



Prüfbericht-Nr.: <i>Test Report No.:</i>	50213590 001	Auftrags-Nr.: <i>Order No.:</i>	114085340	Seite 1 von 33 <i>Page 1 of 33</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	459883	Auftragsdatum: <i>Order date.:</i>	28 Dec. 2018	
Auftraggeber: <i>Client:</i>	AAEON Technology Inc. 5F., No. 135, Lane 235, Pao Chiao Rd., TW-23415 Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C.			
Prüfgegenstand: <i>Test item:</i>	LoRa Long Range Node System, LoRa Long Range Node Board			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	xAIOT-ILND02x, xAIOT-ILND01x (x - Where x may be any combination of alphanumeric characters or "-" or blank for marketing purpose.)			
Auftrags-Inhalt: <i>Order content:</i>	TUV Rheinland - EMC service			
Prüfgrundlage: <i>Test specification:</i>	EN 301 489-1 V1.9.2 EN 301 489-3 V1.6.1			
Wareneingangsdatum: <i>Date of receipt:</i>	25 Jan. 2019			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000862828-003			
Prüfzeitraum: <i>Testing period:</i>	Refer to test report			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland Taiwan Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Taiwan Ltd. Taichung Branch Office			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 08 Mar. 2019 Neil J. N. Tsai/ Senior Project Manager		 08 Mar. 2019 Spring C. Y. Wang/ Department Manager		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
Sonstiges / Other:				
Class A device. Primary Function Type I: Transfer of messages (digital or analogue signals)				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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1 Test Site

Laboratory:

TUV Rheinland Taiwan Ltd. Taichung Branch Office
No.9, Lane 36, Minsheng Rd., Sec. 3, Daya District, Taichung City 428, Taiwan, R.O.C.

Test Facility:

TÜV Rheinland Taiwan Ltd.

1. 11F., No.758, Sec. 4, Bade Rd., Songshan Dist., Taipei City 105, Taiwan, R.O.C.
2. 0034-0001, Sec. 2, Balian Rd., Xizhi Dist., New Taipei City 221, Taiwan, R.O.C. (10m Open Area Test Site)

The test facility is accredited by TAF (member of ILAC), under number 0759 according to ISO/IEC 17025:2005.

1.1 Measurement Uncertainty

Testing Item	Frequency Range	Uncertainty
Radiated Emission (966 Chamber: 3m)	30MHz - 1000MHz	2.82 dB
Radiated Emission (966 Chamber: 3m)	Above 1GHz	2.42 dB
Radiated Emission (10m OATS: 10m)	30MHz - 1000MHz	2.82 dB

Note:

The uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

2 Description of the Test Sample

2.1 General Description of Equipment

The tested samples are "LoRa Long Range Node System" and "LoRa Long Range Node Board" with model number "xAIOT-ILND02x" and "xAIOT-ILND01x" for new approval, which are LoRa Long Range Radio Node System.

Due to all model electrical constructions are similar, except for "xAIOT-ILND01x" is a board which build-in on system, one representative model with number "xAIOT-ILND02x" was tested only.

(x - Where x may be any combination of alphanumeric characters or "-" or blank for marketing purpose.)

2.2 Rating and Physical Characteristics

Type Designation:	xAIOT-ILND02x
Rating:	3.7Vdc battery or 5Vdc via USB port
Protection Class:	III
Wireless Frequency:	863 - 870 MHz (LoRa function)

2.3 Sources of Interference

- 1) IC circuits

2.4 Noise Suppression Parts

Please refer to attachment documentation for details.

2.5 Submitted Documents

- 1) Product Specification

3 Measurement Conditions

3.1 Modes of Operation

The EUT was linked to Gateway via RoLa function, and the EUT was transmit signal to Gateway continued, then the Gateway used "The Things Network" web page to monitor the status.

The final mode:

- A. LoRa link by battery
- B. LoRa link by USB port

3.2 Additional Equipment

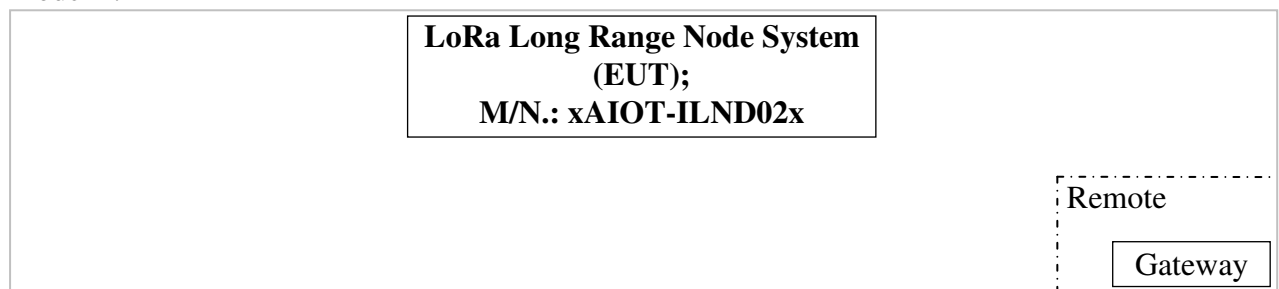
The subject sample was tested as an independent unit with the following equipment:

Description	Manufacturer	Model No.	Serial No.
Gateway	AAEON	UP-CHT01-A20-0464	N/A
USB Power Adapter	Apple	A1401	0012ADU00

3.3 Test Setup

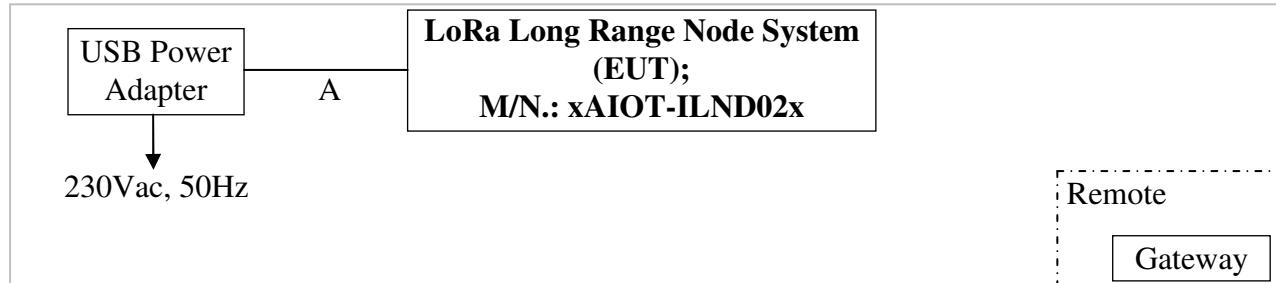
The test arrangement is configured and set according to manufacturer's installations.

Mode A:



Signal Cable Type	Signal Cable Description
A N/A	N/A

Mode B:



Signal Cable Type		Signal Cable Description
A	USB cable	Shielding, 1m

3.4 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment
For EMI/Radiated Measurement (Taipei: Semi-Anechoic Chamber B)

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR 7	101549	2018/11/12	2019/11/10
2	Spectrum Analyzer	Rohde & Schwarz	FSV-40	101112	2018/10/01	2019/10/01
3	Pre-Amplifier	Hewlett Packard	8447D	2944A09270	2018/08/31	2019/08/31
4	Pre-Amplifier	EM Electronics	EM01G18G	060649	2018/08/24	2019/08/24
5	Pre-Amplifier	EMC Instruments	EMC184045SE	980408	2018/06/08	2019/06/08
6	Bilog Antenna	TESEQ	CBL 6111D	29804	2018/07/02	2019/07/02
7	Horn Antenna	ETS-Lindgren	3117	00138160	2018/06/01	2019/06/01
8	Horn Antenna	Com-Power	AH-840	101029	2018/12/22	2019/12/22
9	Loop Antenna	Schwarzbeck	FMZB 1513	1513-076	2018/06/21	2019/06/21
10	Test Software	Audix	e3	Ver. 9	N/A	N/A

For EMI/Radiated Measurement (Taipei: 10m Open Area Test Site)

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESCI 3	101094	2018/11/07	2019/11/07
2	Pre-Amplifier	Hewlett Packard	8447D	2944A06641	2019/01/08	2020/01/08
3	Bilog Antenna	TESEQ	CBL6111D	29803	2018/08/01	2019/08/01
4	Test Software	Farad	EZ EMC	Ver. TUV3A1	N/A	N/A

For EMS/Electrostatic Discharge Test (Taipei: Shield Room)

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
1	ESD Simulator	TESEQ	NSG437	1259	2018/05/23	2019/05/23

For EMS/Radio-Frequency Electromagnetic Field Test (Taipei: Fully-Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
1	Signal Generator	Rohde & Schwarz	SMB-100A	104167	2018/08/23	2019/08/23
2	Power Amplifier (20-1GHz)	FRANKONIA	FLH-200B	1088	N.C.R.	N.C.R.
3	Power Amplifier (1-6GHz)	Bonn	BLMA1060-50D	108052	N.C.R.	N.C.R.
4	Broadband Antenna (30M-3GHz)	FRANKONIA	BTA-M	08009	N.C.R.	N.C.R.
5	Horn Antenna (0.7-10.5GHz)	FRANKONIA	MAX-9	MAX-9-801	N.C.R.	N.C.R.
6	Power Meter	FRANKONIA	PMS_1084	108B1251	2018/05/16	2019/05/16
7	2 Directional Coupler	AR	DC6180A	334572	N.C.R.	N.C.R.
8	Test Software	FRANKONIA	RF-LAB	Ver. 4.97	N/A	N/A

3.5 Abbreviations

PASS : Complied with requirement	N/A : Not applicable
FAIL : Not complied	N.C.R. : No calibration required

3.6 Decision rule of conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in this test report, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty.

