

# TEST REPORT

Applicant/ Manufacture : Advanced Card Systems Ltd.  
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Report Number : SZ1221201-58353E-RF-22

## Test Standard (s)

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

## Sample Description

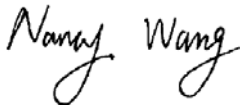
Product Type: Contactless Smart Card Reader  
Model No.: ACR1581U  
Multiple Model(s) No.: N/A  
Trade Mark: N/A  
Date Received: 2022/12/01  
Report Date: 2023/01/13

Test Result:	Pass*
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\* In the configuration tested, the EUT complied with the standards above.

## Prepared and Checked By:

## Approved By:



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RF Engineer

Jacob Kong  
RF Supervisor

Note: 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.

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Frequency Range	13.56MHz
Maximum H-Field Strength	2.36dBuA/m @ 3m
Modulation	ASK
Voltage Range	DC5V from USB Port
Sample serial number	1T71-1 (Assigned by BACL, Shenzhen)
Normal/Extreme Condition	L.V.: Low Voltage: 207V <sub>DC</sub> ; L.T.: Low Temperature 0°C N.V.: Normal Voltage: 230V <sub>DC</sub> ; N.T.: Normal Temperature +25°C H.V.: High Voltage: 253V <sub>DC</sub> ; H.T.: High Temperature +60°C Note: It is provided by the manufacturer
Sample/EUT Status	Good condition

### Objective

This report is 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; Harmonised 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).

### Measurement Uncertainty

Parameter	Flab
Radio Frequency	$\pm 1 \times 10^{-7}$
RF power, conducted	$\pm 1$ dB
RF power, radiated	$\pm 6$ dB
Temperature	$\pm 1$ °C
Humidity	$\pm 1$ %

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

### Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West), 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

Each test item follows test standards and with no deviation.

## SYSTEM TEST CONFIGURATION

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### Justification

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

### EUT Exercise Software

No software used in test.

### Equipment Modifications

No modifications were made to the EUT tested

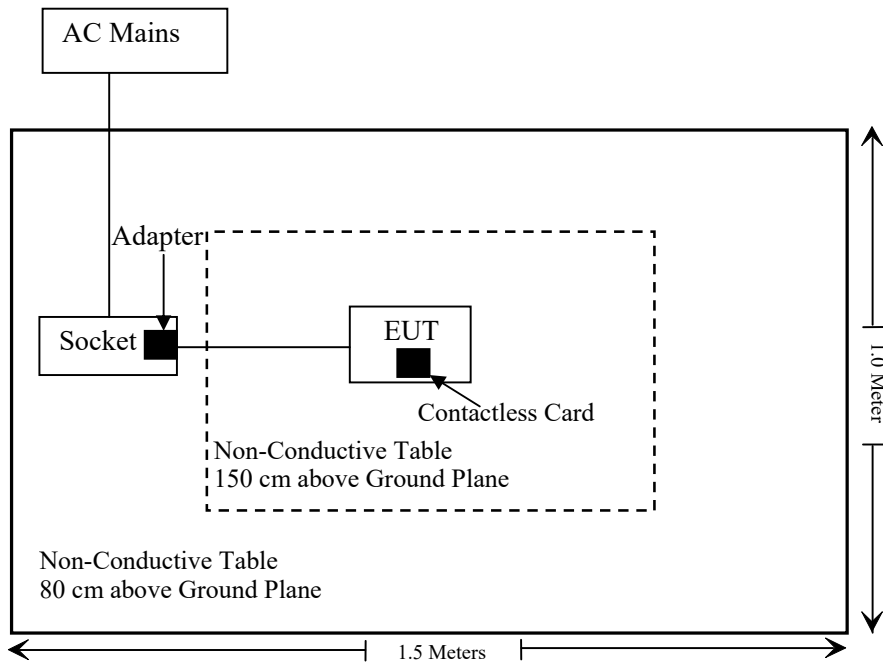
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Unknown	Contactless Card	Unknown	Unknown
Dongguan Boxin Electronic Technology Co., Ltd	Adapter	T4-0520CD	Unknown

