ETSI EN 300 330 V2.1.1 (2017-02)

TEST REPORT

For

XonTel Technology Trd. Co. W.L.L

Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait. zip code: 13065

Tested Model: XT-12P

Report Type:	**Product Type:**
Amended Report	Door Phone

Report Number:	RXM220104050-01B
Report Date:	2022-01-11
Reviewed By:	Chris Wang
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road,Kunshan,Jiangsu province,China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Issue
1	RXM200819050-01B	Original Report	2020-09-16
2	RXM220104050-01B	Amended Report	2022-01-11

Note:

This is an amended report application based on RXM200819050-01B, the details as below:

1. Changing the applicant to “XonTel Technology Trd. Co. W.L.L”.

2. Changing the address to “Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait. zip code: 13065.”

3. Changing the trade name “Xontel”.

4. Changing model name to “XT-12P”

For above difference, We Updated the EUT external photographs, all test data and other photos were referred to the original report RXM200819050-01B that issued on 2020-09-16.

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	XonTel Technology Trd. Co. W.L.L
Tested Model	XT-12P
Operation Frequency	13.56 MHz
Product Type	Door Phone
Power Supply	DC 12V power by External power supply or DC 48V power by POE
RF Function	RFID
Operating Band/Frequency	13.553~13.567MHz
Antenna Type	PCB antenna
* Maximum Antenna Gain	0.0 dBi

**Note: The maximum antenna gain was declared by the applicant.*

All measurement and test data in this report was gathered from production sample serial number: 20200819050 (Assigned by the BACL(Kunshan). The EUT supplied by the applicant was received on 2020-08-19)

Objective

This report is prepared on behalf of *XonTel Technology Trd. Co. W.L.L* in accordance with ETSI EN 300 330 V2.1.1 (2017-02), Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonized Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

The objective is to determine the compliance of EUT with ETSI EN 300 330 V2.1.1 (2017-02).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 330 V2.1.1 (2017-02).

Measurement Uncertainty

Item		Uncertainty
RF Output Power with Power meter		0.5dB
Power Spectral Density, conducted		0.5dB
Unwanted Emissions		2.34 dB
Radiated emission	9kHz~30MHz	6.07dB
	30MHz~1GHz	5.91dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		5%
Time		5 %
Supply voltages		0.04%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical mode (as normally used by a typical user).

EUT Exercise Software

The EUT was tested in the engineering mode.

Equipment Modifications

No modifications were made to the EUT tested

Support Equipment List and Details

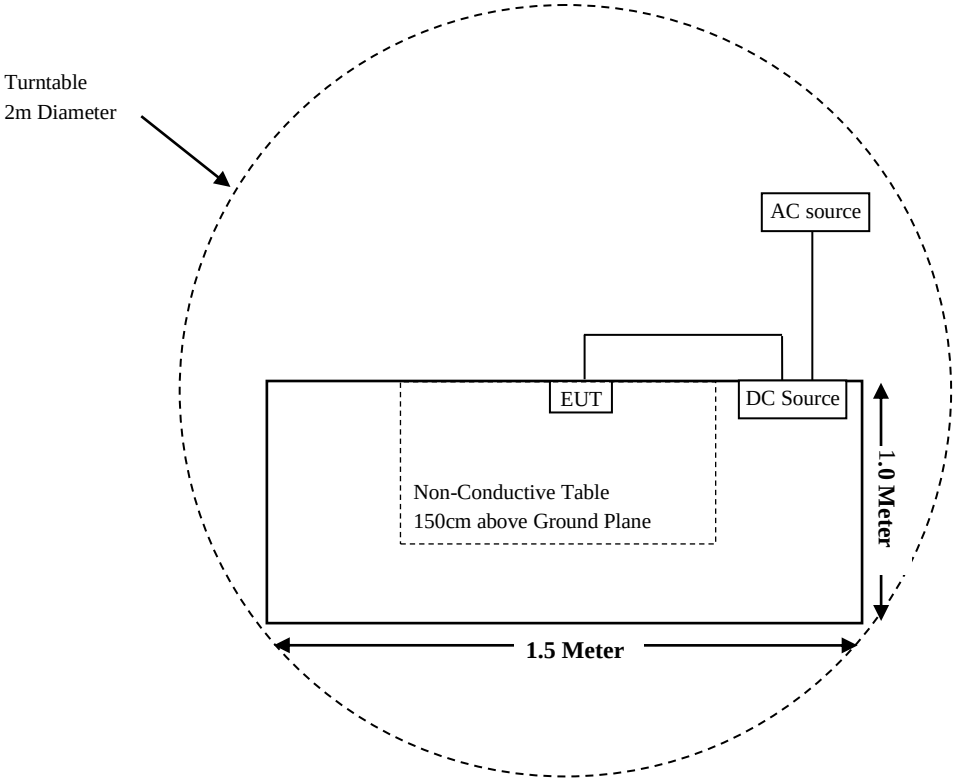
Manufacturer	Description	Model	Serial Number
ZHAOXIN	DC Power Supply	RXN-605D	DC002

External I/O Cable

Cable Description	Length (m)	From Port	To
Data Cable	1.0	EUT	DC Source
Power Cable	1.0	DC Source	AC Source

Block Diagram of Test Setup

Radiated Emissions (Below 30MHz & Above 30MHz):



SUMMARY OF TEST RESULTS

ETSI EN 300 330 V2.1.1 (2017-02)

EN 300 330 V2.1.1 Rules	Description of Test	Result
Transmitter Requirements		
Clause4.3.1	Permitted range of Operating Frequencies	Compliant
Clause4.3.2	Operating Frequency Ranges	Compliant
Clause4.3.3	Modulation Bandwidth	Compliant
Clause4.3.4	Transmitter H-field Requirements	Compliant
Clause4.3.5	Transmitter RF Carrier Current	Not Applicable (See Note1)
Clause4.3.6	Transmitter Radiated E-field	Not Applicable (See Note2)
Clause4.3.7	Transmitter Conducted Spurious Emissions	Not Applicable (See Note1)
Clause4.3.8	Transmitter Radiated Spurious Domain Emission Limits < 30 MHz	Compliant
Clause4.3.9	Transmitter Radiated Spurious Domain Emission Limits > 30 MHz	Compliant
Clause4.3.10	Transmitter Frequency Stability	Not Applicable (See Note3)
Receiver Requirements		
Clause4.4.2	Receiver Spurious Emissions	Compliant
Clause4.2.3	Adjacent Channel Selectivity	Not Applicable (See Note3)
Clause4.4.4	Receiver Blocking or Desensitization	Not Applicable (See Note4)

Note1: Only for equipment under class 3.
Note2: Only for equipment under class 4
Note3: Only for channelized systems.
Note4: Not for tagging systems.
Note5: The EUT under class 1.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2019-12-14	2020-12-13
ETS-LINDGREN	LOOP Antenna	6512	00108100	2019-04-25	2022-04-24
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2017-12-26	2020-12-25
Sunol Sciences	Bilog Antenna	JB3	A060217	2020-08-04	2023-08-03
Sonoma Instrunent	Pre-amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto Test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-8	008	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-7	007	2019-12-12	2020-12-11
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2019-12-14	2020-12-13
BACL	Temperature & Humidity Chamber	BTH-150	30023	2019-12-20	2020-12-19
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2019-10-10	2020-10-09
XonTel Technology Trd. Co. W.L.L	RF Cable	XonTel Technology Trd. Co. W.L.L	C01	Each Time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

ETSI EN 300 330 V2.1.1 (2017-02) CLAUSE 4.3.1 – PERMITTED RANGE OF OPERATING FREQUENCIES

Applicable Standard

According to EN 300 330 V2.1.1 (2017-02) Clause4.3.1.3, The permitted range of operating frequencies for intentional emissions shall be entirely within the frequency bands in table 1.

Table 1: Short Range Devices within the 9 kHz to 30 MHz permitted frequency bands

	Frequency Bands/frequencies	Applications
Transmit and Receive	9 kHz to 90 kHz	Inductive devices, Generic use
Transmit and Receive	90 kHz to 119 kHz	Inductive devices, Generic use
Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use
Transmit and Receive	140 kHz to 148,5 kHz	Inductive devices, Generic use
Transmit and Receive	148,5 kHz to 5 MHz	Inductive devices, Generic use
Transmit and Receive	400 kHz to 600 kHz	RFID only
Transmit and Receive	5 MHz to 30 MHz	Inductive devices, Generic use
Transmit and Receive	3 155 kHz to 3 400 kHz	Inductive devices, Generic use
Transmit and Receive	984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz)	Inductive devices, Railway applications
Transmit and Receive	4 516 kHz	Inductive devices, Railway applications
Transmit and Receive	6 765 kHz to 6 795 kHz	Inductive devices, Generic use
Transmit and Receive	7 400 kHz to 8 800 kHz	Inductive devices, Generic use
Transmit and Receive	10 200 kHz to 11,000 MHz	Inductive devices, Generic use
Transmit and Receive	11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz)	RFID only
Transmit and Receive	12,5 MHz to 20 MHz	Inductive devices, Wireless healthcare
Transmit and Receive	13,553 MHz to 13,567 MHz	Inductive devices, Generic use
Transmit and Receive	26,957 MHz to 27,283 MHz	Inductive devices, Generic use
Transmit and Receive	27,090 MHz to 27,100 MHz	Inductive devices, Railway applications

NOTE 1: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz.

NOTE 2: On non-harmonised parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an Individual Rights for use of spectrum or General Authorization, or as a condition for use under "licence exemption" as it is in most cases for Short Range Devices.

NOTE 3: Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

The permitted range of operating frequencies used by the EUT shall be declared by the applicant. The operating frequency range(s) will be tested considered under in clause 4.3.2.

Test result: Compliant

ETSI EN 300 330 V2.1.1 (2017-02) CLAUSE 4.3.2 – OPERATING FREQUENCY RANGES

Applicable Standard

According to EN 300 330 V2.1.1 (2017-02) Clause4.3.2.2, The operating frequency range (OFR) is the frequency range over which the EUT is transmitting. The operating frequency range of the EUT is determined by the lowest (f_L) and highest frequency (f_H) as occupied by the power envelope.

With the centre frequency of the OFR as: $f_C = (f_H+f_L)/2$.

An EUT could have more than one operating frequency range.

The operating frequency ranges for intentional emissions shall be entirely within the frequency bands in table 1.

Table 1: Short Range Devices within the 9 kHz to 30 MHz permitted frequency bands

	Frequency Bands/frequencies	Applications
Transmit and Receive	9 kHz to 90 kHz	Inductive devices, Generic use
Transmit and Receive	90 kHz to 119 kHz	Inductive devices, Generic use
Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use
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Transmit and Receive	148,5 kHz to 5 MHz	Inductive devices, Generic use
Transmit and Receive	400 kHz to 600 kHz	RFID only
Transmit and Receive	5 MHz to 30 MHz	Inductive devices, Generic use
Transmit and Receive	3 155 kHz to 3 400 kHz	Inductive devices, Generic use
Transmit and Receive	984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz)	Inductive devices, Railway applications
Transmit and Receive	4 516 kHz	Inductive devices, Railway applications
Transmit and Receive	6 765 kHz to 6 795 kHz	Inductive devices, Generic use
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Transmit and Receive	10 200 kHz to 11,000 MHz	Inductive devices, Generic use
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Transmit and Receive	27,090 MHz to 27,100 MHz	Inductive devices, Railway applications

NOTE 1: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz.

NOTE 2: On non-harmonised parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an Individual Rights for use of spectrum or General Authorization, or as a condition for use under "licence exemption" as it is in most cases for Short Range Devices.

NOTE 3: Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

Measurement Procedure

The measuring receiver may be a spectrum analyzer, oscilloscope, selective power meter or any measuring receiver which is appropriate to perform the intended measurement of the EUT.