4 Test Results EMISSION

Result:	PASS
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4.1 Continuous Interference

4.1.1 Conducted Emission (AC Mains)

Port:	AC Mains
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Frequency Range:	0.15 – 30 MHz
Limits:	EN 55022: 2006+ A1: 2007, Table 1, Class A

Result:	N/A
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The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

4.1.2 Conducted Emission (Telecommunication Ports)

Port:	Telecommunication Ports
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Frequency Range:	0.15 – 30 MHz
Limits:	EN 55022: 2006+ A1: 2007, Table 3, Class A

Result:	N/A
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The subject sample has not telecommunication port. Therefore, this test is not applicable.

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4.1.3 Radiated Emission, 30 - 1000 MHz

Port:	Enclosure
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Frequency Range:	30 - 1000 MHz
Limits:	EN 55022: 2006+ A1: 2007, Table 5, Class A (at 10m distance)

Result:	PASS
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Test Setup

Date of Test:	12 Feb. 2019 / 07 Mar. 2019
Input Voltage:	See 2.2
Operational Mode:	See 3.1
Temperature	22 °C / 12.3 °C
Relative Humidity	60 % / 82 %

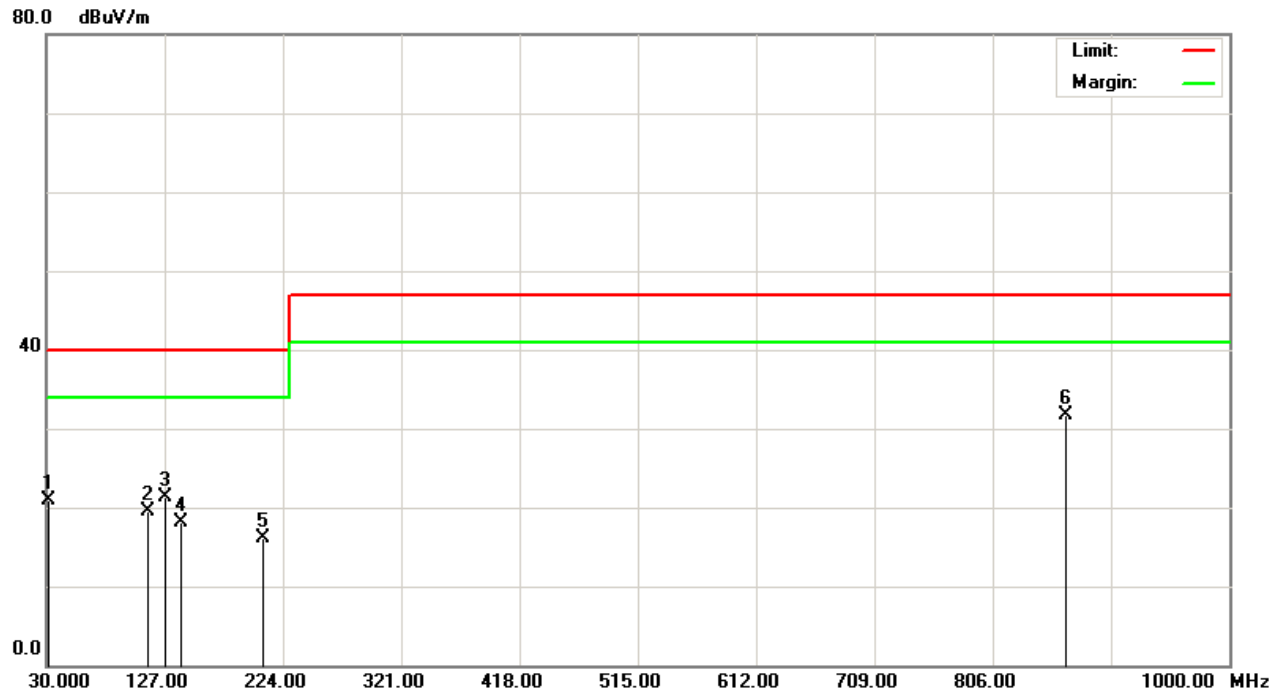
Table 2: Radiated Emission, 30 - 1000 MHz

Setting:

Frequency		Settings	
Start	Stop	IF Bandwidth	Detector
30 MHz	1000 MHz	120 kHz	QP

Note 1: Level = Reading(Read Level) + Factor
Margin(Over Limit) = Level – Limit(Limit Line)

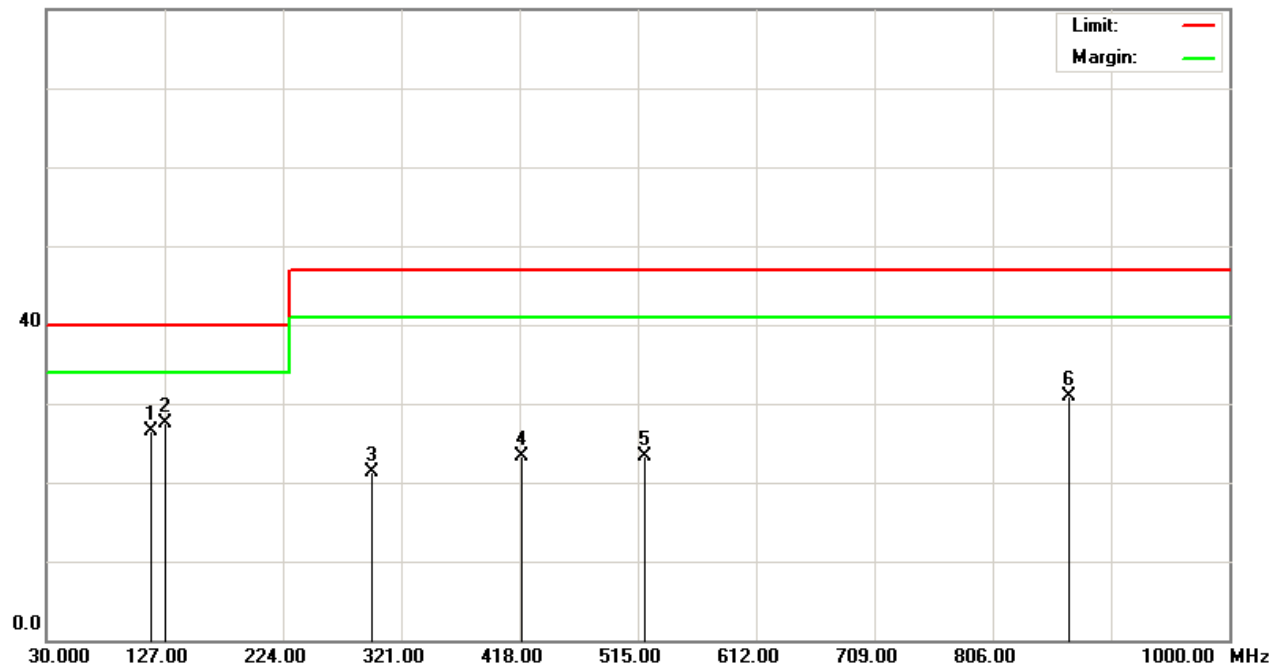
Note 2: Factor = Antenna factor + Cable loss + (- Amplifier gain)

Figure 1: Radiated Emission, 30 - 1000 MHz (Mode A)
Horizontal


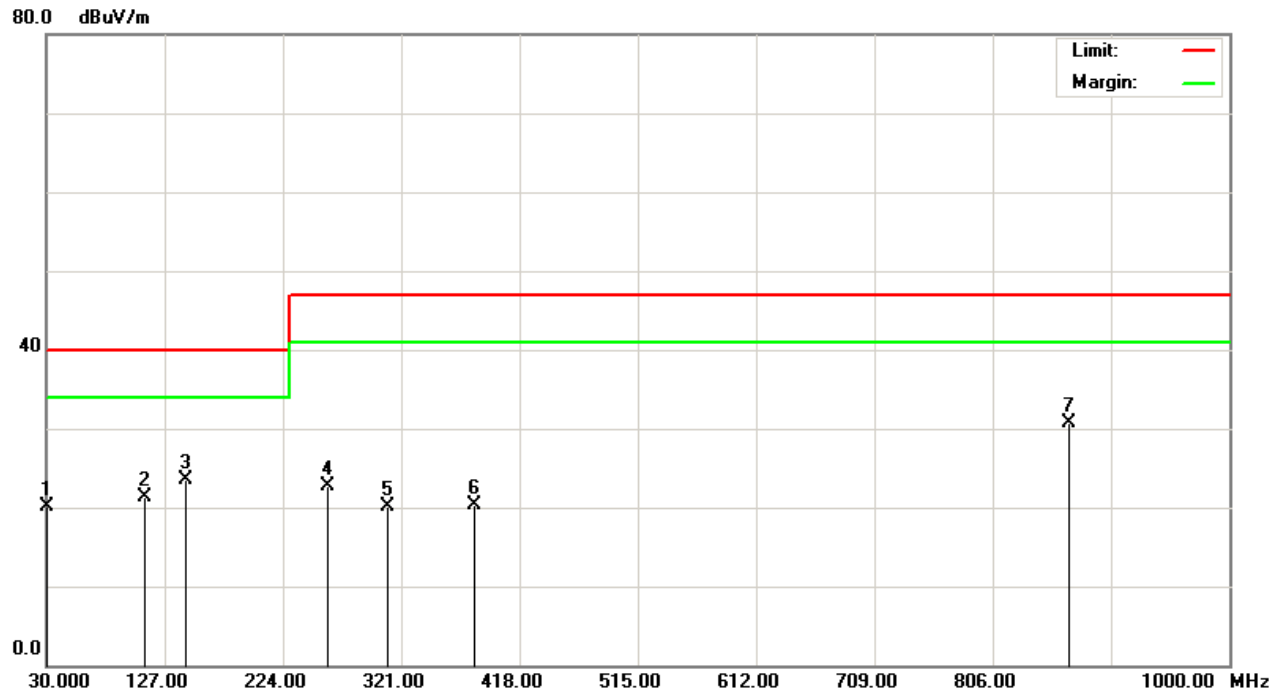
No.	Frequency (MHz)	Factor ()	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (°)	P/F	Remark
1	31.9400	-2.93	23.80	20.87	40.00	-19.13	QP	100	153	P	
2	113.4200	-8.90	28.34	19.44	40.00	-20.56	QP	100	260	P	
3	127.9700	-8.23	29.53	21.30	40.00	-18.70	QP	100	211	P	
4	140.5800	-8.29	26.48	18.19	40.00	-21.81	QP	100	149	P	
5	207.5100	-10.41	26.61	16.20	40.00	-23.80	QP	100	220	P	
6	866.5000	5.16	26.49	31.65	47.00	-15.35	QP	100	328	P	