### External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Un-Detachable USB cable	1.0	Adapter	EUT

**Block Diagram of Test Setup**



## SUMMARY OF TEST RESULTS

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

EN 300 330 V2.1.1 Rules	Description of Test	Result
§4.3.1	Permitted range of operating frequencies	Compliant
§4.3.2	Operating frequency ranges	Compliant
§4.3.3	Modulation bandwidth	Compliant
§4.3.4	Transmitter H-field requirements	Compliant
§4.3.5	Transmitter RF carrier current	Not Applicable
§4.3.6	Transmitter radiated E-field	Not Applicable*
§4.3.7	Transmitter conducted spurious emissions	Not Applicable
§4.3.8	Transmitter radiated spurious domain emission limits < 30 MHz	Compliant
§4.3.9	Transmitter radiated spurious domain emission limits > 30 MHz	Compliant
§4.3.10	Transmitter Frequency stability	Not Applicable**
§4.4.2	Receiver spurious emissions	Not Applicable****
§4.4.3	Adjacent channel selectivity	Not Applicable**
§4.4.4	Receiver blocking or desensitization	Not Applicable***

Note: This equipment is as product Class 1.

Not Applicable: Only for equipment under class 3.

Not Applicable\*: Only for equipment under class 4.

Not Applicable\*\*: Only for channelized systems.

Not Applicable\*\*\*: Not for tagging systems.

Not Applicable\*\*\*\*: Does only apply to receivers which a not co-located with transmitters

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102455	2022/07/28	2023/07/27
Sonoma instrument	Pre-amplifier	310 N	186238	2022/08/19	2023/08/18
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
ETS	Passive Loop Antenna	6512	29604	2022/07/14	2023/07/13
Unknown	Cable	Chamber Cable 1	F-03-EM236	2022/08/02	2023/08/01
Unknown	Cable	Chamber Cable 4	EC-007	2022/08/02	2023/08/01
Agilent	Signal Generator	N5183A	MY51040755	2022/09/30	2023/09/29
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
BACL	Temperature & Humidity Chamber	BTH-150-40	30145	2022/02/10	2023/02/09
Fluke	Digital Multimeter	287	19000011	2022/02/21	2023/02/20

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

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## **ETSI EN 300 330 V2.1.1 (2017-02) §4.3.1 - PERMITTED RANGE OF OPERATING FREQUENCIES**

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### **Applicable Standard**

According to ETSI EN 300 330 V2.1.1 (2017-02) §4.3.1, the permitted range of operating frequencies is the frequency range over which the equipment is authorized to operate.

The permitted range of operating frequencies for intentional emissions shall be entirely within the frequency bands in table 1.

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

**Test result: Pass.** The manufacturer declared the operating frequency is 13.56MHz.

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

### Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) §4.3.2, 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.

### Measurement of measurement

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

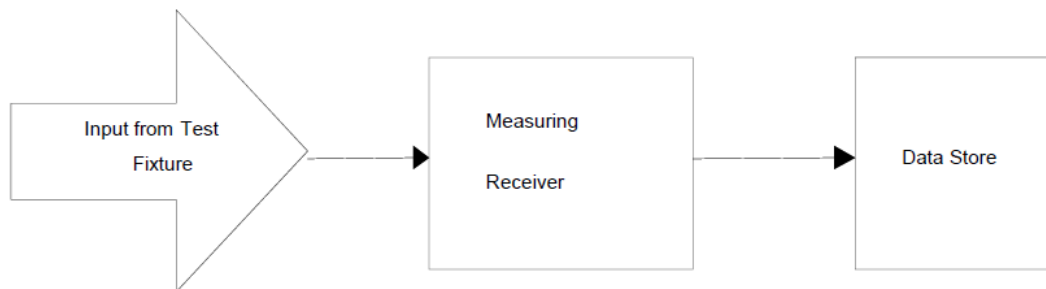


Figure 1: Test set-up for measurement of the operating frequencies

OFR measurement with spectrum analyser:

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:	$\geq$ Resolution Bandwidth.
Detector mode:	RMS.
Display mode:	Maxhold.

The 99 % OBW function shall be used to determine the operating frequency range:

$f_H$  is determined.  $f_H$  is the frequency of the upper marker resulting from the OFR.

$f_L$  is determined.  $f_L$  is the frequency of the lower marker resulting from the OFR.

$f_c$  is the centre frequency.  $f_c = (f_H + f_L)/2$ .