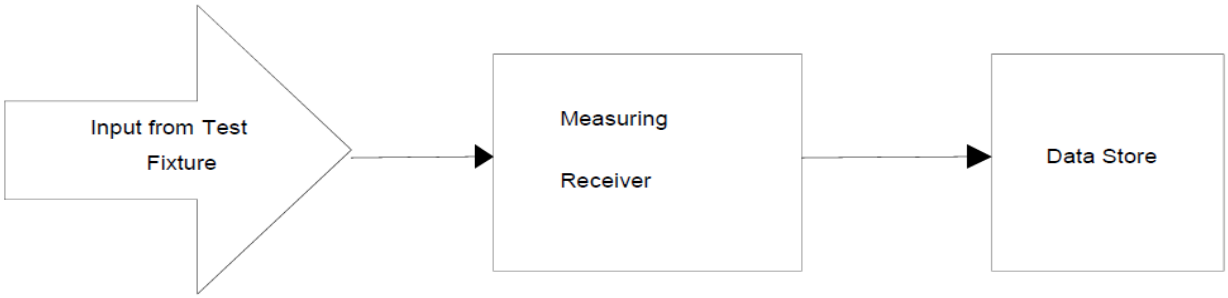


Figure 1: Test set-up for measurement of the operating frequencies

OFR measurement with spectrum analyzer

The measurement antenna shall be placed at one point of the setup up. Alternatively, a current probe could be used.

A spectrum analyser with the following settings is used as measuring receiver in the test set-up:
- Start frequency: lower than the lower edge of the permitted frequency range.
- Stop frequency: higher than the upper edge of the permitted frequency range.
- Resolution Bandwidth: see table 11.
- Video Bandwidth: ⩾ Resolution Bandwidth.
- Detector mode: RMS.
- Display mode: Maxhold.

The 99 % OBW function shall be used to determine the operating frequency range:
- fH is determined. fH is the frequency of the upper marker resulting from the OFR.
- fL is determined. fL is the frequency of the lower marker resulting from the OFR.
- fc is the centre frequency $f_c = \frac{f_H + f_L}{2}$.

Alternatively, the recorded results from the H-field measurement described in clause 6.2.4 may be used.

Test Data

Environmental Conditions

Temperature:	22.7 ℃
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Chao Gao on 2020-08-31.

Test Mode: Transmitting

Test Result: Compliant

Power Supply (V_{DC})	Temperature (℃)	Lowest Frequency (f_L) (MHz)	Highest Frequency (f_H) (MHz)	Centre Frequency (f_C) (MHz)	Minimum Limit (MHz)	Maximum Limit (MHz)
10.8	-20	13.560578	13.566094	13.56334	13.553	13.567
	+25	13.560733	13.566249	13.56349	13.553	13.567
	+55	13.561237	13.566753	13.56399	13.553	13.567
12.0	-20	13.561324	13.566840	13.56408	13.553	13.567
	+25	13.560799	13.566315	13.56356	13.553	13.567
	+55	13.560988	13.566504	13.56375	13.553	13.567
13.2	-20	13.56113	13.566646	13.56389	13.553	13.567
	+25	13.561386	13.566902	13.56414	13.553	13.567
	+55	13.560423	13.565939	13.56318	13.553	13.567

Note 1: $f_C = (f_H+f_L)/2$
Note2: The extreme operating temperature range as declared by the manufacturer.

ETSI EN 300 330 V2.1.1 (2017-02) CLAUSE 4.3.3 – MODULATION BANDWIDTH

Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) Clause 4.3.3.3, The modulation bandwidth shall be within the assigned frequency band see table 1 or ±7,5 % of the carrier frequency whichever is the smallest. For RFID and EAS Systems, the modulation bandwidth shall be within the transmitter emission boundary of figures I.1, I.2, I.3 and I.4. For further information, see CEPT/ERC/REC 70-03 [i.1] or ERC/ECC/CEPT Decisions as implemented through National Radio Interfaces (NRI) and additional NRI as relevant.

Method of Measurement

The transmitter shall be connected to an artificial antenna or if the transmitter has an integral antenna, a test fixture shall be used (see clause 5.10). The RF output of the equipment shall be connected to a spectrum analyzer via a 50 Ω variable attenuator.

The transmitter shall be operated at the nominal carrier power or field strength measured under normal test conditions in clause 4.3.4. The attenuator shall be adjusted to an appropriate level displayed at the spectrum analyzer screen.

The transmitter shall be modulated with standard test modulation (see clauses 5.8.1 and 5.8.2). If the equipment cannot be modulated externally, the internal modulation shall be used.

For transmitters using a continuous wideband swept carrier the measurement shall be made with the sweep on.

The output of the transmitter, with or without test fixture, shall be measured by using a spectrum analyser with a resolution bandwidth appropriate to accept all major side bands. The power level calibration of the spectrum analyzer shall then be related to the power level or field strength measured in clause 4.3.3. The calculation will be used to calculate the absolute level of the sideband power.

The test laboratory shall ensure that the spectrum analyzer's span is sufficiently wide enough to ensure that the carrier and all its major side bands are captured.

The frequency of the upper and lower points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level defined in clause 4.3.3 is recorded as the modulation bandwidth.

Measurement Result

Environmental Conditions

Temperature:	25.3 ℃
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Chao Gao on 2020-09-08.

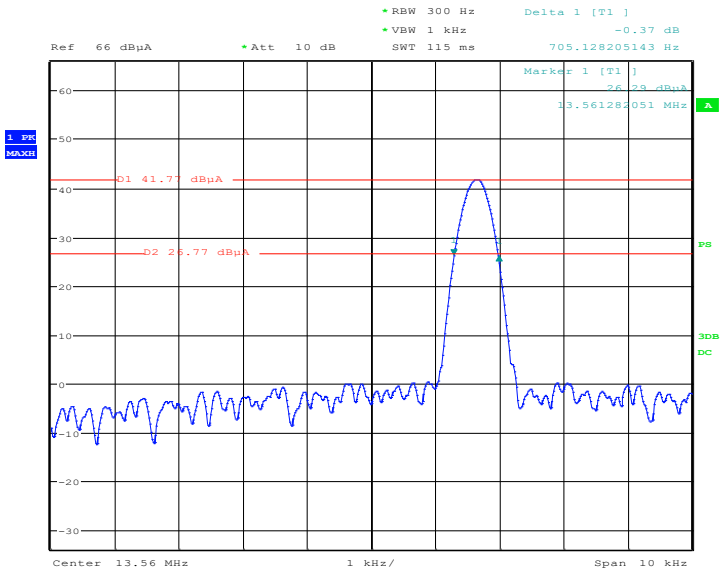
Test Mode: Transmitting

Test Result: Compliant

Power Supply (V_{DC})	Temperature (℃)	f_L at Operating Frequency (MHz)	f_H at Operating Frequency (MHz)	f_L Limit (MHz)	f_H Limit (MHz)
10.8	-20	13.561717	13.566174	13.553	13.567
	+25	13.561901	13.566358	13.553	13.567
	+55	13.561681	13.566138	13.553	13.567
12.0	-20	13.561152	13.565609	13.553	13.567
	+25	13.561089	13.565546	13.553	13.567
	+55	13.561976	13.566433	13.553	13.567
13.2	-20	13.561668	13.566125	13.553	13.567
	+25	13.561454	13.565911	13.553	13.567
	+55	13.561156	13.565613	13.553	13.567

Note: The extreme operating temperature range as declared by the manufacturer.

15 dB Modulation Bandwidth



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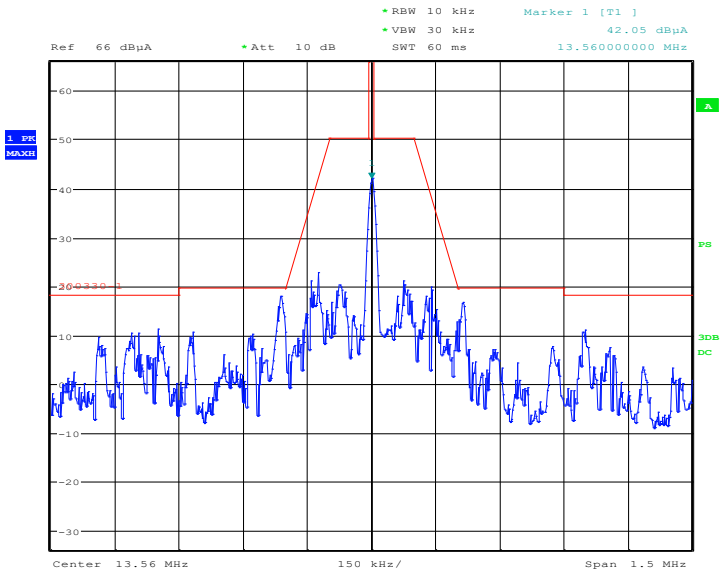
Emission Mask



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Note:
$H_{3\,m}$ Limit = $H_{10\,m}$ Limit +C_3; (C_3=23.3)
C_3 is a conversion factor in dB determined from figure H.2.

ETSI EN 300 330 V2.1.1 (2017-02) CLAUSE 4.3.4 – TRANSMITTER H-FIELD REQUIREMENTS

Applicable Standard

According to EN 300 330 V2.1.1 (2017-02) section 4.3.4.2, In the case of a transmitter with an integral or dedicated antenna, the radiated H-field is defined in the direction of maximum field strength under specified conditions of measurement.

The frequency ranges and limits of the present document are shown in table 2. The limits are based on the European Commission Decision for SRDs [i.10], CEPT/ERC/REC 70-03 [i.1].

Table 2: H-field limits at 10 m

Frequency range (MHz)	H-field strength limit (H_f) dBµA/m at 10 m or specified in mW e.r.p.
0,009 ≤ f < 0,090	72 descending 3 dB/oct above 0,03 MHz or according to note 1 (see note 5)
0,09 ≤ f < 0,119	42
0,119 ≤ f < 0,135	66 descending 3 dB/oct above 0,119 MHz or according to note 1 (see notes 3 and 5)
0,135 ≤ f < 0,140	42
0,140 ≤ f < 0,1485	37,7
0,1485 ≤ f < 30	-5 (see note 4)
0,315 ≤ f < 0,600	-5
3,155≤ f < 3,400	13,5
4,234	9 (see note 9)
4,516	7
7,400 ≤ f < 8,800	9
10,2 ≤ f < 11,00	9
12,5 ≤ f ≤ 20	-7
6,765 ≤ f ≤ 6,795	42 (see notes 3 and 7)
26,957 ≤ f ≤ 27,283	42 (see note 3)
13,410 ≤ f ≤13,553, 13,567 ≤ f ≤ 13,710	9 (see note 6)
13,110 ≤ f ≤ 13,410, 13,710 ≤ f ≤ 14,010	-3,5 (see note 6)
12,660 ≤ f ≤ 13,110, 14,010 ≤ f ≤ 14,460	-10 (see note 6)
11,810 ≤ f ≤ 12,660, 14,460 ≤ f ≤ 15,310	-16 (see note 6)
13,460 ≤ f ≤ 13,553, 13,567 ≤ f ≤ 13,660	27 (see note 6)
13,360 ≤ f ≤ 13,460, 13,660 ≤ f ≤ 13,760	Linear transition from 27 to -3,5 (see note 6)
13,110 ≤ f ≤ 13,360, 13,760 ≤ f ≤ 14,010	-3,5 (see note 6)
12,660 ≤ f ≤ 13,110, 14,010 ≤ f ≤ 14,460	-5 (see note 6)
13,553 ≤ f ≤ 13,567	42 (see note 3) or 60 (see notes 2 and 3)
27,095	42

Frequency range (MHz)	H-field strength limit (H_f) dBµA/m at 10 m or specified in mW e.r.p.
26,995, 27,045, 27,095, 27,145, 27,195 (see note 8)	100 mW

NOTE 1: For the frequency ranges 9 kHz to 135 kHz, the following additional restrictions apply to limits above 42 dBµA/m:
- for loop coil antennas with an area ≥ 0,16 m^2 this table and table B.1 with the antenna limitations apply;
- for loop coil antennas with an area between 0,05 m^2 and 0,16 m^2 table B.1 applies with a correction factor. The limit is: table value + 10 × log (area/0,16 m^2);
- for loop coil antennas with an area < 0,05 m^2 the limit is 10 dB below table B.1.