Vertical

80.0 dBuV/m



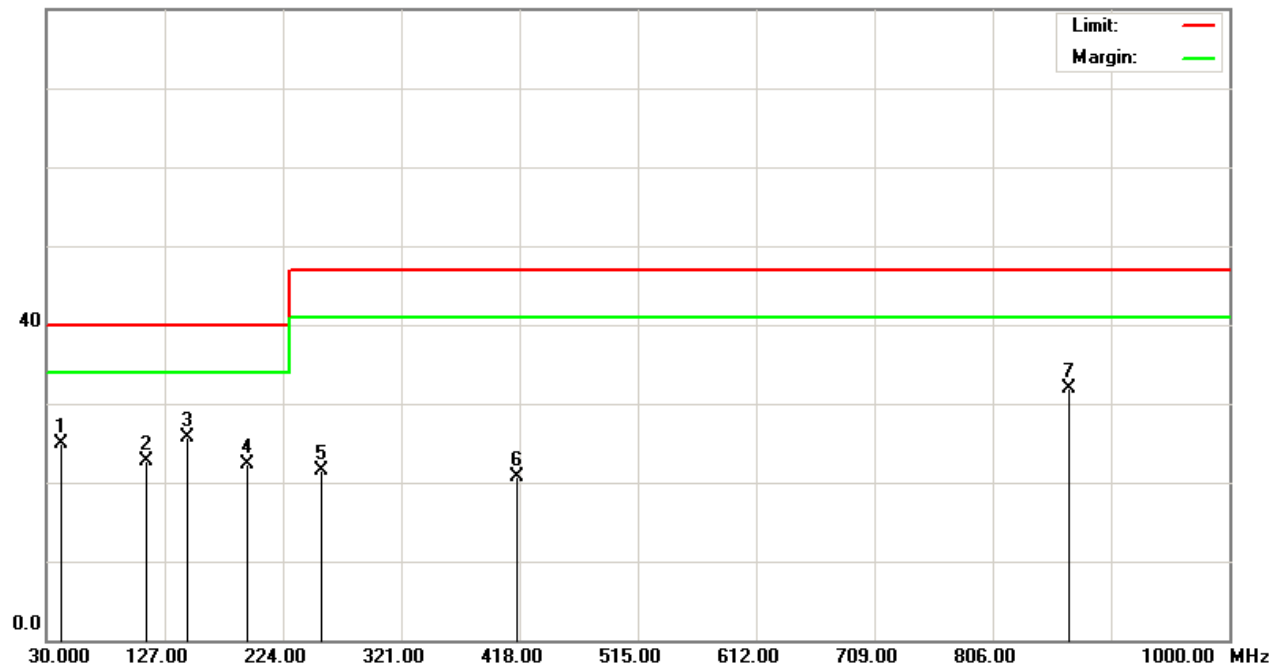
No.	Frequency (MHz)	Factor ()	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (°)	P/F	Remark
1	116.3200	-8.71	35.21	26.50	40.00	-13.50	QP	100	103	P	
2	127.9600	-8.23	35.83	27.60	40.00	-12.40	QP	100	267	P	
3	296.7500	-5.68	26.93	21.25	47.00	-25.75	QP	200	46	P	
4	420.1000	-2.67	26.06	23.39	47.00	-23.61	QP	100	304	P	
5	520.8000	-0.71	24.00	23.29	47.00	-23.71	QP	100	177	P	
6	869.0499	5.17	25.73	30.90	47.00	-16.10	QP	300	235	P	

Figure 2: Radiated Emission, 30 - 1000 MHz (Mode B)
Horizontal


No.	Frequency (MHz)	Factor ()	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (°)	P/F	Remark
1	30.8100	-2.41	22.53	20.12	40.00	-19.88	QP	300	259	P	
2	110.4500	-9.11	30.50	21.39	40.00	-18.61	QP	270	310	P	
3	144.9140	-8.52	32.04	23.52	40.00	-16.48	QP	301	182	P	
4	260.8200	-5.98	28.71	22.73	47.00	-24.27	QP	256	249	P	
5	310.5940	-5.38	25.47	20.09	47.00	-26.91	QP	270	128	P	
6	380.6280	-3.59	23.88	20.29	47.00	-26.71	QP	268	125	P	
7	868.5000	5.16	25.48	30.64	47.00	-16.36	QP	290	147	P	Tx

Vertical

80.0 dBuV/m



No.	Frequency (MHz)	Factor ()	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (°)	P/F	Remark
1	42.0640	-8.54	33.39	24.85	40.00	-15.15	QP	100	139	P	
2	111.9500	-9.00	31.65	22.65	40.00	-17.35	QP	100	305	P	
3	146.0360	-8.58	34.26	25.68	40.00	-14.32	QP	100	229	P	
4	194.3400	-10.75	33.02	22.27	40.00	-17.73	QP	100	68	P	
5	255.8500	-6.27	27.79	21.52	47.00	-25.48	QP	100	204	P	
6	415.6719	-2.76	23.40	20.64	47.00	-26.36	QP	100	236	P	
7	868.5000	5.16	26.70	31.86	47.00	-15.14	QP	100	274	P	Tx

4.1.4 Radiated Emission, Above 1 GHz

Port:	Enclosure
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Frequency Range:	1 - 6 GHz
Limits:	EN 55022: 2006+ A1: 2007, Table 8, Class A

Result:	PASS
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The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes.

- ☐ highest frequency is less than 108MHz, measurement shall only be made up to 1GHz
☐ highest frequency is between 108 & 500MHz, measurement shall only be made up to 2GHz
☒ highest frequency is between 500 & 1GHz, measurement shall only be made up to 5GHz
☐ highest frequency is above 1GHz, measurement shall be made up to 5 times the highest frequency or 6GHz, whichever is less.

Test Setup

Date of Test:	28 Jan. 2019 / 04 Mar. 2019
Input Voltage:	See 2.2
Operational Mode:	See 3.1
Temperature	23 °C / 21 °C
Relative Humidity	48 % / 51 %

Table 3: Radiated Emission, Above 1 GHz

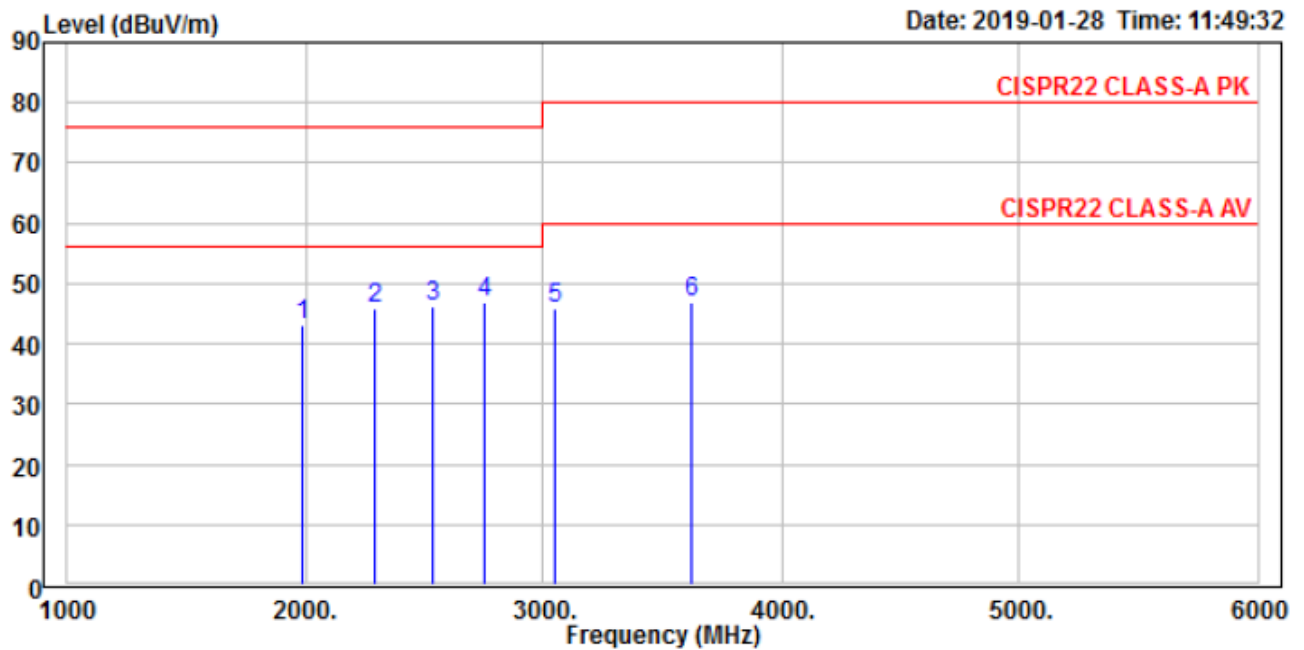
Setting:

Frequency		Settings	
Start	Stop	IF Bandwidth	Detector
1000 MHz	6000 MHz	1 MHz	Peak / Avg

Note 1: The highest frequency is 870MHz for LoRa function, measurement shall only be made up to 5GHz, the test result was measured up to 6GHz as described in this report.