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Anson Su on 2023-01-10.*

*Test Mode: Transmitting*

Voltage Supply	Temperature	f <sub>L</sub> (MHz)	f <sub>H</sub> (MHz)	(f <sub>H</sub> +f <sub>L</sub> )/2 (MHz)	Limit (MHz)
LV	LT	13.5620	13.5635	13.5627	Within 13.553 to 13.567
	NT	13.5604	13.5624	13.5614	
	HT	13.5622	13.5648	13.5635	
NV	LT	13.5606	13.5620	13.5613	
	NT	13.5587	13.5608	13.5598	
	HT	13.5622	13.5642	13.5632	
HV	LT	13.5609	13.5622	13.5615	
	NT	13.5634	13.5655	13.5644	
	HT	13.5603	13.5626	13.5614	

**Test result: Pass**

## **ETSI EN 300 330 V2.1.1 (2017-02) §4.3.3 - MODULATION BANDWIDTH**

### **Applicable Standard**

According to ETSI EN 300 330 V2.1.1 (2017-02) §4.3.3, the modulation bandwidth contains all associated side bands above the following level:

- a) For carrier frequencies below 135 kHz:
  - 23 dB below the carrier, for RFID within the transmitter emission boundary of figure I.1, and for RFID and EAS systems within the transmitter mask of figures I.2, I.3 and I.4, see CISPR 16-1-4 [2] or the appropriate spurious limit as defined in clauses 4.3.7, 4.3.8, 4.3.9.
- b) For carrier frequencies in the range 135 kHz to 30 MHz:
  - 15 dB below the carrier or the appropriate spurious limit as defined in clauses 4.3.7, 4.3.8, 4.3.9.

The modulation bandwidth shall be within the assigned frequency band see table 1 or  $\pm 7,5\%$  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 analyser via a  $50\ \Omega$  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 analyser 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 analyser 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 analyser'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.

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Anson Su on 2023-01-10.

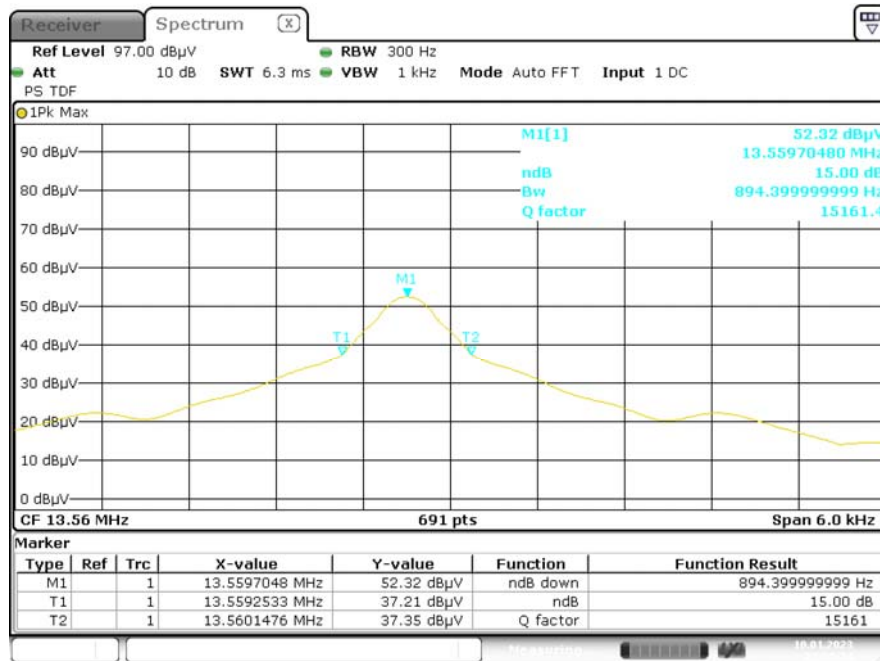
Test Mode: Transmitting

Frequency (MHz)	Test Condition					Result
	Normal	L.V. L.T.	L.V. H.T.	H.V L.T	H.V. H.T	
13.56	Normal	L.V. L.T.	L.V. H.T.	H.V L.T	H.V. H.T	Pass

Voltage Supply	Temperature	f <sub>L</sub> at Low Channel (MHz)	f <sub>H</sub> at High Channel (MHz)	Limit (MHz)
N.V.	N.T.	13.5592533	13.5601476	Within 13.553 to 13.567