NOTE 2: For RFID (incl. NFC) and EAS applications only.
NOTE 3: Spectrum mask limit, see annex I.
NOTE 4: For further information see annex G.
NOTE 5: Limit is 42 dBµA/m for the following spot frequencies:
60 kHz ± 250 Hz, 66,6 kHz ± 750 Hz, 75 kHz ± 250 Hz, 77,5 kHz ± 250 Hz,
and 129,1 kHz ± 500 Hz.
NOTE 6: Only in conjunction with spectrum mask, see annex I.
NOTE 7: The frequency range 6,765 MHz - 6,795 MHz is not a harmonised ISM frequency band according article 5.138 of the ITU Radio Regulations [i.13].
NOTE 8: Center frequencies for channelized systems by using ≤ 10 kHz bandwidth.
NOTE 9: The limit is valid in the range 984 kHz - 7 484 kHz for Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

For calculation rules for limits at other measurement distances, see annex H.

Measurement Procedure

The measurements of the transmitter radiated H-field shall be made on an open field test site as specified in clause C.1.3. Any measured values shall be at least 6 dB above the ambient noise level.

The H-field produced by the equipment shall be measured at standard distance of 10 m. Where this is not practical, e.g. due to physical size of the equipment including the antenna or with use of special field cancelling antenna, then other distances may be used. When another distance is used, the distance used and the field strength value measured shall be stated in the test report. In this case, the measured value at actual test distance shall be extrapolated to 10 m according to annex H and these calculations shall be stated in the test report.

The H-field is measured with a shielded loop antenna connected to a measurement receiver. The measuring bandwidth and detector type of the measurement receiver shall be in accordance with clause 5.12.

The equipment under test shall operate where possible, with modulation. Where this is not possible, it shall be stated in the test report.

For transmitters using a continuous wideband swept carrier, the measurement shall be made with the sweep off. When it is not possible to turn the sweep off the measurements shall be made with the sweep on and this shall be stated in the test report.

For measuring equipment calibrated in dBµV/m, the reading should be reduced by 51,5 dB to be converted to dBµA/m.

Test Data

Environmental Conditions

Temperature:	22.3 ℃
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Chao Gao on 2020-09-02.

Test Mode: Transmitting

Test Result: Compliant

Indicated		Table Angle Degree	Antenna Height (cm)	Detector PK/QP/ Ave.	Correction Factor			Corrected Amplitude (dBµV/m) @3m	Corrected Amplitude (dBµA/m) @3m	EN 300 330		
										Limit		Margin (dB)
Freq. (MHz)	Maximum Reading (dBµV) @3m				Ant. Factor (dB)	Cable Loss (dB)	Pre-Amp. Gain (dB)			(dBµA/m) @10m	(dBµA/m) @3m	
13.56	90.09	268	150	QP	35.32	0.48	32	93.89	42.39	60	83.3	40.91

fo = 13.560MHz; Vnor =12V_{DC}			
Test Condition		Correction amplitude (dBµA/m) @3m	Note
Temperature (℃)	Power Supply (input V_{DC})		
T_{min} = -20	10.8	42.51	Extreme Condition
	12.0	42.48	Extreme Condition
	13.2	42.44	Extreme Condition
T_{nor} = +25	10.8	42.38	Extreme Condition
	12.0	42.39	Normal Condition
	13.2	42.41	Extreme Condition
T_{max} = +55	10.8	42.18	Extreme Condition
	12.0	42.15	Extreme Condition
	13.2	42.19	Extreme Condition

Note:

According to ETSI EN 300 330 V2.1.1 (2017-02), for measuring equipment calibrated in dBµV/m, the reading should be reduced by 51, 5 dB to be converted to dBµA/m.

That the tested distance between EUT and receiver is 3 meters and according to annex H and these calculations shall be stated in the test report. The calculated Limit at 3 m distance as, $H_{3\,m} = H_{10\,m}+C_3$; (C_3=23.3)

H_{10}m is the H-field limit in dBµA/m at 10 m distance according to the present document;

C_3 is a conversion factor in dB determined from figure H.2.

The extreme operating temperature range as declared by the manufacturer.

ETSI EN 300 330 V2.1.1 (2017-02) Clause 4.3.8 – TRANSMITTER RADIATED SPURIOUS DOMAIN EMISSION LIMITS < 30 MHZ

Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) Clause4.3.8.3, The radiated field strength of the spurious domain emissions below 30 MHz shall not exceed the generated H-field dBµA/m at 10 m given in table 5.

Table 5

State	Frequency 9 kHz ≤ f < 10 MHz	Frequency 10 MHz ≤ f < 30 MHz
Operating	27 dBµA/m at 9 kHz descending 3 dB/oct	-3,5 dBµA/m
Standby	5,5 dBµA/m at 9 kHz descending 3 dB/oct	-25 dBµA/m

Methods of measurement

The field strength shall be measured for frequencies below 30 MHz. The equipment under test shall be measured at a distance of 10 m on an outdoor test site. The test antenna shall be a calibrated shielded magnetic field antenna. The equipment under test and test antenna shall be arranged as stated in clause C.1.

For Product Class 3 the transmitter antenna connector of the equipment under test shall be connected to an artificial antenna (see clause 5.9) and the output connector terminated.

The equipment under test shall be switched on with normal modulation. The characteristics of the modulation signal used shall be stated on the test report. The measuring receiver shall be tuned over the frequency range 9 kHz to 30 MHz, except for the frequency band on which the transmitter is intended to operate.

At each frequency at which a relevant spurious signal is detected the equipment under test and the test antenna shall be rotated until maximum field strength is indicated on the measuring receiver. This level shall be noted.

If the transmitter can be operated in the standby mode, then the measurements shall be repeated in the standby mode.

For measuring equipment calibrated in dBµV/m, the reading should be reduced by 51,5 dB to be converted to dBµA/m.

Test Data

Environmental Conditions

Temperature:	22.3 ℃
Relative Humidity:	50 %
ATM Pressure:	101.2 kPa

The testing was performed by Chao Gao on 2020-09-02.

Test Mode: Transmitting

Test Result: Compliant

Below 30 MHz:

Indicated		Table Angle Degree	Antenna Height (cm)	Detector PK/QP/Ave.	Correction Factor			Corrected Amplitude (dBµV/m) @3m	Corrected Amplitude (dBµA/m) @3m	EN 300 330		
										Limit		Margin (dB)
Freq. (MHz)	Maximum Reading (dBµV) @3m				Ant. Factor (dB)	Cable Loss (dB)	Pre-Amp. Gain (dB)			(dBµA/m) @10m	(dBµA/m) @3m	
0.197	55.16	168	150	QP	58.26	0.42	32	81.84	30.34	13.64	44.94	14.6
28.23	39.54	229	100	QP	34.53	0.61	32	42.68	-8.82	-3.5	9.35	18.17

Note1: According to ETSI EN 300 330 V2.1.1 (2017-02), for measuring equipment calibrated in dBµV/m, the reading should be reduced by 51, 5 dB to be converted to dBµA/m.
Note2: that the tested distance between EUT and receiver, is 3 meters and according to annex H and these calculations shall be stated in the test report. The calculated Limit at 3 m distance as, H3 m = H10 m+C3; (C3= 31.3 for 0.197MHz, C3=12.85 for 28.23MHz).

H_{10}m is the H-field limit in dBµA/m at 10 m distance according to the present document;

C_3 is a conversion factor in dB determined from figure H.2.

ETSI EN 300 330 V2.1.1 (2017-02) Clause 4.3.9 – TRANSMITTER RADIATED SPURIOUS DOMAIN EMISSION LIMITS > 30 MHZ

Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) Clause4.3.9.3, The power of any radiated emission shall not exceed the values given in table 6.

Table 6

State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW

Methods of measurement

This method applies to all EUT.

For classes 1, 2 and 4 an appropriate test site selected from annex C shall be used. The equipment shall be placed at the specified height on a non-conducting support and in the position closest to normal use as declared by the manufacturer.

For Product Class 3 (see clause B.2) the transmitter antenna port shall be connected to an artificial antenna (see clause 5.9).

The test antenna shall be oriented for vertical polarization. The output of the test antenna shall be connected to a measuring receiver.

The transmitter shall be switched on with normal modulation, and the measuring receiver shall be tuned over the frequency range 30 MHz to 1 000 MHz.

At each frequency at which a relevant spurious component is detected, the test antenna shall be raised and lowered through the specified range of heights until a maximum signal level is detected on the measuring receiver.

The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

The maximum signal level detected by the measuring receiver shall be noted.

The substitution antenna shall be oriented for vertical polarization and calibrated for the frequency of the spurious component detected.

The frequency of the calibrated signal generator shall be set to the frequency of the spurious component detected. The input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver, if necessary.

The test antenna shall be raised and lowered through the specified range of heights to ensure that the maximum signal is received.

When a test site according to clause C.1.1 is used, there is no need to vary the height of the antenna. The input signal to the substitution antenna shall be adjusted until an equal or a known related level to that detected from the transmitter is obtained on the measuring receiver.

The input signal to the substitution antenna shall be recorded as a power level and corrected for any change of input attenuator setting of the measuring receiver.

The measure of the effective radiated power of the spurious components is the larger of the two power levels recorded for each spurious component at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

If an unmodulated carrier cannot be obtained then the measurements shall be made with the transmitter modulated by the normal test signal (see clause 5.8.2) in which case this fact shall be recorded in the test report.

If standby mode is available, the measurements shall be repeated in that mode.

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Chao Gao on 2020-09-03.

Test Mode: Transmitting

Test Result: Compliant

Above 30 MHz:

Frequency (MHz)	Maximum Reading (dBμV) @3m	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN300330	
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)		Limit (dBm)	Margin (dB)
64.55	50.64	237	150	V	-55.03	0.28	-10.09	-65.4	-54	11.4
87.60	50.81	321	150	V	-53.12	0.31	-7.17	-60.6	-54	6.6
189.83	47.46	337	150	V	-56.72	0.41	-4.40	-61.53	-54	7.53
199.97	45.78	131	150	V	-59.3	0.42	-3.95	-63.67	-54	9.67
227.88	46.16	325	150	V	-61.49	0.43	-3.00	-64.92	-54	10.92
693.85	39.40	358	150	V	-60.25	0.62	-1.68	-62.55	-54	8.55

ETSI EN 300 330 V2.1.1 (2017-02) Clause 4.4.2 – RECEIVER SPURIOUS EMISSIONS

Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) Clause4.4.2.3, The spurious components below 30 MHz shall not exceed the generated H-field dBµA/m values at 10 m according to table 8.

Table 8: Receiver spurious radiation limits

Frequency 9 kHz ≤ f < 10 MHz	Frequency 10 MHz ≤ f < 30 MHz
5,5 dBµA/m at 9 kHz descending 3 dB/oct	-25 dBµA/m

The spurious components above 30 MHz measured values shall not exceed 2 nW.

Methods of measurement (＜30 MHz)

The field strength shall be measured for frequencies below 30 MHz. The equipment under test shall be measured at a distance of 10 m on an outdoor test site. The test antenna shall be a calibrated shielded magnetic field antenna. The equipment under test and test antenna shall be arranged as stated in clause C.1.