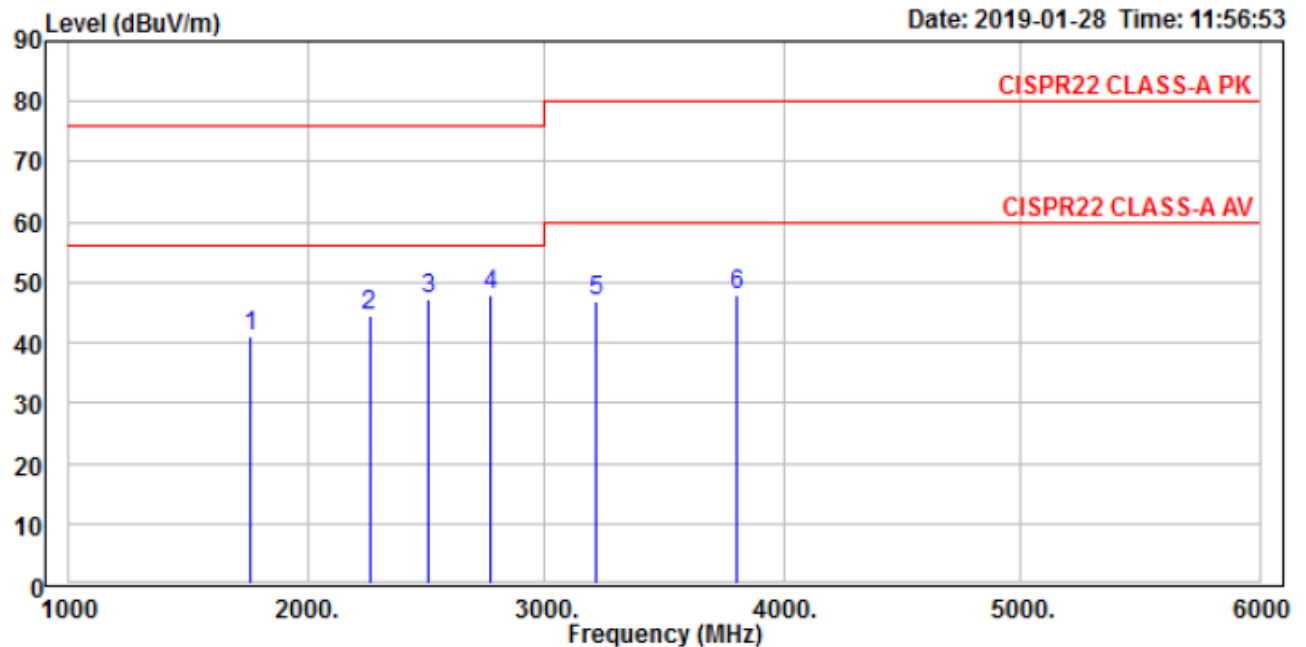
Note 2: Level = Reading(Read Level) + Factor
 Margin(Over Limit) = Level – Limit(Limit Line)

Note 3: Factor = Antenna factor + Cable loss + (- Amplifier gain)

Figure 3: Radiated Emission, Above 1 GHz (Mode A)
Horizontal


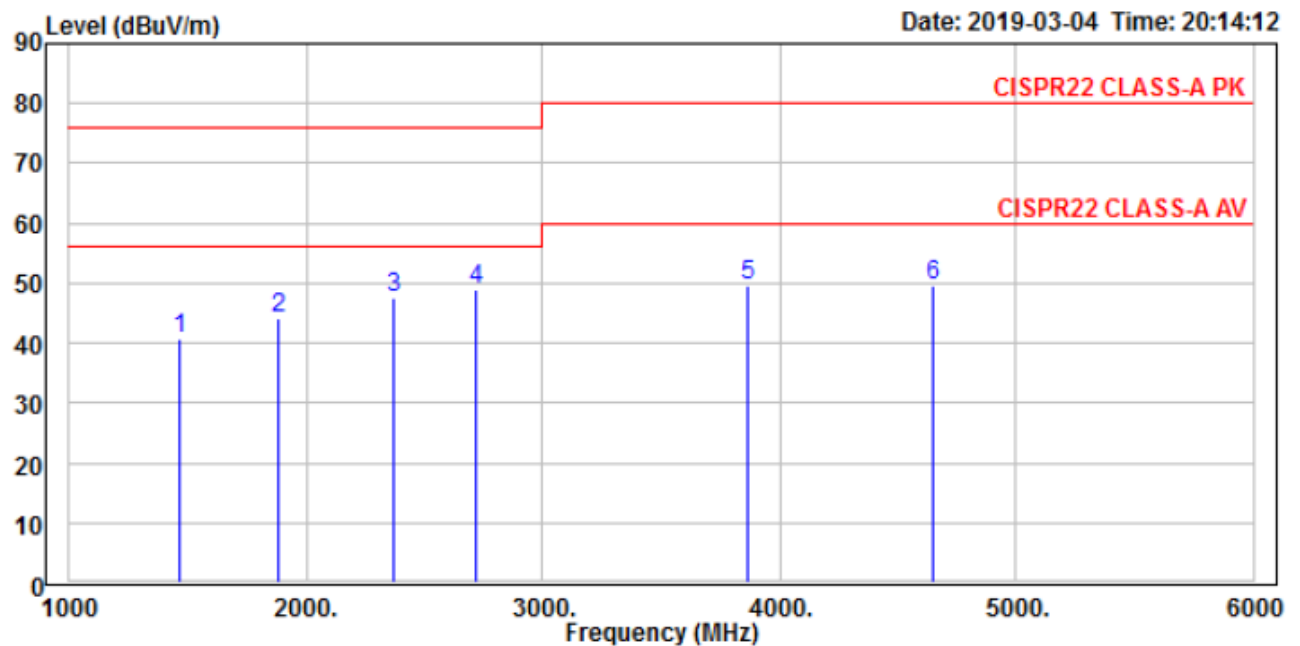
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	1985.507	43.00	46.59	-3.59	76.00	-33.00	100	360	Peak
2	2289.855	45.88	48.24	-2.36	76.00	-30.12	100	196	Peak
3	2536.232	46.15	47.58	-1.43	76.00	-29.85	100	141	Peak
4	2753.623	47.02	47.67	-0.65	76.00	-28.98	100	0	Peak
5	3050.725	45.86	45.38	0.48	80.00	-34.14	100	278	Peak
6	3623.188	46.93	45.16	1.77	80.00	-33.07	100	2	Peak

Note: The peak readings were below average limit, thus no average measuring required for those.

Vertical


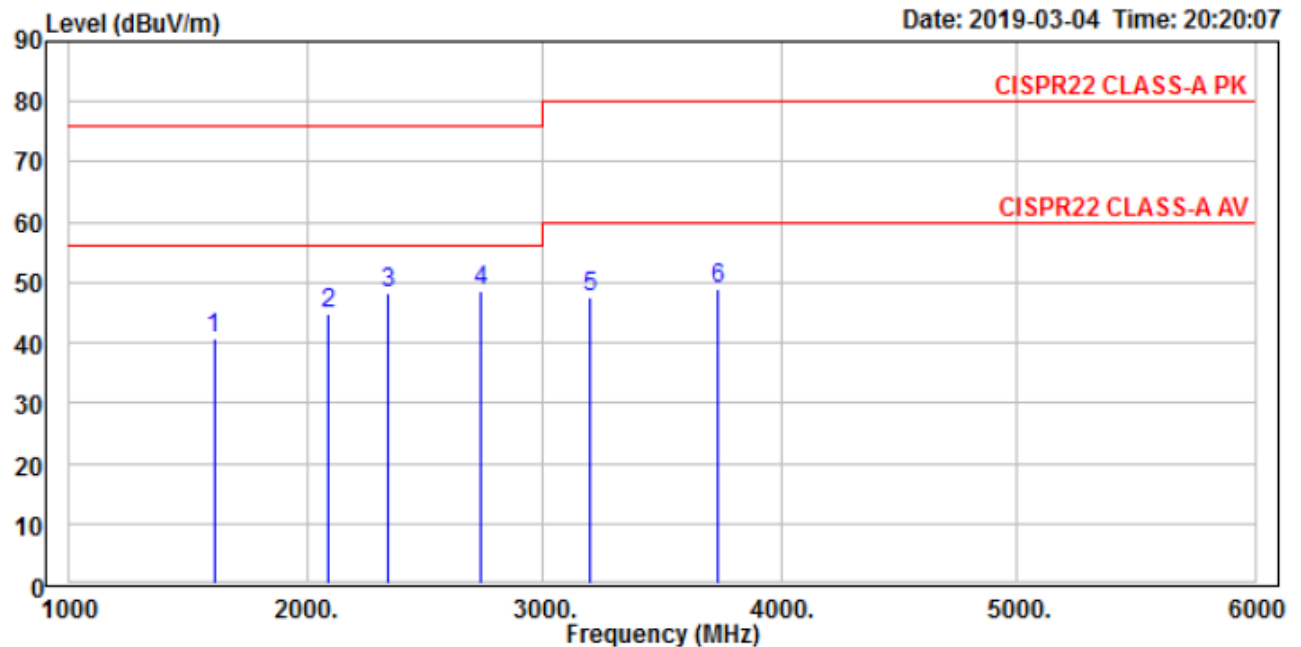
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	1760.870	41.11	46.89	-5.78	76.00	-34.89	100	159	Peak
2	2260.870	44.53	47.13	-2.60	76.00	-31.47	100	301	Peak
3	2507.246	47.30	48.86	-1.56	76.00	-28.70	100	287	Peak
4	2768.116	47.99	48.60	-0.61	76.00	-28.01	100	63	Peak
5	3210.145	46.74	45.79	0.95	80.00	-33.26	100	25	Peak
6	3804.348	47.88	45.43	2.45	80.00	-32.12	100	274	Peak