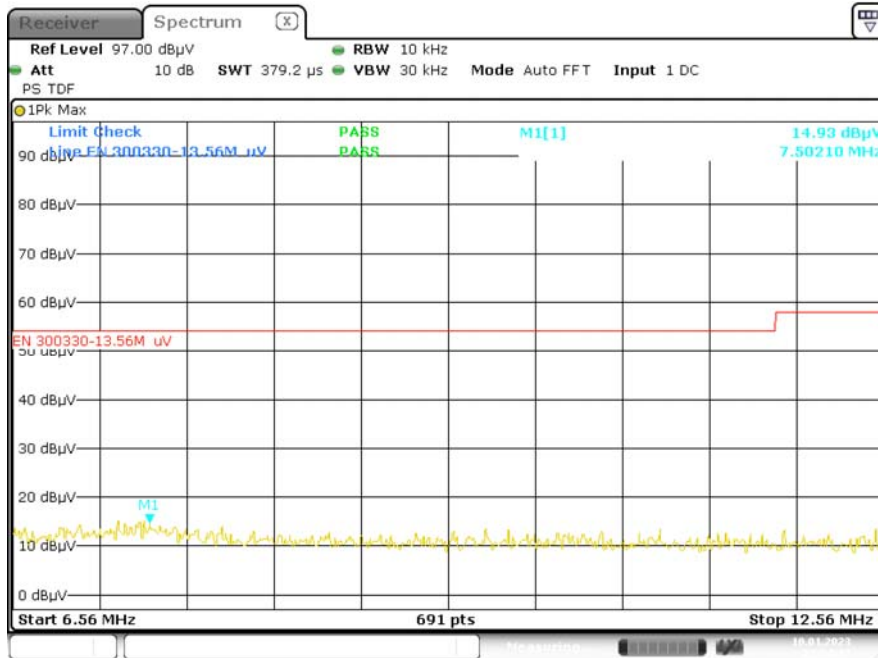
Please refer to following plot for normal condition:

15 dB Modulation Bandwidth

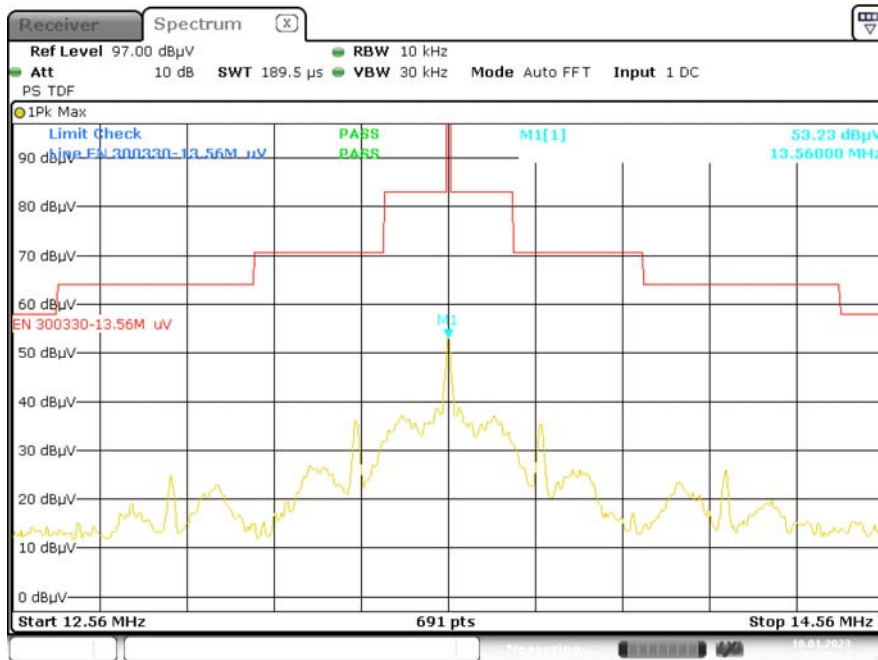


Date: 10.JAN.2023 22:39:24

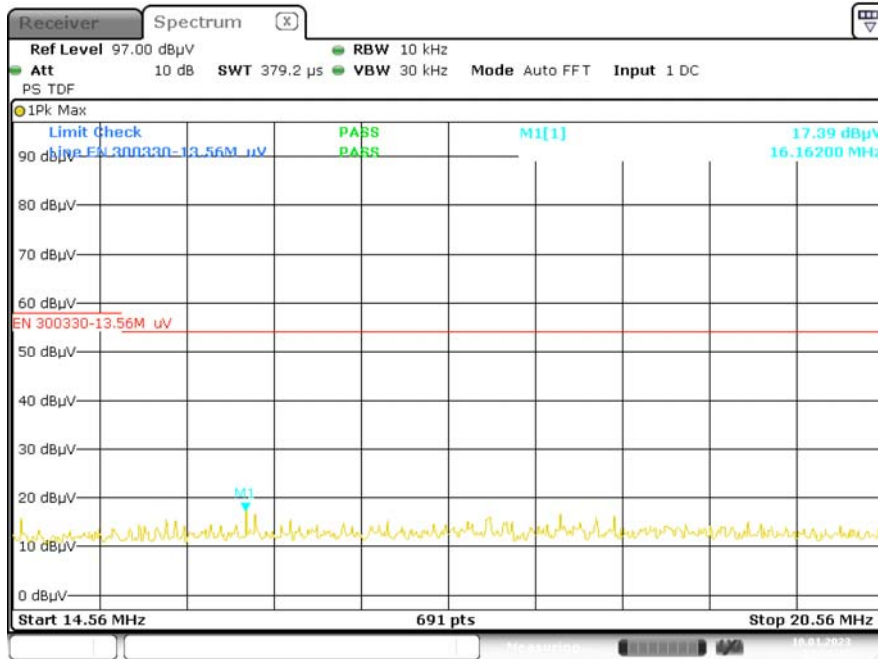
### Emission Mask



Date: 10.JAN.2023 22:34:37



Date: 10.JAN.2023 22:33:15



Date: 10.JAN.2023 22:36:19

**Note:**

1. According to ETSI EN 300 330 Figure I.3, the spectrum mask limits as below:

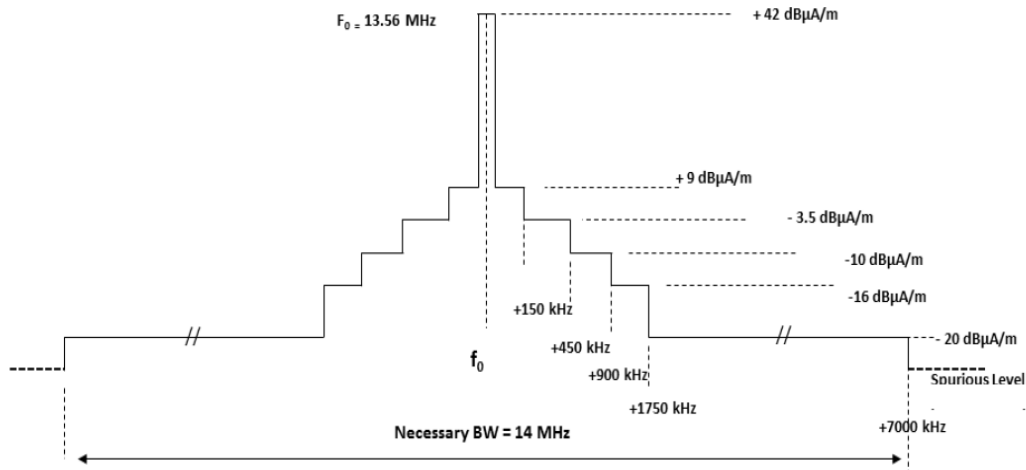


Figure I.3: Spectrum mask limit for wideband RFIDs (incl. NFC application) in the 13,56 MHz range

2. According to ETSI EN 300 330, for measuring equipment calibrated in dBµV/m, the limit should be increased by 51.5 dB to be converted to dBµA/m.
3. 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,  $H_{3m} = H_{10m} + C_3$ ;

**Test result: Pass**

## ETSI EN 300 330 V2.1.1 (2017-02) §4.3.4 - TRANSMITTER RADIATED H-FIELD

### Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) §4.3.4, 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 <sub>f</sub> ) 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 <sub>f</sub> ) 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 <sup>2</sup> this table and table B.1 with the antenna limitations apply; - for loop coil antennas with an area between 0,05 m <sup>2</sup> and 0,16 m <sup>2</sup> table B.1 applies with a correction factor. The limit is: table value + 10 × log (area/0,16 m <sup>2</sup> ); - for loop coil antennas with an area < 0,05 m <sup>2</sup> 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.

**Methods of measurement**

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 51,5dB to be converted to dBµA/m.