For Product Class 3 the transmitter antenna connector of the equipment under test shall be connected to an artificial antenna (see clause 5.9) and the output connector terminated.

The equipment under test shall be switched on with normal modulation. The characteristics of the modulation signal used shall be stated on the test report. The measuring receiver shall be tuned over the frequency range 9 kHz to 30 MHz, except for the frequency band on which the transmitter is intended to operate.

At each frequency at which a relevant spurious signal is detected the equipment under test and the test antenna shall be rotated until maximum field strength is indicated on the measuring receiver. This level shall be noted.

If the transmitter can be operated in the standby mode, then the measurements shall be repeated in the standby mode.

For measuring equipment calibrated in dBµV/m, the reading should be reduced by 51,5 dB to be converted to dBµA/m.

Methods of measurement (≥ 30 MHz)

This method applies to all EUT.

For classes 1, 2 and 4 an appropriate test site selected from annex C shall be used. The equipment shall be placed at the specified height on a non-conducting support and in the position closest to normal use as declared by the manufacturer.

For Product Class 3 (see clause B.2) the transmitter antenna port shall be connected to an artificial antenna (see clause 5.9).

The test antenna shall be oriented for vertical polarization. The output of the test antenna shall be connected to a measuring receiver.

The transmitter shall be switched on with normal modulation, and the measuring receiver shall be tuned over the frequency range 30 MHz to 1 000 MHz.

At each frequency at which a relevant spurious component is detected, the test antenna shall be raised and lowered through the specified range of heights until a maximum signal level is detected on the measuring receiver.

The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

The maximum signal level detected by the measuring receiver shall be noted.

The substitution antenna shall be oriented for vertical polarization and calibrated for the frequency of the spurious component detected.

The frequency of the calibrated signal generator shall be set to the frequency of the spurious component detected. The input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver, if necessary.

The test antenna shall be raised and lowered through the specified range of heights to ensure that the maximum signal is received.

When a test site according to clause C.1.1 is used, there is no need to vary the height of the antenna. The input signal to the substitution antenna shall be adjusted until an equal or a known related level to that detected from the transmitter is obtained on the measuring receiver.

The input signal to the substitution antenna shall be recorded as a power level and corrected for any change of input attenuator setting of the measuring receiver.

The measure of the effective radiated power of the spurious components is the larger of the two power levels recorded for each spurious component at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

If an unmodulated carrier cannot be obtained then the measurements shall be made with the transmitter modulated by the normal test signal (see clause 5.8.2) in which case this fact shall be recorded in the test report.

If standby mode is available, the measurements shall be repeated in that mode.

Convert reading by 51,5 dB for measuring equipment calibrated in dBµV or dBµV/m.

Test Data

Environmental Conditions

Temperature:	24.3 ℃
Relative Humidity:	51 %
ATM Pressure:	103.2 kPa

The testing was performed by Chao Gao on 2020-09-02.

Test Mode: Receiving

Test Result: Compliant

9 kHz-30 MHz:

Indicated		Table Angle Degree	Antenna Height (cm)	Detector PK/QP/Ave.	Correction Factor			Corrected Amplitude (dBµV/m) @3m	Corrected Amplitude (dBµA/m) @3m	EN 300 330		
										Limit		Margin (dB)
Freq. (MHz)	Maximum Reading (dBµV) @3m				Ant. Factor (dB)	Cable Loss (dB)	Pre-Amp. Gain (dB)			(dBµA/m) @10m	(dBµA/m) @3m	
0.197	35.12	169	150	QP	58.26	0.42	32	61.8	10.3	-7.86	23.44	13.14
28.23	22.48	328	100	QP	34.53	0.61	32	25.62	-25.88	-25	-12.15	13.73

Note1: According to ETSI EN 300 330 V2.1.1 (2017-02), for measuring equipment calibrated in dBµV/m, the reading should be reduced by 51.5 dB to converted to dBµA/m.
Note2: that the tested distance between EUT and receiver, is 3 meters and according to annex H and these calculations shall be stated in the test report. The calculated Limit at 3 m distance as, H3 m = H10 m+C3; (C3= 31.3 for 0.197MHz, C3=12.85 for 28.23MHz).

The EUT was measured at a distance of 3m.

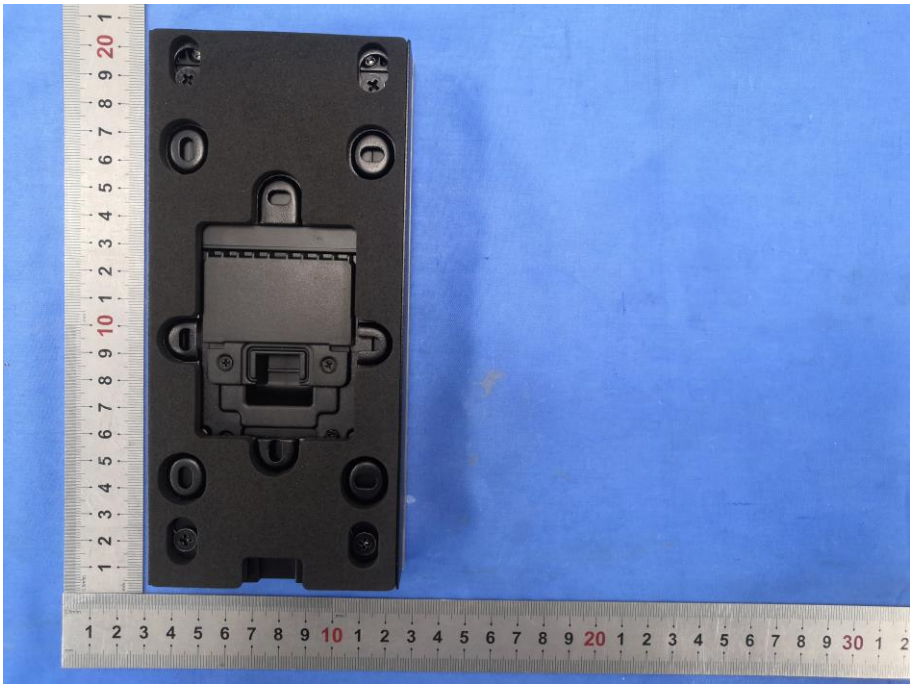
For the H-field limit in dBµA/m at 3 m, please refer to EN 300 330 annex H.2.

30 MHz-1GHz:

Frequency (MHz)	Maximum Reading (dBµV) @3m	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN300330	
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
64.52	50.78	284	150	V	-54.89	0.28	-10.09	-65.26	-57	8.26
87.63	50.65	210	150	V	-53.28	0.31	-7.17	-60.76	-57	3.76
189.74	47.49	258	150	V	-56.69	0.41	-4.40	-61.5	-57	4.5
199.92	45.70	232	150	V	-59.38	0.42	-3.95	-63.75	-57	6.75
227.89	46.96	345	150	V	-60.69	0.43	-3.00	-64.12	-57	7.12
693.76	39.79	6	150	V	-59.86	0.62	-1.68	-62.16	-57	5.16

Note 1: The unit of antenna gain is dBd for frequency below 1GHz .
Note 2: Absolute Level = Submitted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

EXHIBIT A - EUT PHOTOGRAPHS

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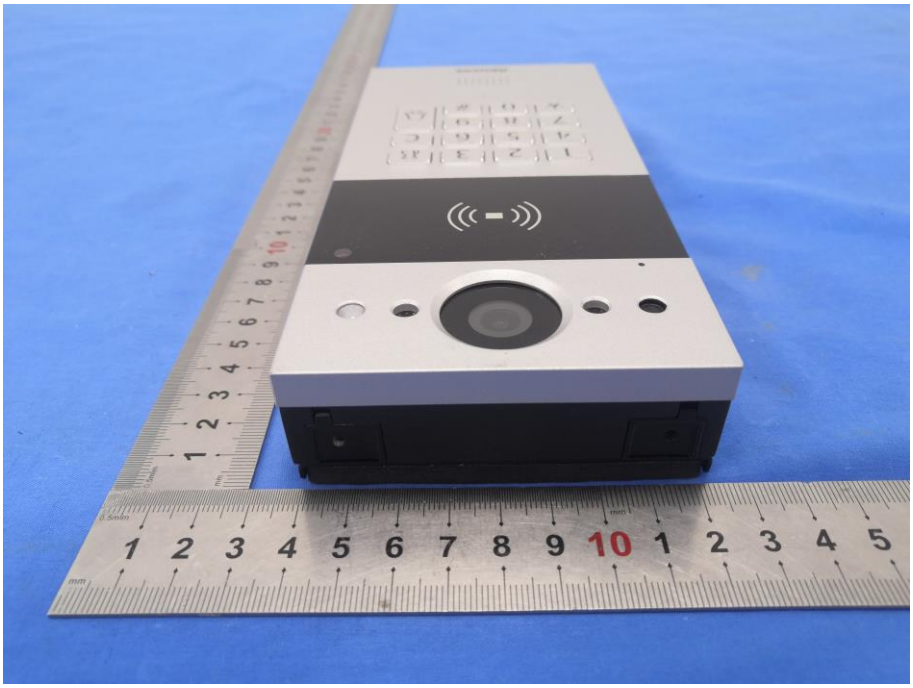
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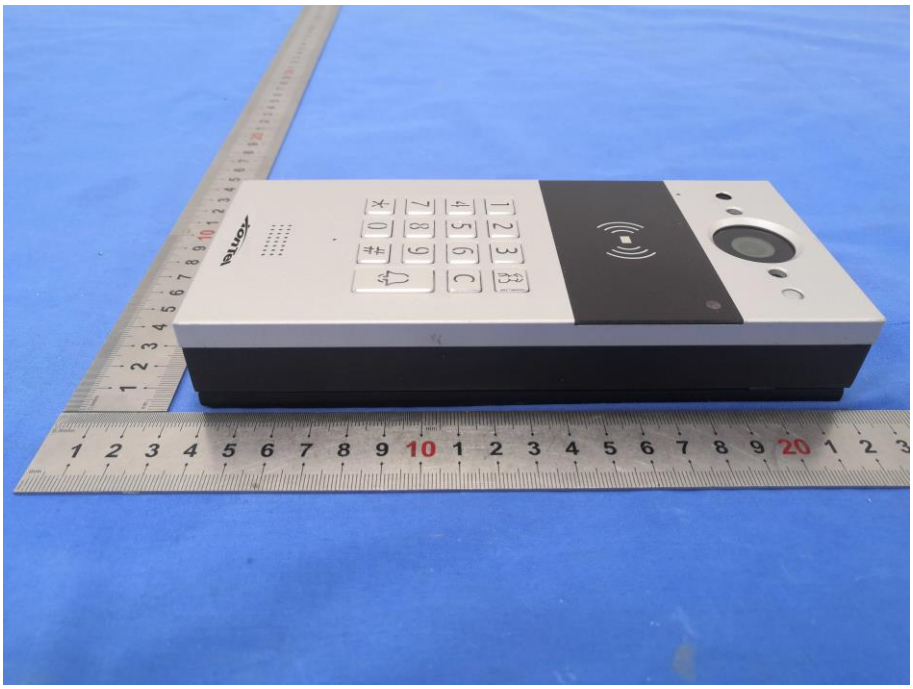