Note: The peak readings were below average limit, thus no average measuring required for those.

Figure 4: Radiated Emission, Above 1 GHz (Mode B)
Horizontal


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1463.768	40.71	48.72	-8.01	76.00	-35.29	100	360	Peak	
2	1884.058	44.10	48.41	-4.31	76.00	-31.90	100	360	Peak	
3	2369.565	47.73	49.59	-1.86	76.00	-28.27	100	234	Peak	
4	2717.391	48.93	49.67	-0.74	76.00	-27.07	100	3	Peak	
5	3869.565	49.65	47.04	2.61	80.00	-30.35	100	132	Peak	
6	4644.928	49.72	44.53	5.19	80.00	-30.28	100	5	Peak	

Note: The peak readings were below average limit, thus no average measuring required for those.

Vertical


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1608.696	40.59	48.06	-7.47	76.00	-35.41	100	246	Peak	
2	2094.203	44.83	47.81	-2.98	76.00	-31.17	100	343	Peak	
3	2347.826	48.21	50.17	-1.96	76.00	-27.79	100	76	Peak	
4	2739.130	48.44	49.12	-0.68	76.00	-27.56	200	360	Peak	
5	3195.652	47.50	46.55	0.95	80.00	-32.50	100	357	Peak	
6	3731.884	48.97	46.59	2.38	80.00	-31.03	200	0	Peak	

Note: The peak readings were below average limit, thus no average measuring required for those.

4.2 Disturbances in Supply Systems

4.2.1 Harmonics

Port:	AC Mains
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Limits:	EN 61000-3-2: 2006+ A1: 2009+ A2: 2009, clause 7

Result:	N/A
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The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

4.2.2 Voltage Fluctuations

Port:	AC Mains
Product Standard:	EN 301 489-3 V1.6.1
Basic Standard:	EN 301 489-1 V1.9.2
Limits:	EN 61000-3-3: 2008, clause 5

Result:	N/A
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The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5 Test Results IMMUNITY

Result:	PASS
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5.1 Enclosure Port

5.1.1 Radiated Susceptibility

Port:	Enclosure	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-3: 2006+ A1: 2008+ A2: 2010	
Performance Criteria:	A	
Test Specification:	Frequency Range:	80 – 1000 & 1400 - 2700 MHz
	Field Strength:	3 V/m (unmodulated)
	Modulation:	1 kHz AM 80%

Result:	PASS
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Test Setup

Date of Test:	31 Jan. 2019 / 05 Mar. 2019
Input Voltage:	See 2.2
Operational Mode:	See 3.1
Temperature	21 °C / 23 °C
Relative Humidity	50 % / 49 %

Table 4: Radiated Susceptibility (Mode A & B)
Setting:

Freq.	Freq. Step	Field Strength	Sweep mode	Meas. Time	Modulation	Observation	Result
80 – 1000 MHz	1% of the Preceding freq.	3 V/m	auto	3000 ms	1 kHz, AM 80%	Normal function	PASS
1400 – 2700 MHz	1% of the Preceding freq.	3 V/m	auto	3000 ms	1 kHz, AM 80%	Normal function	PASS

No abnormalities were observed during and after the tests.

5.1.2 Electrostatic Discharge

Port:	Enclosure	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-2: 2009	
Performance Criteria:	B	
Test Specification:	Voltage:	8 kV (Air Discharge) 4 kV (Contact Discharge) H.C.P. and V.C.P.

Result:	PASS
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Test Setup

Date of Test:	01 Feb. 2019 / 06 Mar. 2019
Input Voltage:	See 2.2
Operational Mode:	See 3.1
Temperature	21.4 °C / 20.7 °C
Relative Humidity	57 % / 54 %

Table 5: Electrostatic Discharge (Mode A & B)

Setting:

Test point	Polarity	Number of Discharges	Observation	Result
H.C.P.	+/- 4 kV	20	normal function	PASS
V.C.P.	+/- 4 kV	20	normal function	PASS

No abnormalities were observed during and after the tests.

Note: The testing was performed by air (+/- 8 kV) and contact (+/- 4 kV) method but there was no discharge to the EUT except for points in the table shown above.

5.2 Input and Output AC Power Ports

5.2.1 Conducted Disturbances

Port:	AC Mains	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-6: 2009	
Performance Criteria:	A	
Test Specification:	Frequency Range:	0.15 - 80 MHz
	Voltage Level:	3 Vrms (unmodulated)
	Modulation:	AM 80%, 1kHz sine wave

Result:
N/A

The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.2.2 Fast Transients Common Mode

Port:	AC Mains	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-4: 2004+ A1: 2010	
Performance Criteria:	B	
Test Specification:	Peak Voltage:	1.0 kV
	T_r/T_n	5/50 ns
	Rep. Frequency	5 kHz

Result:
N/A

The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.2.3 Surges

Port:	AC Mains	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-5: 2006	
Performance Criteria:	B	
Test Specification:	Peak Voltage: T _r /T _h	1.0 kV (line to line) 2.0 kV (line to ground) 1,2/50 µs

Result:
N/A

The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.2.4 Voltage Dips and Interruptions

Port:	AC Mains	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-11: 2004	
Test Specification & Performance Criteria:	Test Level:	100% U _T for Voltage Reductions, no. of 0.5 periods (A) 100% U _T for Voltage Reductions, no. of 1 period (A) 30% U _T for Voltage Reductions, no. of 25 period (A) 100% U _T for Voltage Reductions, no. of 250 period (B)

Result:
N/A

The subject sample is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

5.3 Signal and Telecommunication Ports

5.3.1 Fast Transients Common Mode

Port:	Signal / Telecommunication Ports	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-4: 2004+ A1: 2010	
Performance Criteria:	B	
Test Specification:	Peak Voltage:	0.5 kV
	T_r/T_n	5/50 ns
	Rep. Frequency	5 kHz

Result:
N/A

There are no signal lines and control lines on subject sample. Therefore, this test is not applicable.

5.3.2 Conducted Disturbances

Port:	Signal / Telecommunication Ports	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-6: 2009	
Performance Criteria:	A	
Test Specification:	Frequency Range:	0.15 - 80 MHz
	Voltage Level	3 Vrms (unmodulated)
	Modulation:	AM 80%, 1kHz sine wave

Result:
N/A

There are no signal lines and control lines on subject sample. Therefore, this test is not applicable.