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Anson Su on 2023-01-10.*

*Test Mode: Transmitting*

Frequency (MHz)	Test Condition				Result	
	Normal	L.V. L.T.	L.V. H.T.	H.V L.T		H.V. H.T
13.56	Normal	L.V. L.T.	L.V. H.T.	H.V L.T	H.V. H.T	Pass

Indicated			Detector	Antenna Factor (dB/m)	Cable Loss (dB)	Amplifier (dB)	Corrected Amplitude (dBµV/m) @3m	Corrected Amplitude (dBµA/m) @3m	EN 300 330		Result
Freq. (kHz)	Voltage	Maximum Reading (dBµV) @3m							Limit		
									(dBµA/m) @10m	(dBµA/m) @3m	
13.56	N.V.	52.46	QP	32.2	0.2	31	53.86	2.36	42	64.5	Pass

**Note:**

1. According to ETSI EN 300 330, for measuring equipment calibrated in dBµV/m, the reading should be reduced by 51.5dB to be converted to dBµA/m.
2. 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,  $H3\ m = H10\ m + C3$ ;
3. Correction Factor = Ant. Factor + Cable Loss - Pre-Amp. Gain

**Test result: Pass**

## ETSI EN 300 330 V2.1.1 (2017-02) §4.3.8 & §4.3.9 - TRANSMITTER RADIATED SPURIOUS DOMAIN EMISSION LIMITS

### Applicable Standard

According to ETSI EN 300 330 V2.1.1 (2017-02) §4.3.8 & §4.3.9, spurious domain emission limits are limits on emissions at frequencies other than those of the carrier and sidebands associated (clauses 4.3.2 and 4.3.3) with normal test modulation (clause 5.8).

The radiated field strength of the spurious domain emissions below 30 MHz shall not exceed the generated H-field dB $\mu$ A/m at 10 m given in table 5.

Table 5

State	Frequency 9 kHz $\leq$ f < 10 MHz	Frequency 10 MHz $\leq$ f < 30 MHz
Operating	27 dB $\mu$ A/m at 9 kHz descending 3 dB/oct	-3,5 dB $\mu$ A/m
Standby	5,5 dB $\mu$ A/m at 9 kHz descending 3 dB/oct	-25 dB $\mu$ A/m

Above 30MHz, 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 (<30 MHz)

The field strength shall be measured for frequencies below 30MHz. 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 30MHz, 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 dB $\mu$ V/m, the reading should be reduced by 51,5dB to be converted to dB $\mu$ A/m.

**Methods of measurement ( $\geq 30$  MHz)**

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.

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 1000MHz.

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  $360^\circ$  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**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Anson Su on 2023-01-10.

Test mode: Transmitting

Below 30 MHz:

Indicated		Table Angle Degree	Antenna Height (m)	Detector	Correction Factor			Corrected Amplitude (dBµV/m) @3m	Corrected Amplitude (dBµA/m) @3m	EN 300 330		Result	
Freq. (MHz)	Maximum Reading (dBµV) @3m				Ant. Factor (dB)	Cable Loss (dB)	Pre-Amp. Gain (dB)			Limit			
											(dBµA/m) @10m	(dBµA/m) @3m	
Transmitting													
0.165	9.42	182	1.1	QP	62.6	0.2	31	41.22	-10.28	14.41	45.73	Pass	
21.63	32.82	301	1.1	QP	31.7	1.1	31	34.62	-16.88	-3.5	12.30	Pass	
Standby													
0.158	7.91	225	1.1	QP	62.9	0.2	31	40.01	-11.49	-6.9	24.42	Pass	
21.26	30.29	48	1.1	QP	31.8	1.1	31	32.19	-19.31	-25	-8.90	Pass	

Above 30 MHz:

Frequency (MHz)	Receiver Reading (dBµV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN300 330	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Transmitting										
951.2	33.46	235	2	H	-63.0	1.36	0.0	-64.36	-36	28.36
951.2	33.79	117	2	V	-60.3	1.36	0.0	-61.66	-36	25.66
Standby										
954.3	33.85	45	1	H	-62.7	1.36	0.0	-64.06	-57	7.06
954.3	32.14	199	2	V	-61.9	1.36	0.0	-63.26	-57	6.26

**Note1:** According to ETSI EN 300 330, for measuring equipment calibrated in dBµV/m, the reading should be reduced by 51.5 dB to be converted to dBµA/m.

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

**Test result: Pass**

## **EXHIBIT A - EUT PHOTOGRAPHS**

Please refer to the file, the report number is SZ1221201-58353E-EUT.

## **EXHIBIT B - TEST SETUP PHOTOGRAPHS**

### **Radiated Spurious Emissions Test (Below 30MHz)**



### **Radiated Spurious Emissions Test (Above 30MHz)**



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