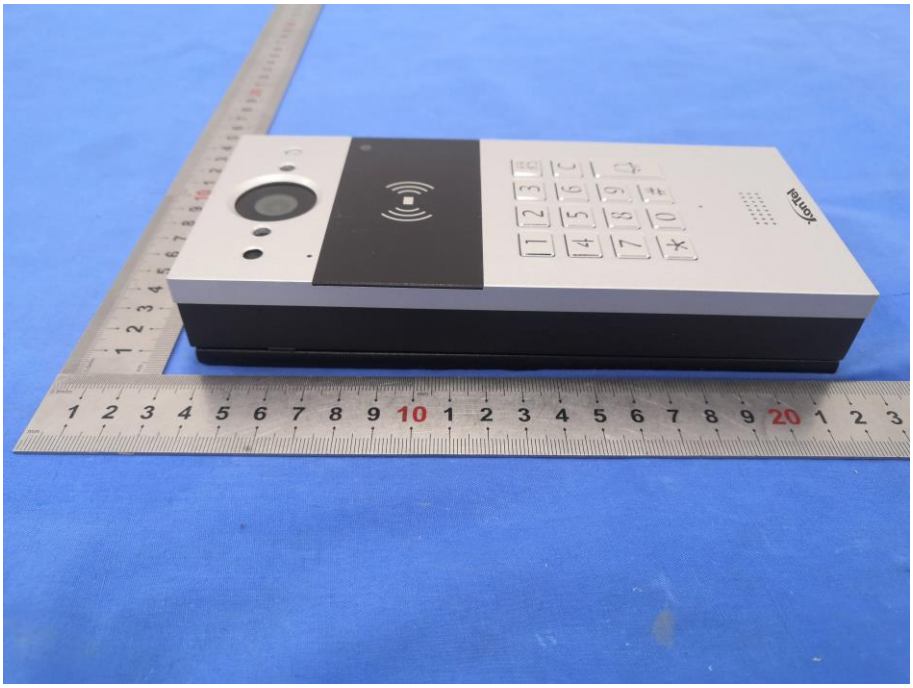

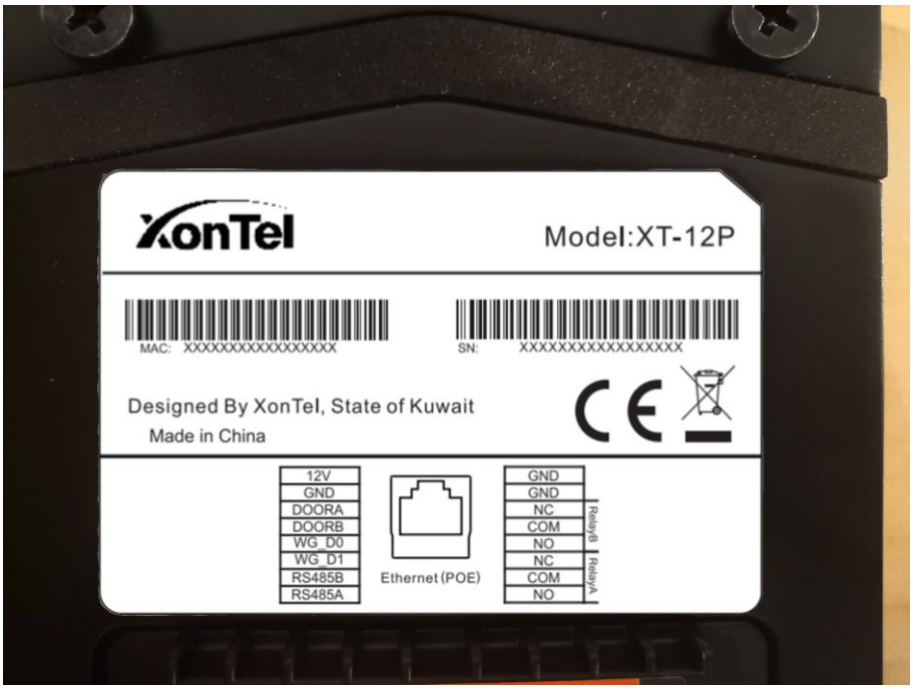
XonTel
Model:XT-12P
MAC: XXXXXXXXXXXXXXXX
SN: XXXXXXXXXXXXXXXX
Designed By XonTel, State of Kuwait
Made in China
12V
GND
DOORA
DOORB
WG_D0
WG_D1
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RS485A
Ethernet (POE)
GND
GND
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COM
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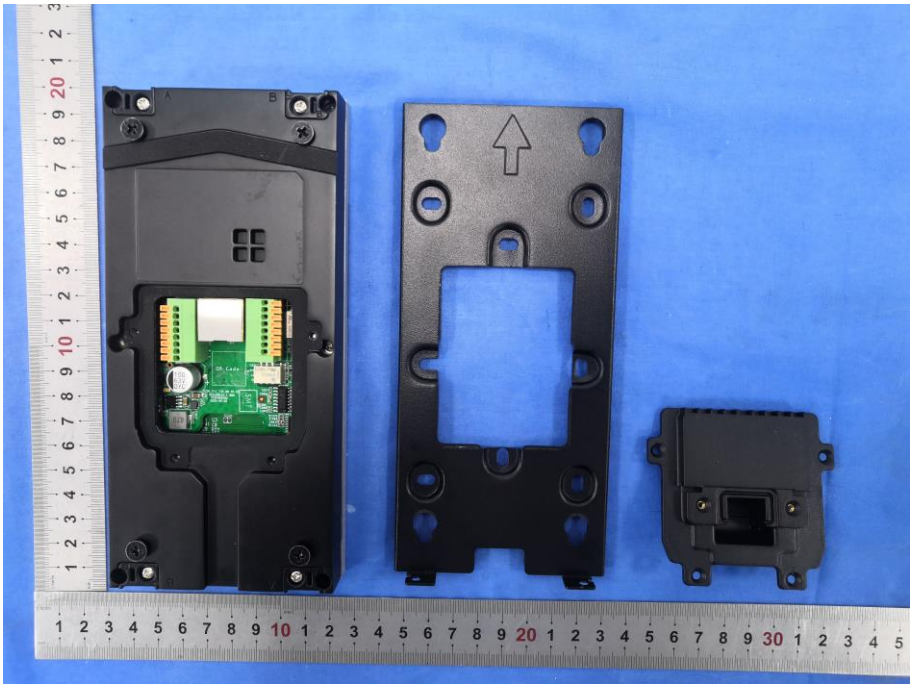
NO
RelayB
RelayA

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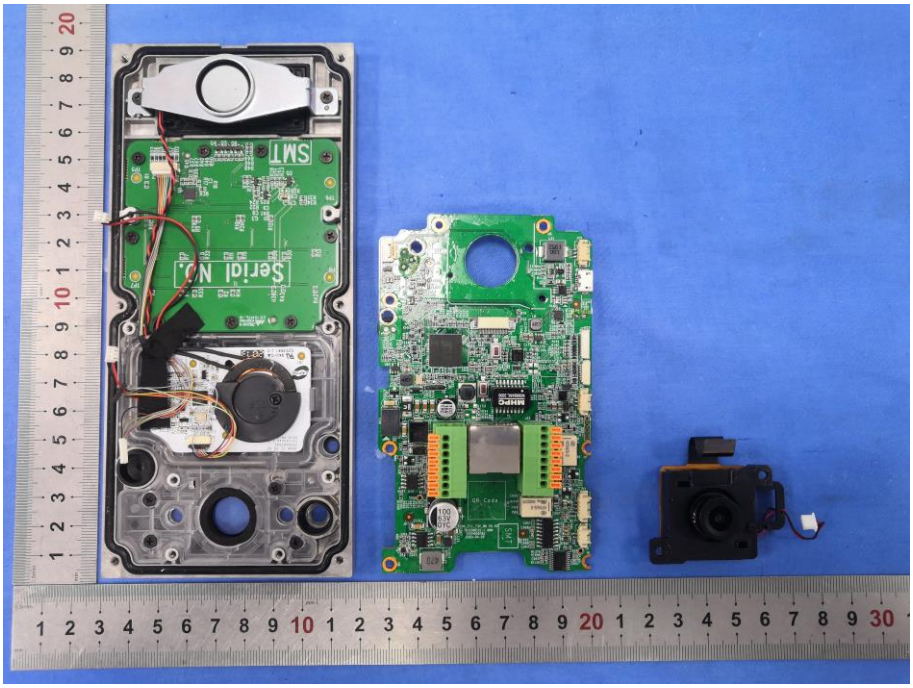
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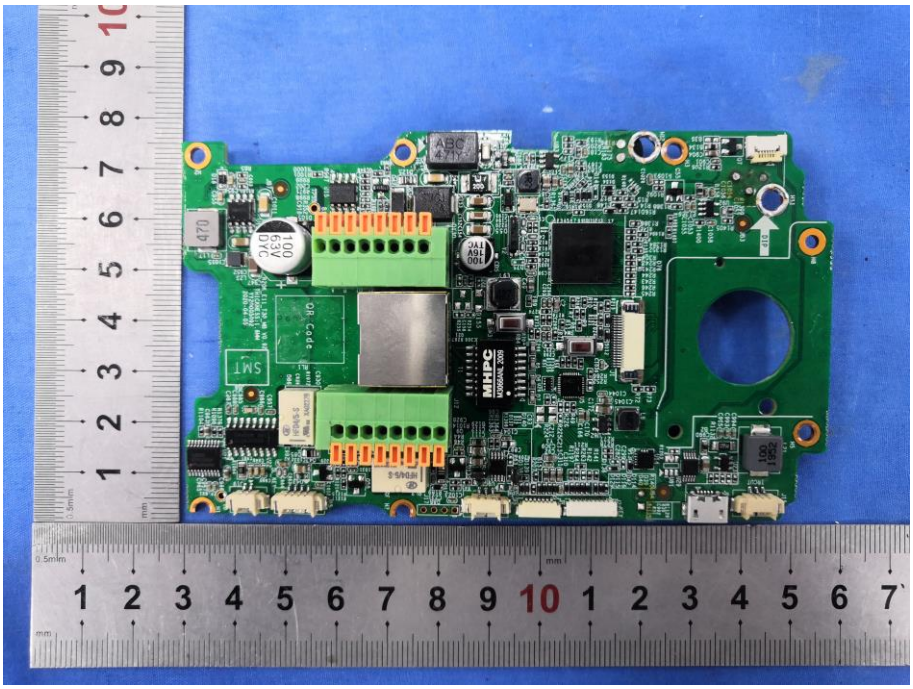