5.3.3 Surges

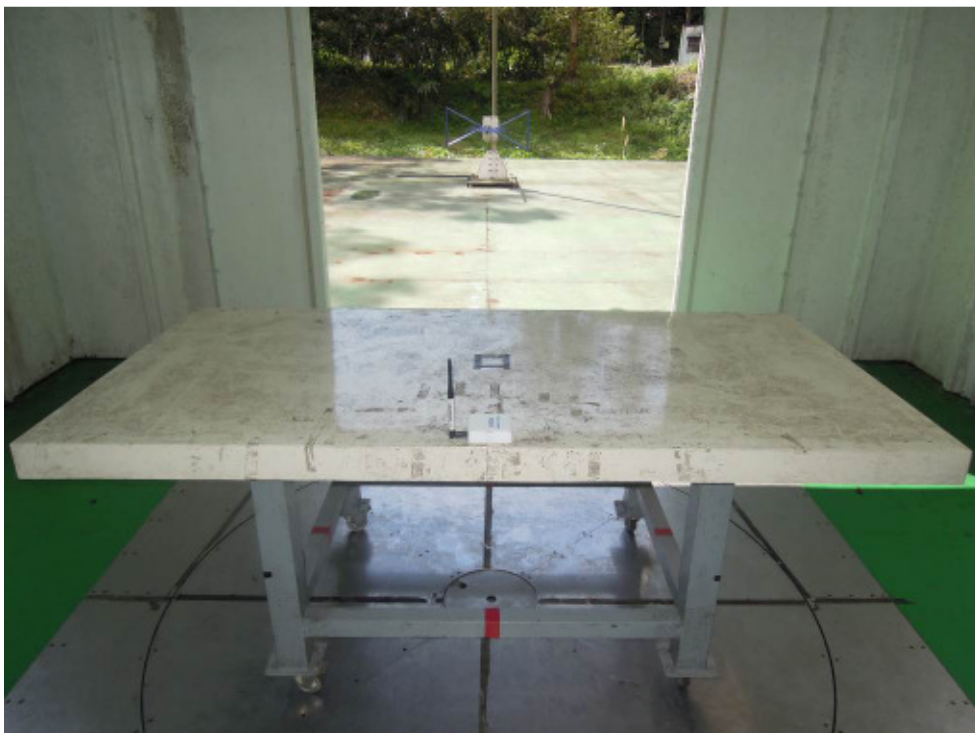
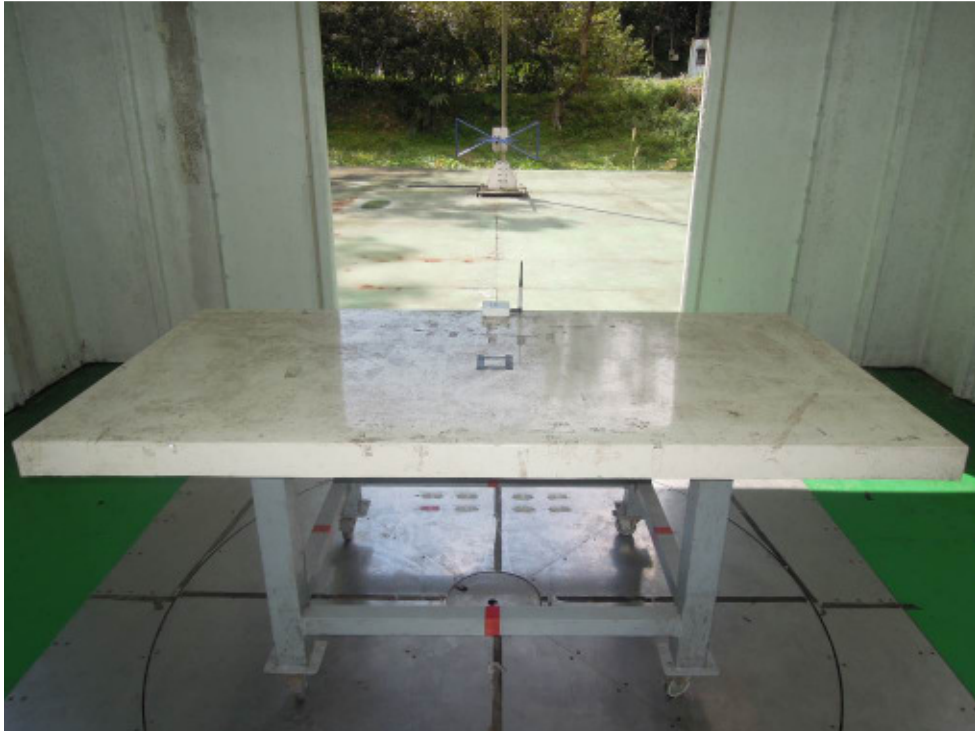
Port:	Signal / Telecommunication ports	
Product Standard:	EN 301 489-3 V1.6.1	
Basic Standard:	EN 301 489-1 V1.9.2 EN 61000-4-5: 2006	
Performance Criteria:	B	
Test Specification:	Peak Voltage: T_r/T_h	1.0 kV 1,2/50 μ s

Result:**N/A**

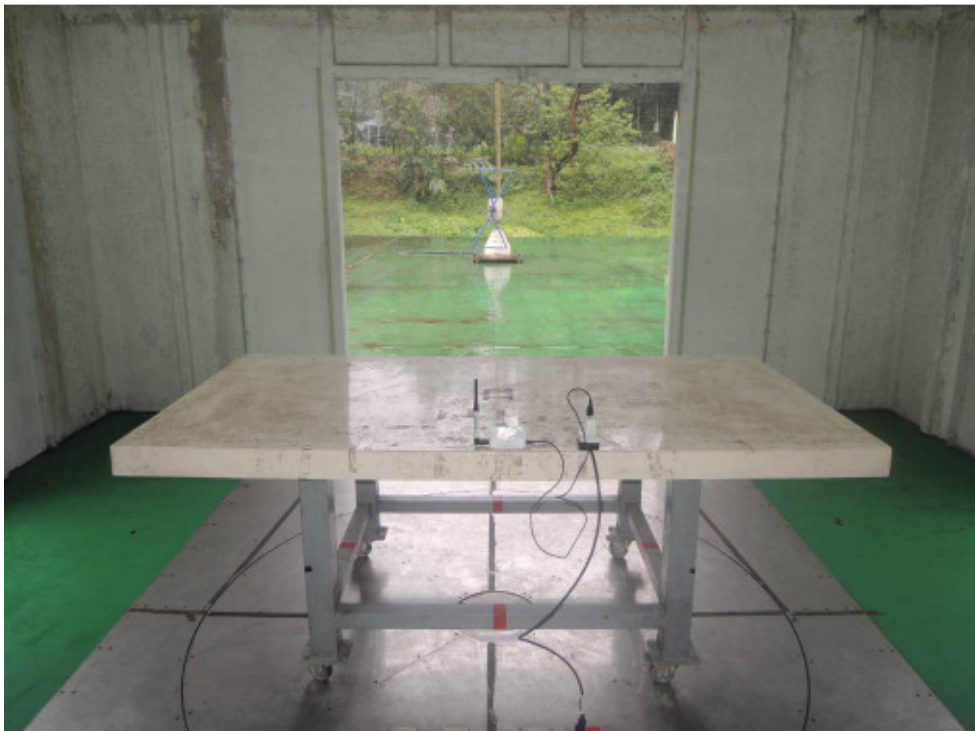
The subject sample is not connected directly to outdoor cable. Therefore, this test is not applicable.

6 Photographs of the Test Set-up

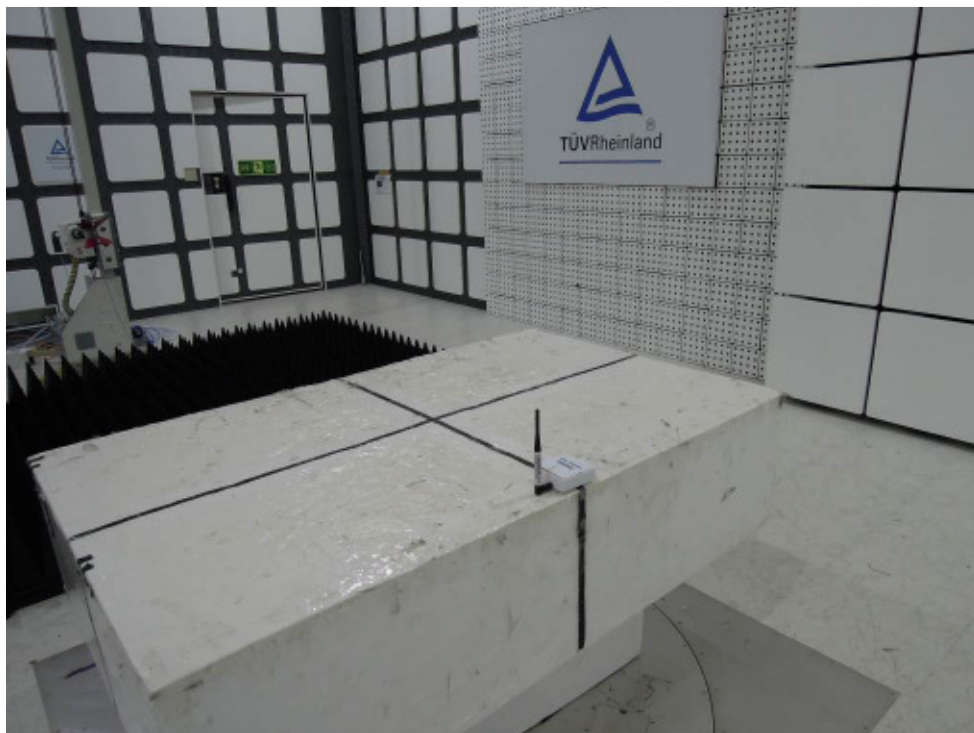
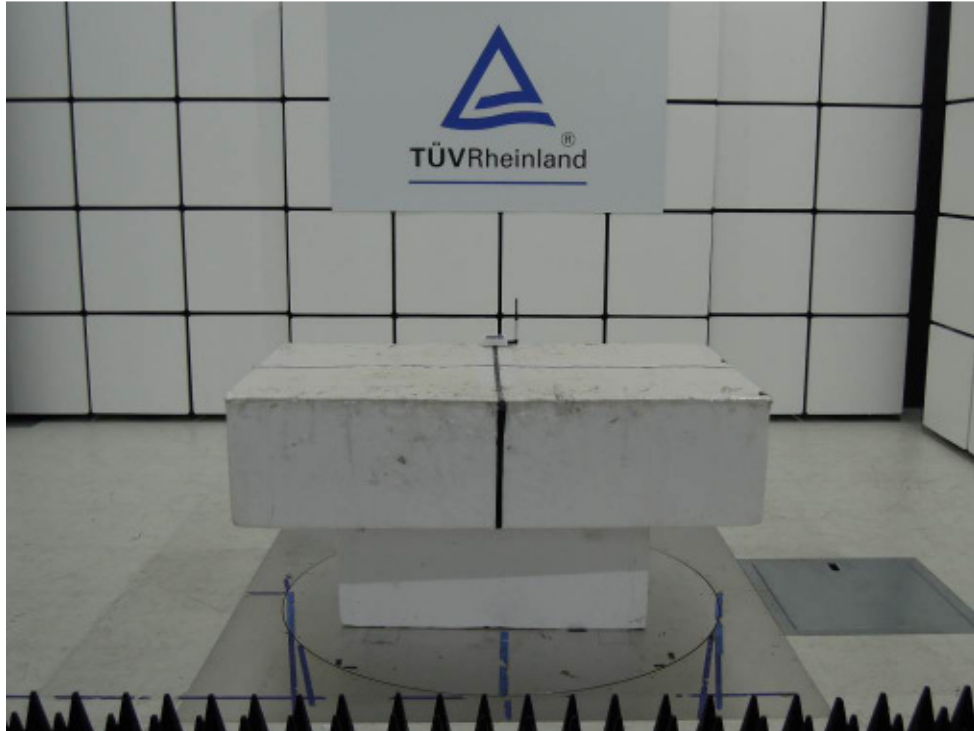
Picture 1: Radiated Emission, 30 - 1000 MHz (Mode A)



