ASL-101ODCTPC-PCAP-V3.1
Series Model:	N/A
Different of series model:	N/A
Operation frequency:	BT: 2402-2480MHz 2.4G WiFi: IEEE 802.11b/g/n20/ax20: 2412~2462 MHz IEEE 802.11n40: 2422~2452 MHz
Modulation type:	BT: GFSK, $\pi/4$ -DQPSK, 8DPSK 2.4G WiFi: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Bit Rate of transmitter:	BT: 1Mbps, 2Mbps, 3Mbps 2.4G WiFi: IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20/HT40: Up to MCS15
Antenna type:	ANT A/B: PCB Antenna
Antenna gain:	ANT A: 1.27 dBi ANT B: 1.27 dBi MIMO: 4.28 dBi
Max. output power:	BLE: 1.38 dBm BR&EDR: 3.9 dBm WiFi: ANT A: 17.21 dBm & ANT B: 17.68 dBm
Hardware version:	C381S-IM-AA
Software version:	V1.0
Battery:	N/A
Power supply:	Input: 12V $\pm$ 5A Output: 5V $\pm$ 0.2A
Adapter information:	INPUT: 100V-240V~ 50/60Hz, 1.5A MAX OUTPUT: 12V $\pm$ 5A

1.2 Test Mode

Pretest Test Mode	Description of Mode
1	TX
2	/

3	/
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1.3 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary Equipment

Equipment	Model	S/N	Manufacturer

2 Test Facilities and Accreditations

2.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

2.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

2.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

The data and results quoted in this document are true and accurate values, and uncertainties are not involved in the calculations.

In addition, components and mass production processes that are similar to testing equipment may introduce additional deviations, and the manufacturer is solely responsible for the continued compliance of the equipment.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2×10^{-5}	
RF power, conducted	± 0.57 dB	
Temperature	± 1 degree	
Humidity	± 5 %	

2.4 Test Software

Software name	Manufacturer	Model	Version
RF Test System	MWRF	MTS 8310	V2.0.0.0

3 List of Test Equipment

RF							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E041	MXG Anaio Signal Generator	Agilent	N5181A	MY47070421	2024-05-17	2025-05-16
2	HB-E042	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	132108	2024-05-17	2025-05-16
3	HB-E043	MXG Anaio Signal Generator	Agilent	N5182A	US46240335	2024-05-17	2025-05-16
4	HB-E044	Signal & spectrum Analyzer	R&S	FSV3044	101264	2024-05-17	2025-05-16
5	HB-E045	RF Control Box	Noyetec	NY100-R FCB	N/A	/	/
6	HB-E058	Thermometer Clock Humidity Monitor	N/A	HTC-1	N/A	/	/

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4 RF Exposure

4.1 Standalone SAR test exclusion considerations

4.1.1. Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b).

Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm (20cm)

P_d the limit of MPE, 1mW/cm².

If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

4.1.2. Test Result

BT/BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

2.4GWi-Fi:

Operation Frequency: WIFI 802.11b/g/n 20: 2412-2462MHz,

802.11n 40: 2422-2452MHz,

Power density limited: 1mW/ cm²

Antenna Type: WLAN Antenna;

Antenna gain: 1.27 dBi

R=20cm

$mW = 10^{(dBm/10)}$

antenna gain Numeric = $10^{(dBi/10)} = 10^{(3/10)} = 2$

BR+EDR: (Worst)

Chann el Freq. (MHz)	modulatio n	conducte d power	Tune -up powe r (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Num eric		
2480	8DPSK	3.9	3±1	4	2.512	1.27	1.34	0.0007	1

BLE: (Worst)

Chann el Freq. (MHz)	modulati on	conducte d power	Tune- up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Num eric		
2402	GFSK	1.38	1±1	2	1.585	1.27	1.34	0.0004	1

2.4GWiFi: (Worst)

Chann el Freq. (MHz)	modulati on	conduc ted power	Tune-u p power	Max		Ante nna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/c m ²)
				(dBm)	(mW)	Num eric		
		Ant A	Ant A	Ant A	Ant A	Ant A		
2462	802.11g	17.68	17±1	18	63.096	1.27	0.01594	1

Conclusion:

Simultaneous transmit:

NO	Configurations	Maximum MPE Value				Limits (mW/cm2)
		BT ANT (mW/cm2)	BLE ANT (mW/cm2)	2.4G WiFi ANT (mW/cm2)	Transmit simultaneously (mW/cm2)	
1	BT ANT +2.4G WiF ANTi+BLE ANT	0.0007	0.0004	0.01594	0.01704	1

According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

Transmit simultaneously MPE = $\sum$ of MPE ratios

MPE ratios = Field strengths or power density / MPE limit at the test frequency

For the max result: $0.01704 \leq 1g$ SAR, No SAR is required.

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