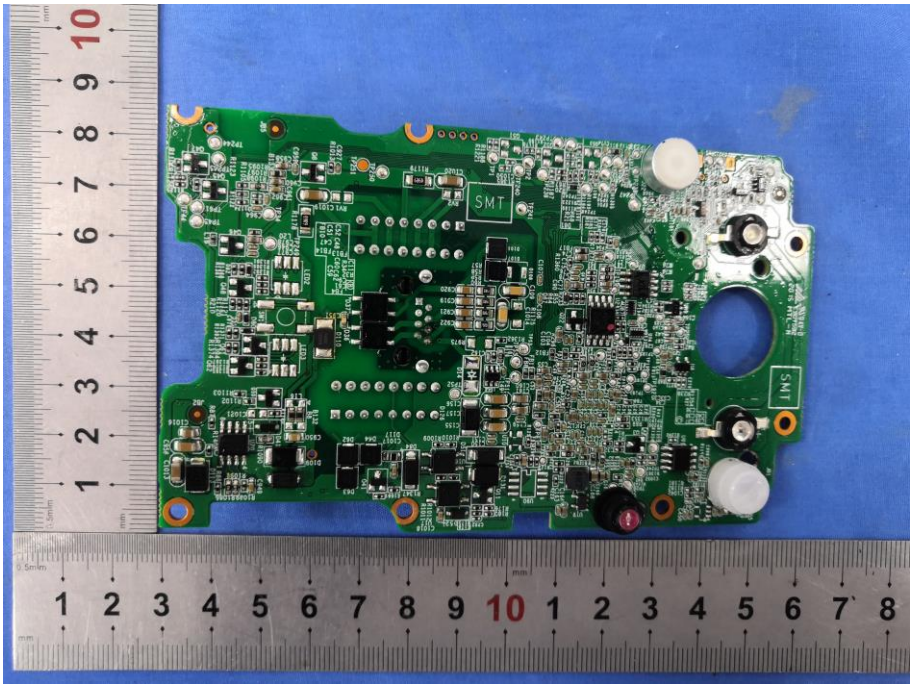

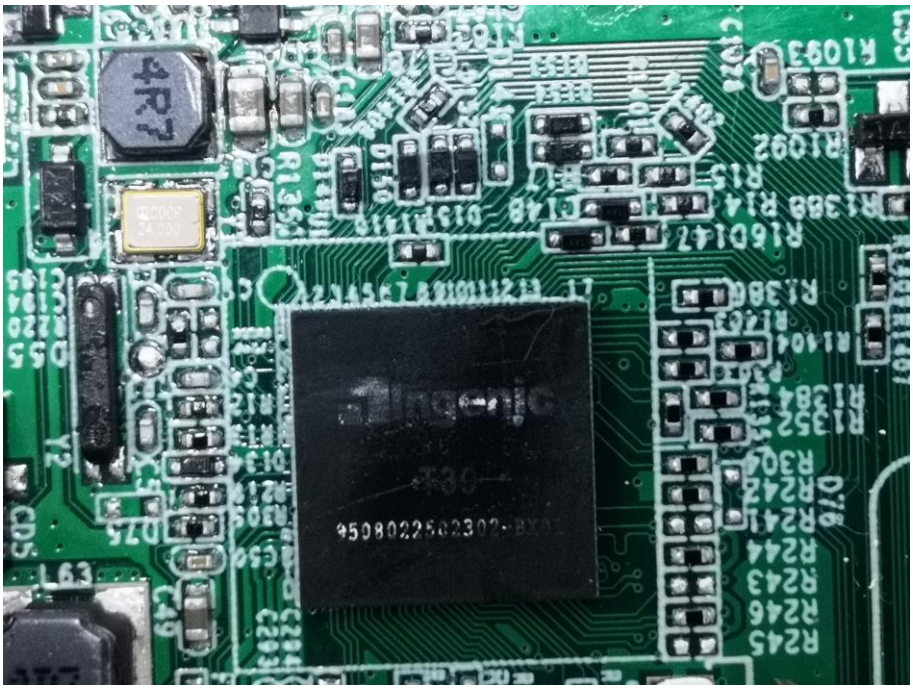

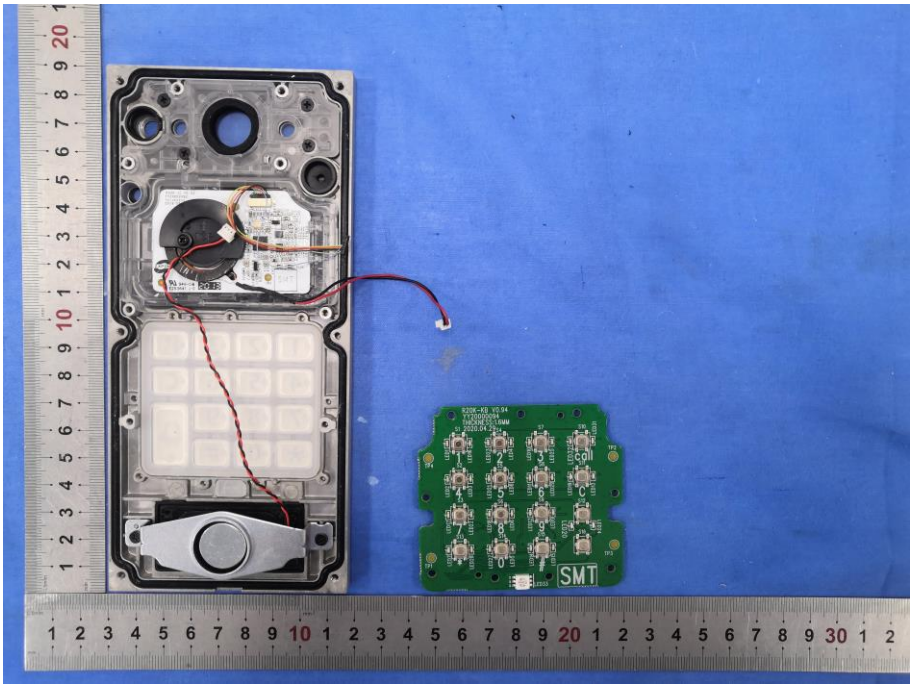
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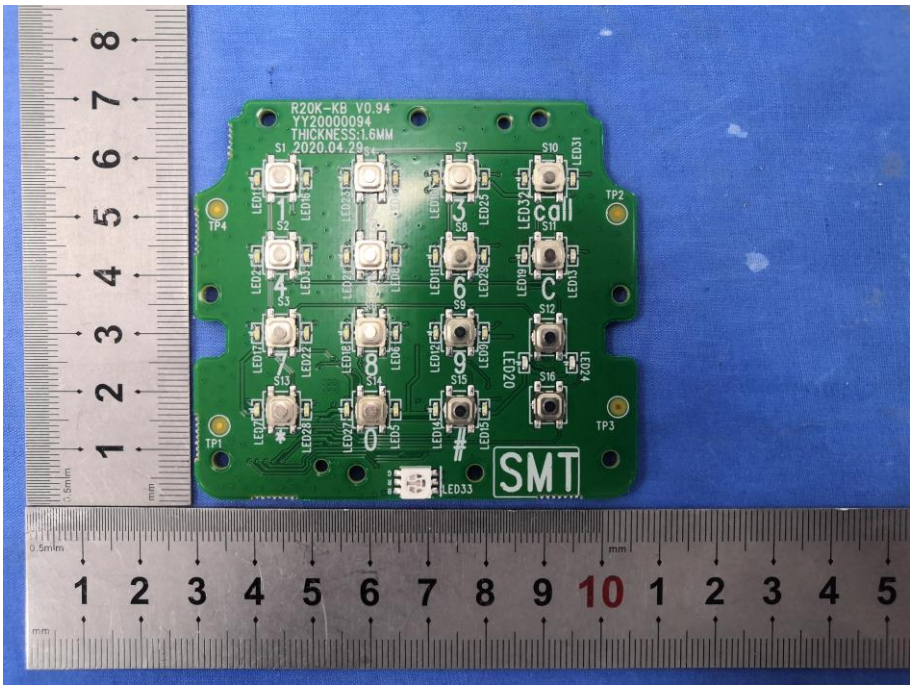
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THICKNESS:1.6MM
2020.04.29
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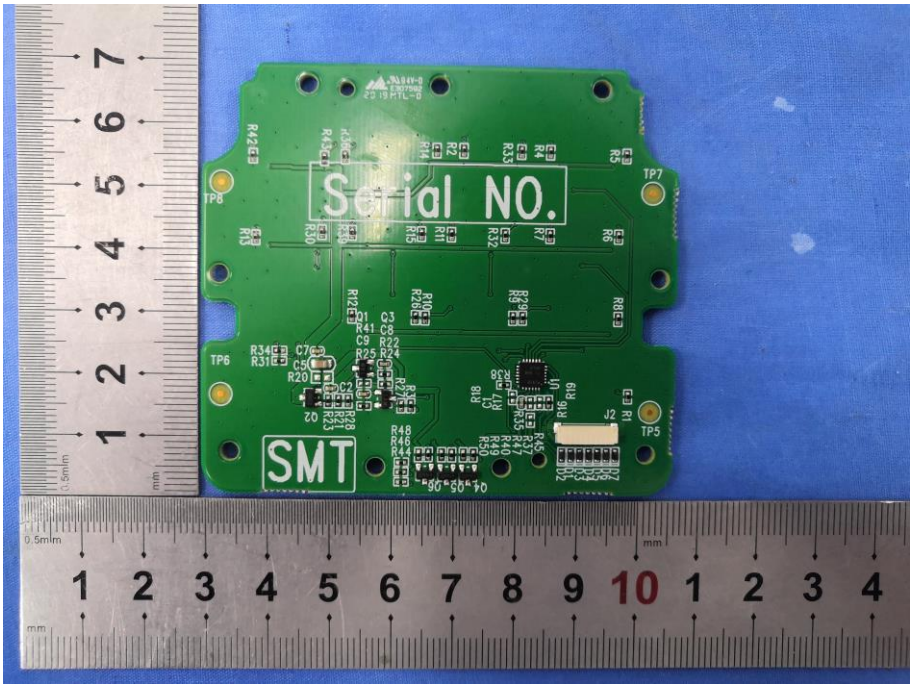