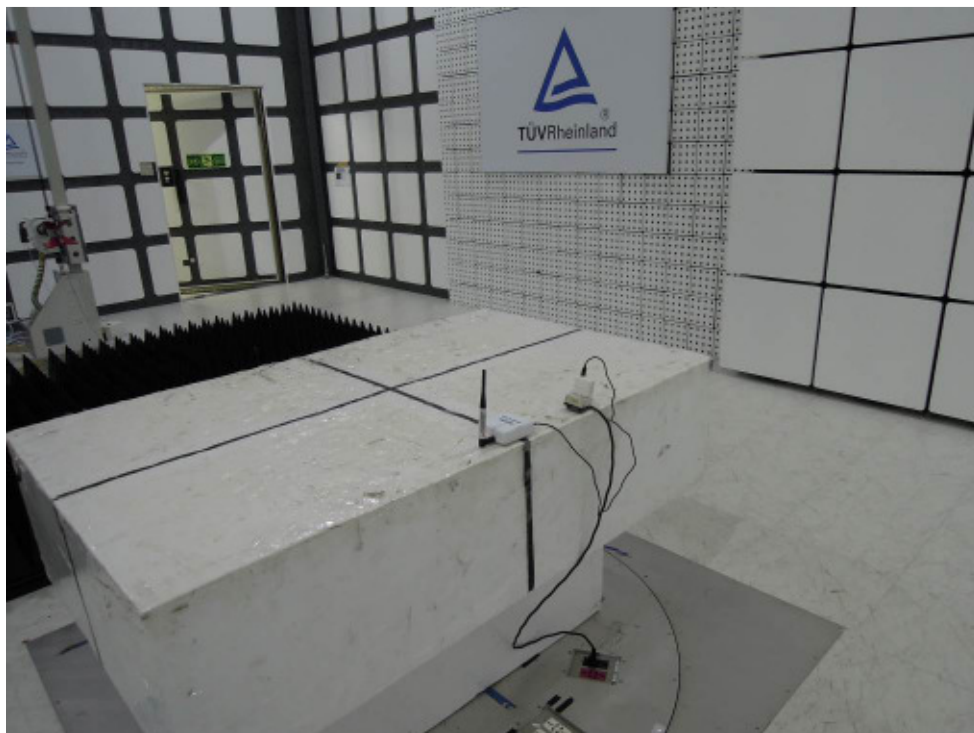
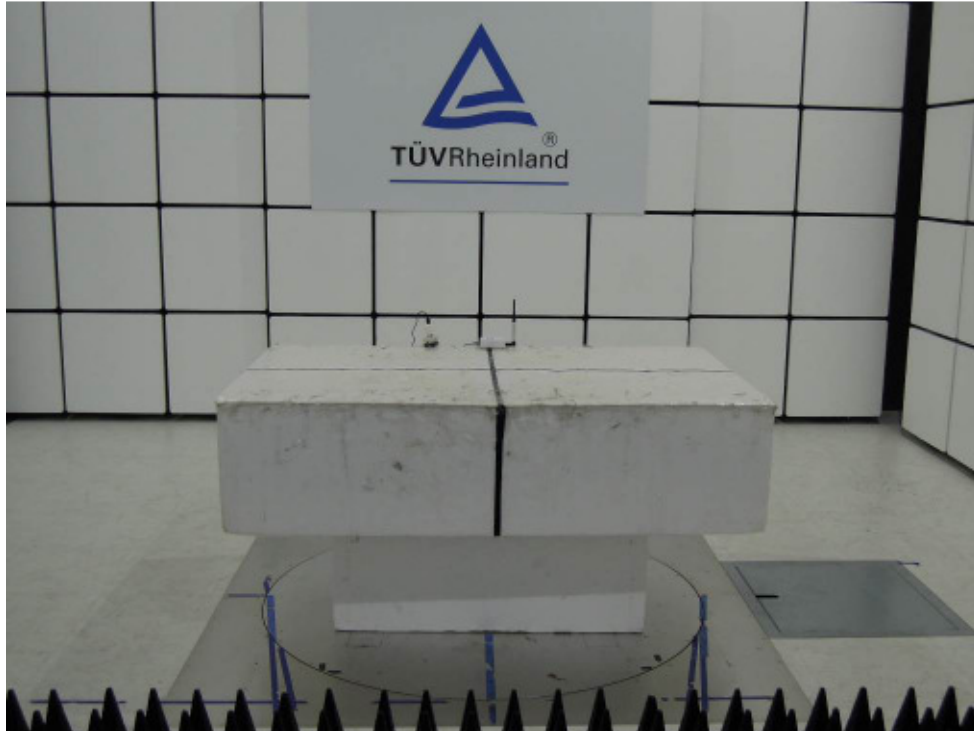
Picture 2: Radiated Emission, 30 - 1000 MHz (Mode B)



Picture 3: Radiated Emission, Above 1 GHz (Mode A)



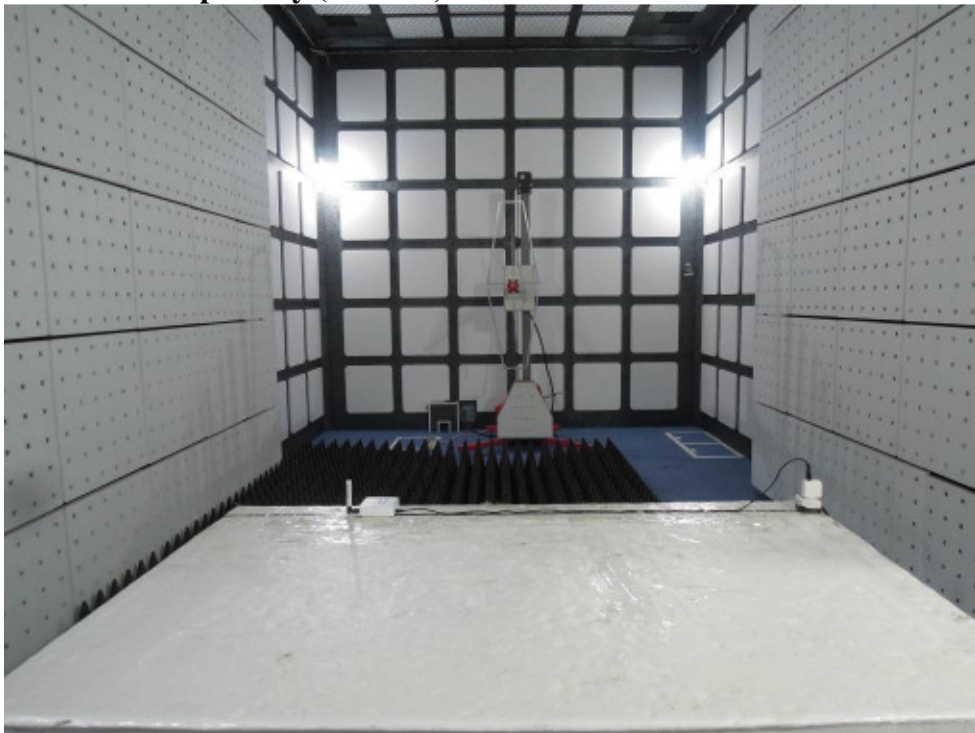
Picture 4: Radiated Emission, Above 1 GHz (Mode B)



Picture 5: Radiated Susceptibility (Mode A)