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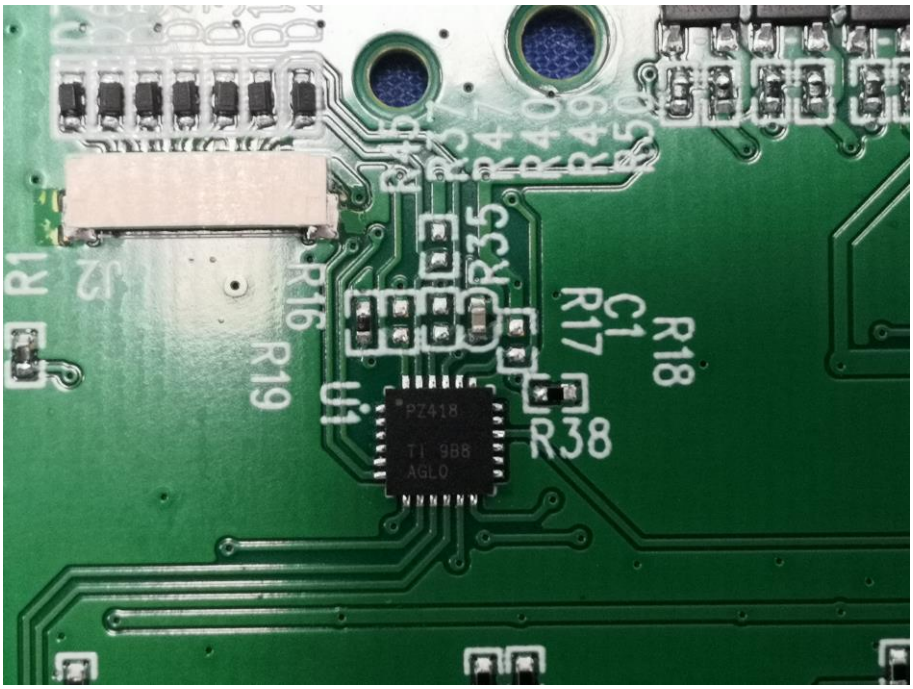
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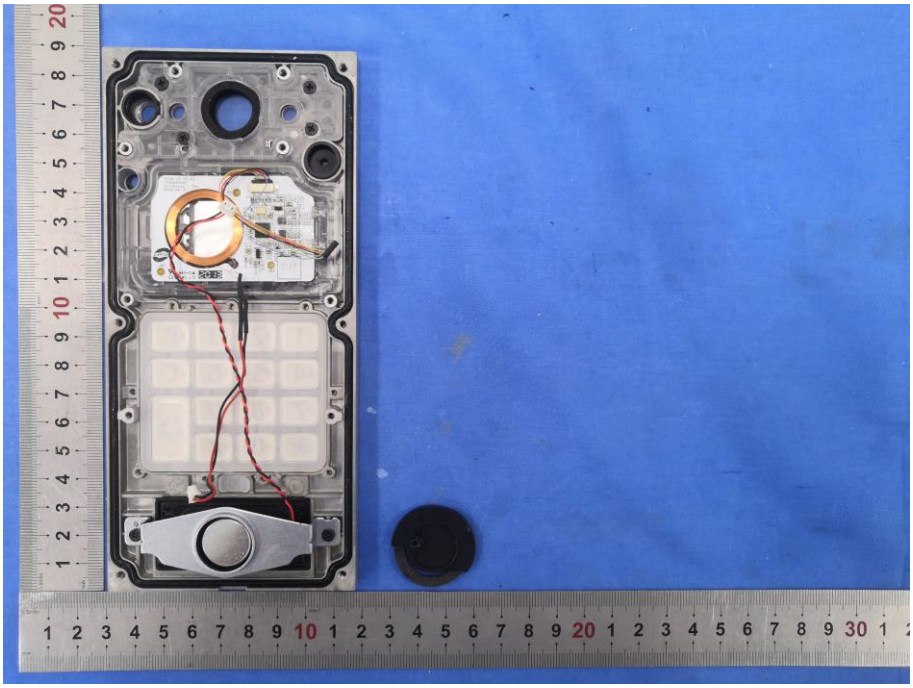
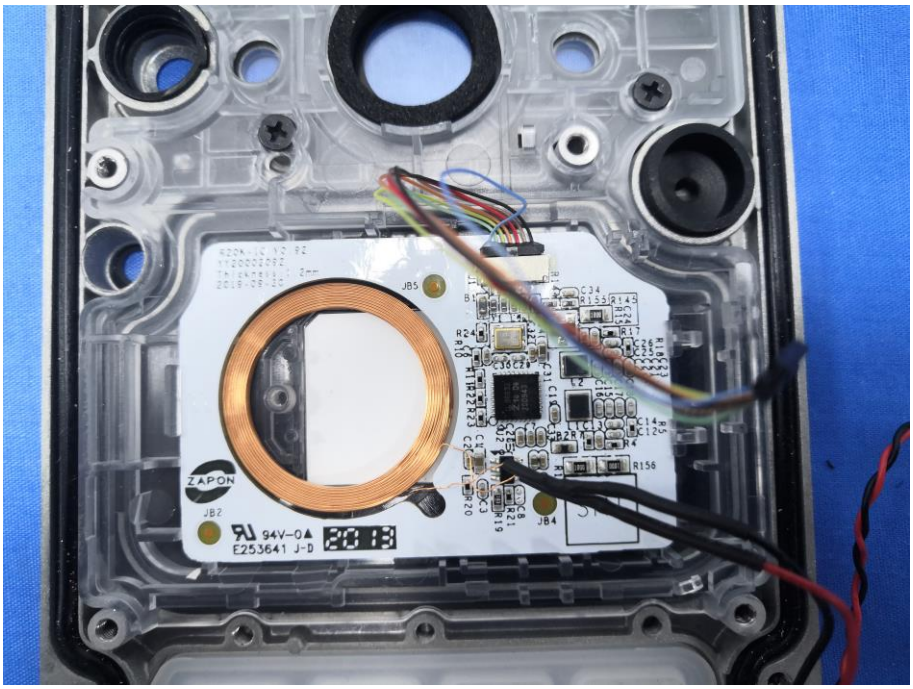
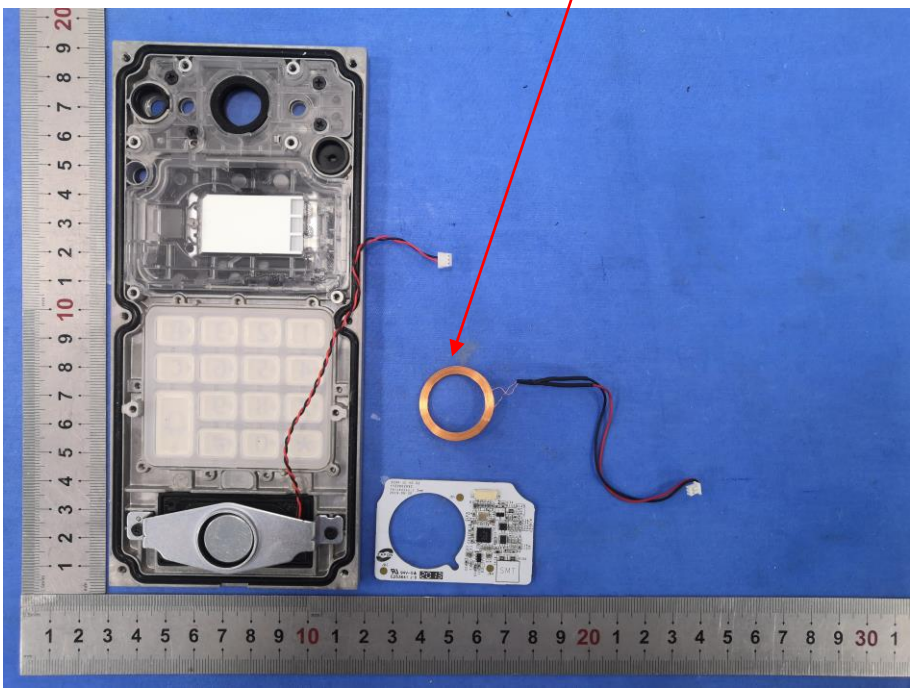
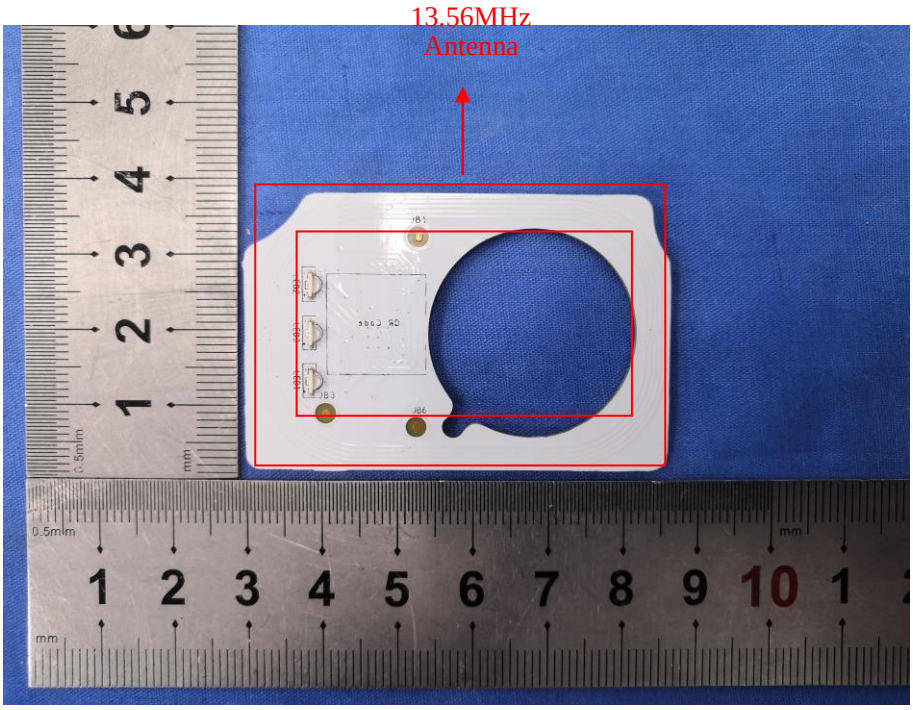




EUT – (125kHz) Antenna Top View

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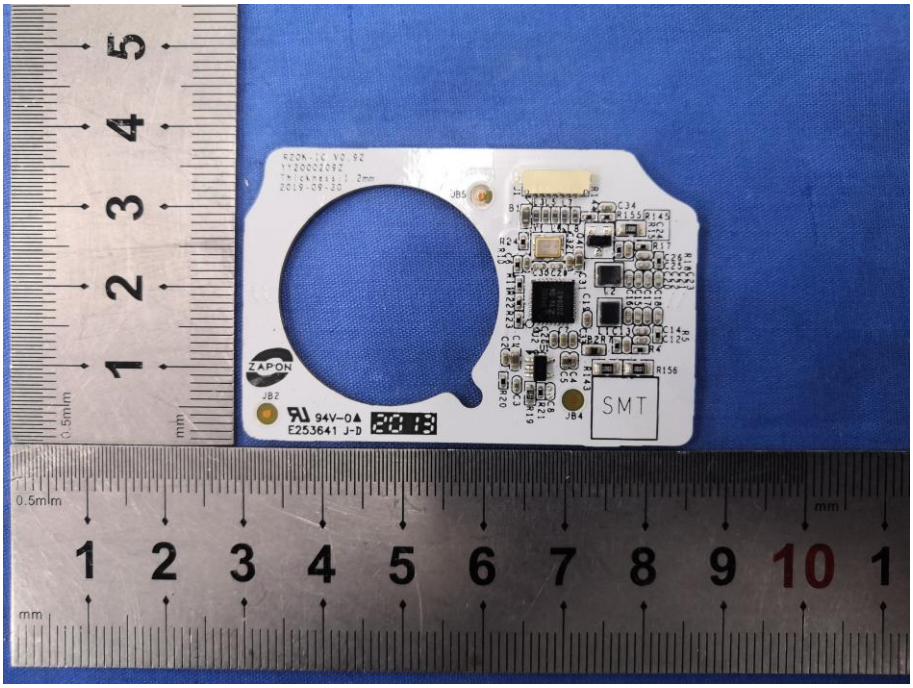
Antenna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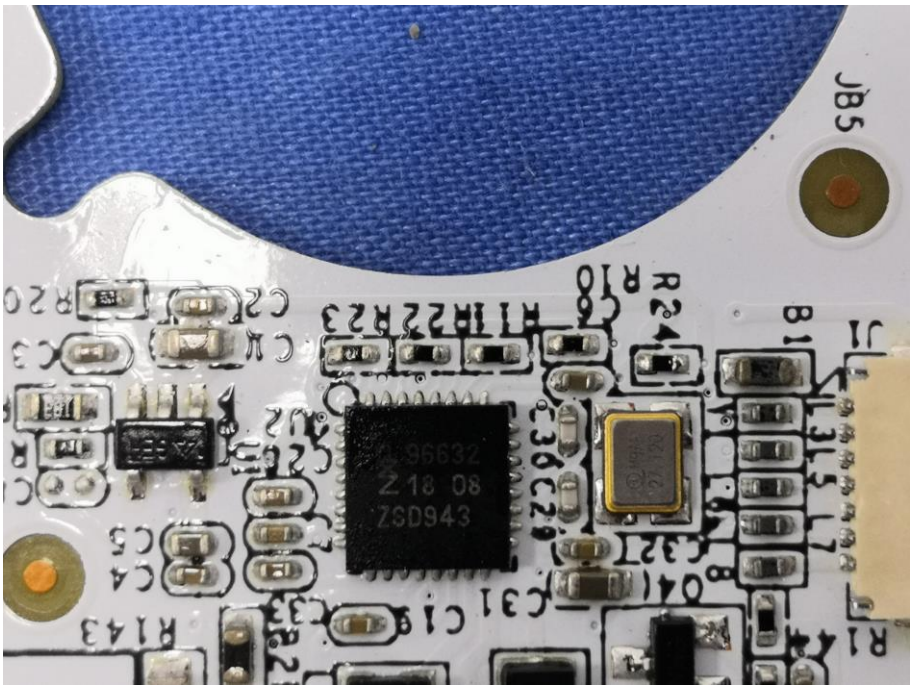
SMT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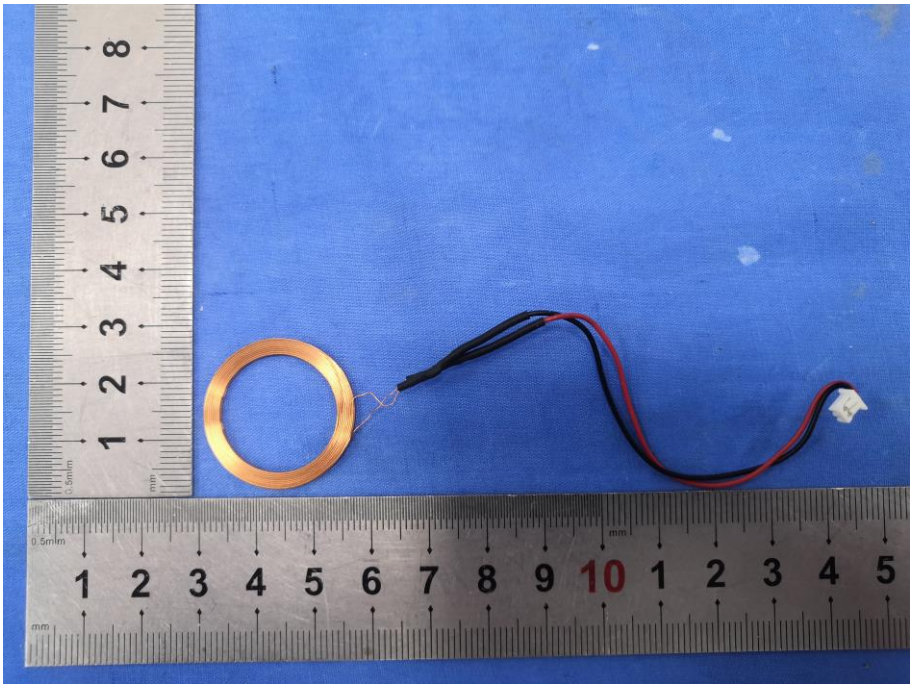
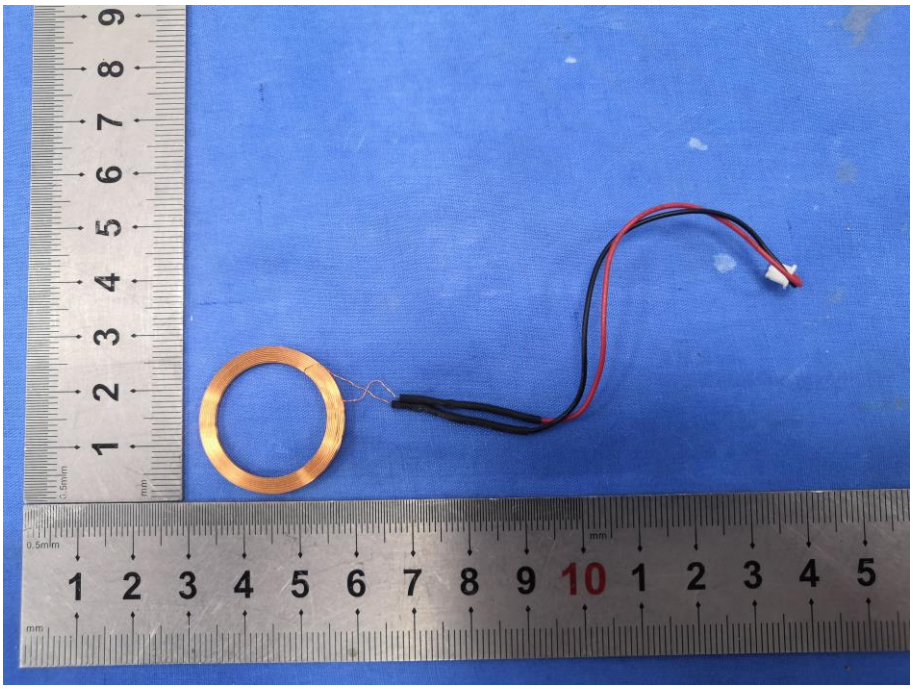
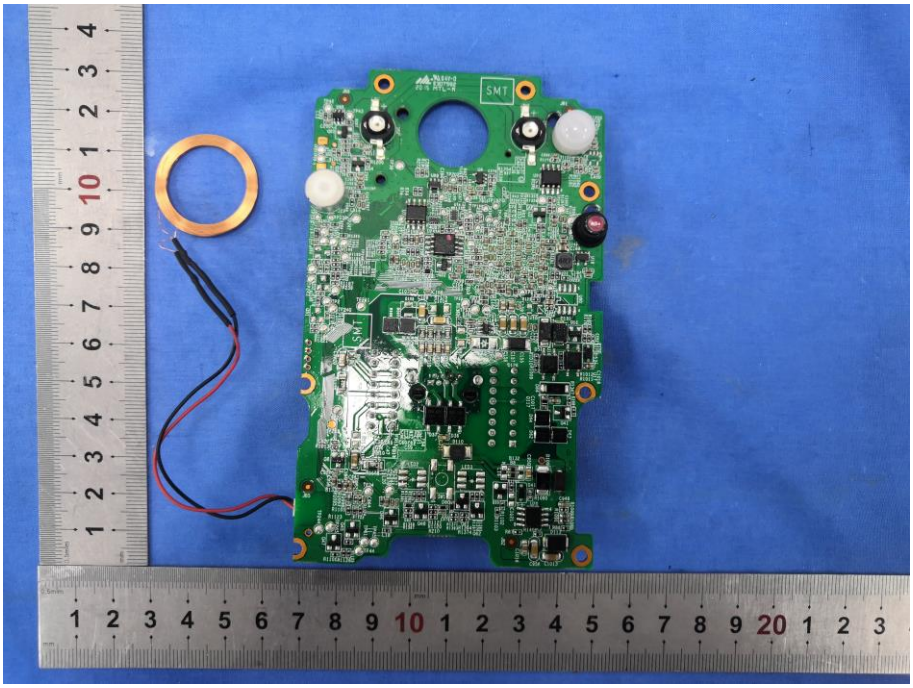






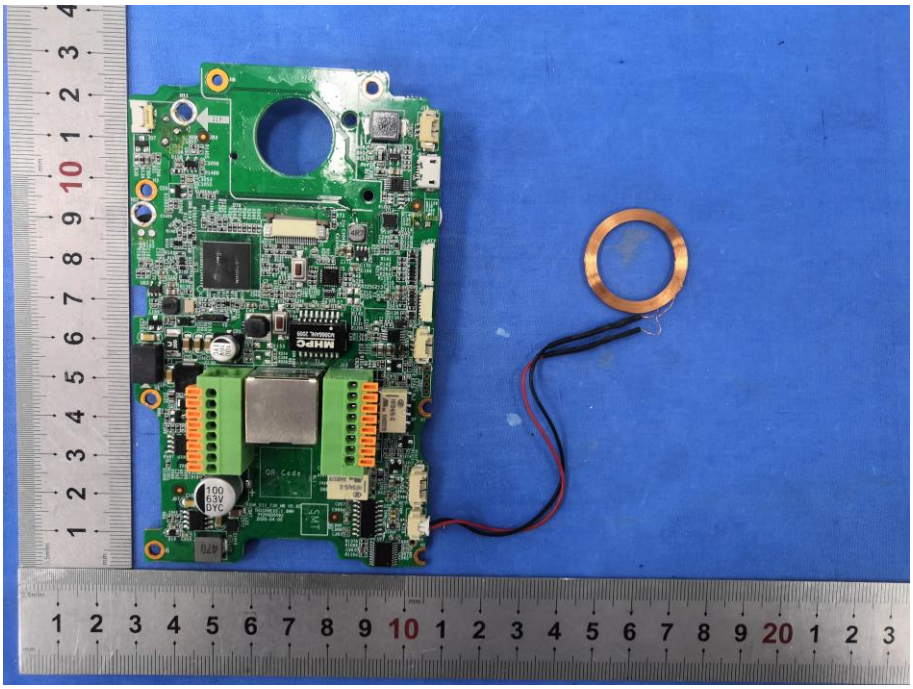
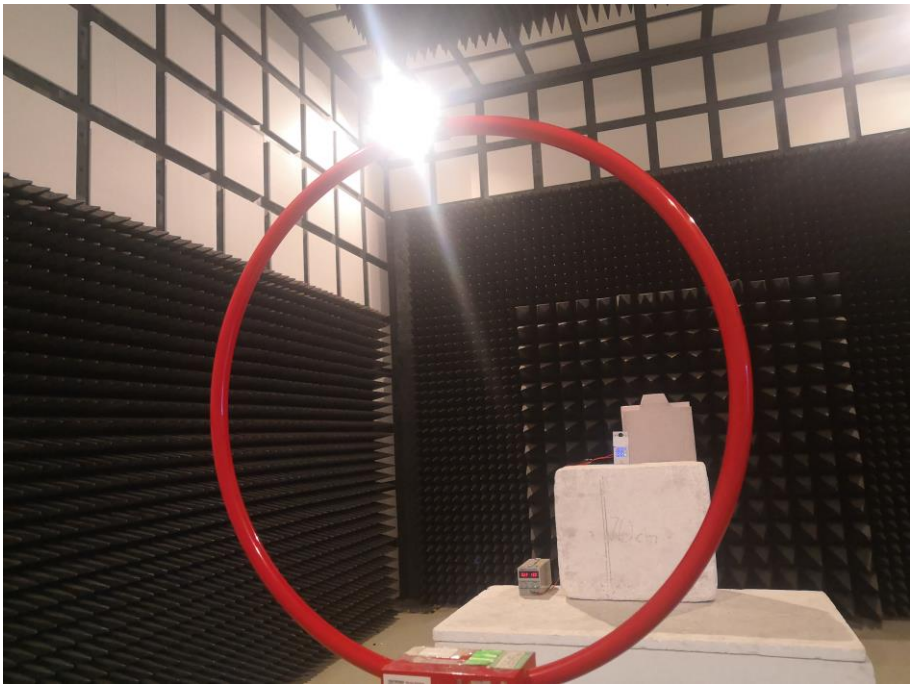
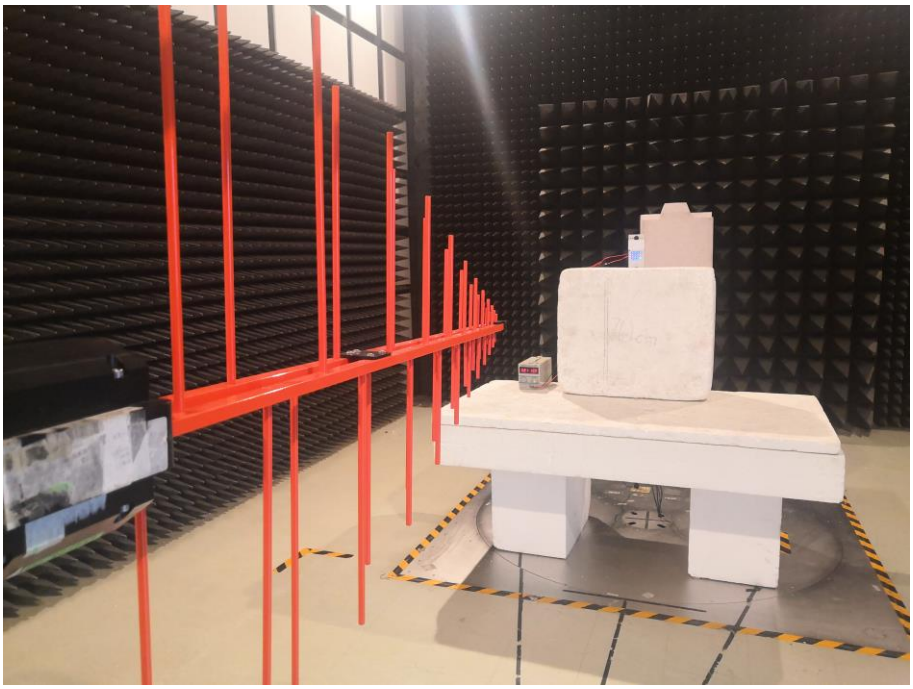


EXHIBIT B - TEST SETUP PHOTOGRAPHS

Radiated Spurious Emissions Test View (Below 30MHz)



Radiated Spurious Emissions Test View (Above 30MHz)



Declarations

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

5: This report cannot be reproduced except in full, without prior written approval of the Company.

6: This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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