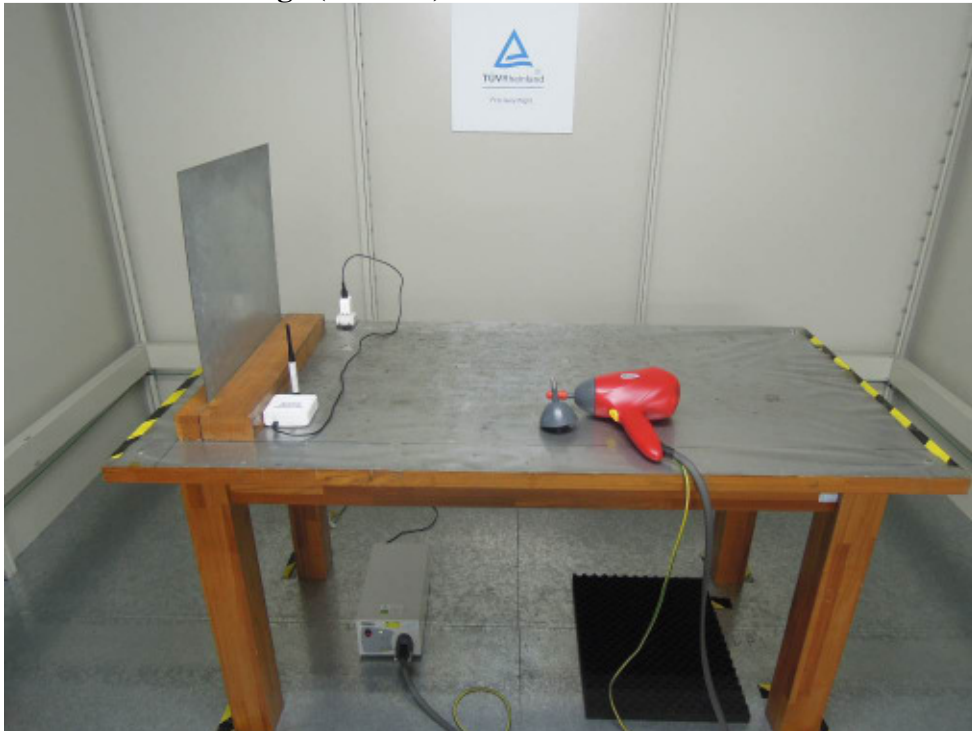
Picture 6: Radiated Susceptibility (Mode B)



Picture 7: Electrostatic Discharge (Mode A)



Picture 8: Electrostatic Discharge (Mode B)



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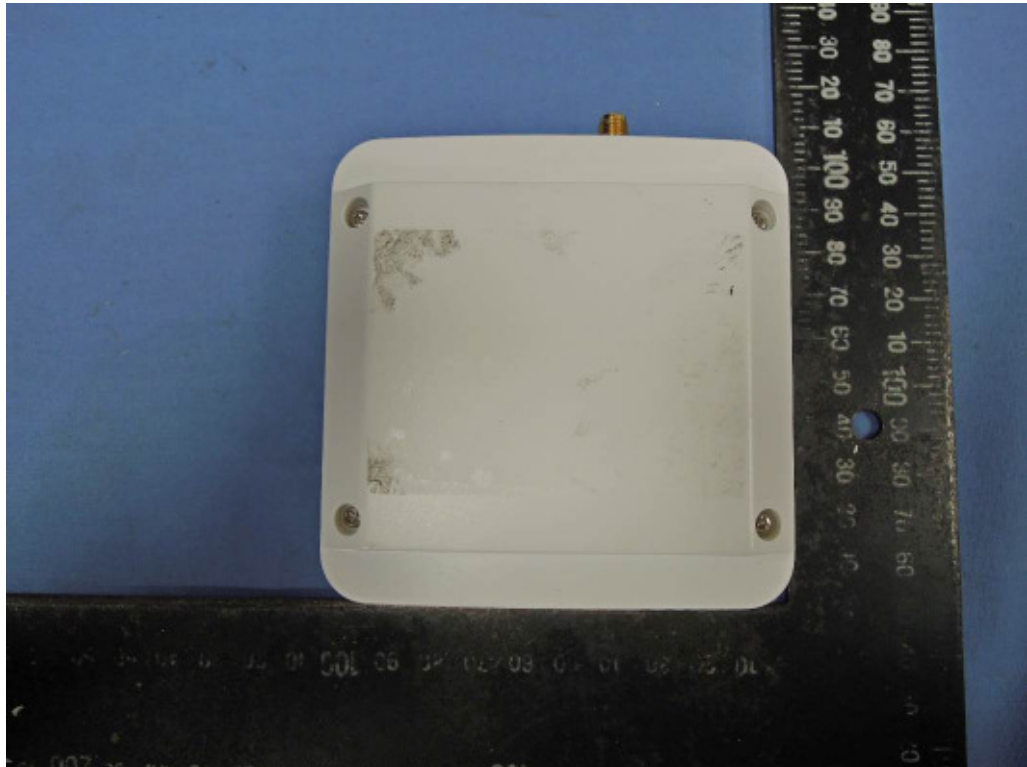
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Type Designation: xAIOT-ILND02x



Product: LoRa Long Range Node System

Type Designation: xAIOT-ILND02x



Product: LoRa Long Range Node System

Type Designation: xAIOT-ILND02x



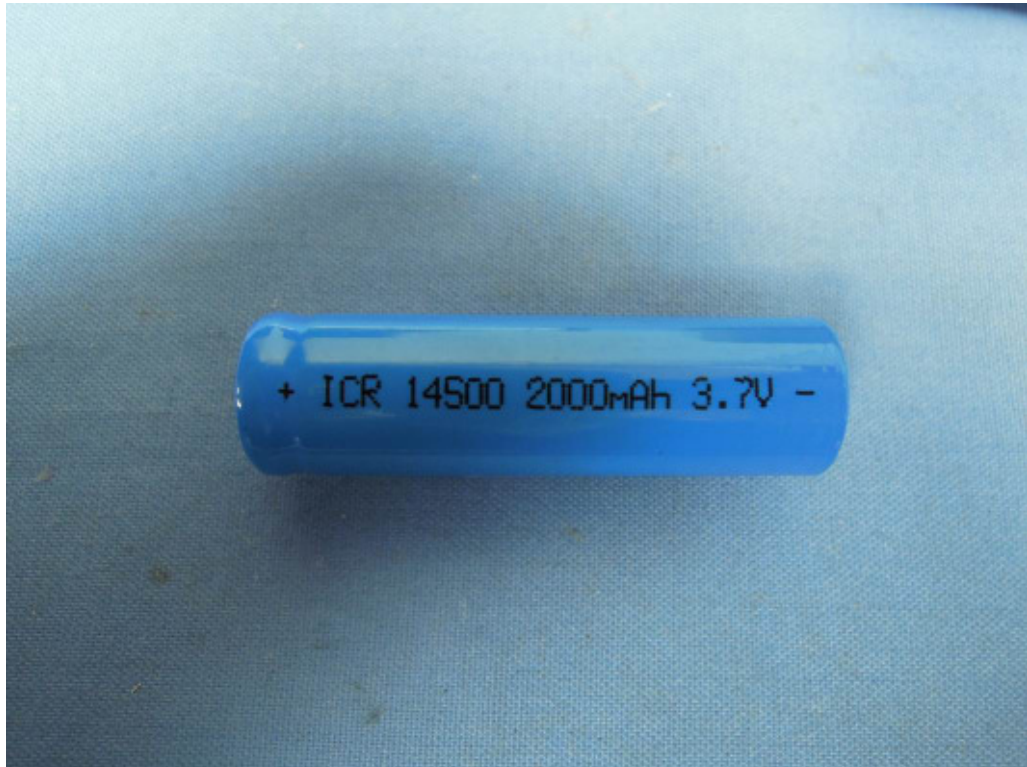
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Type Designation: xAIOT-ILND02x



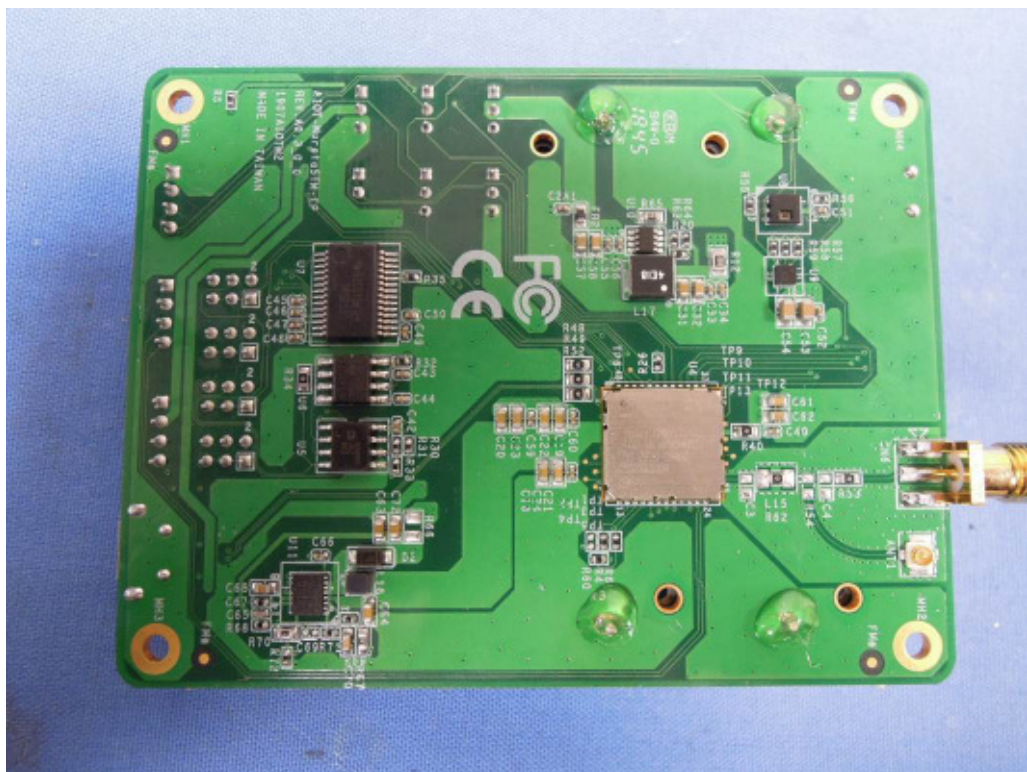
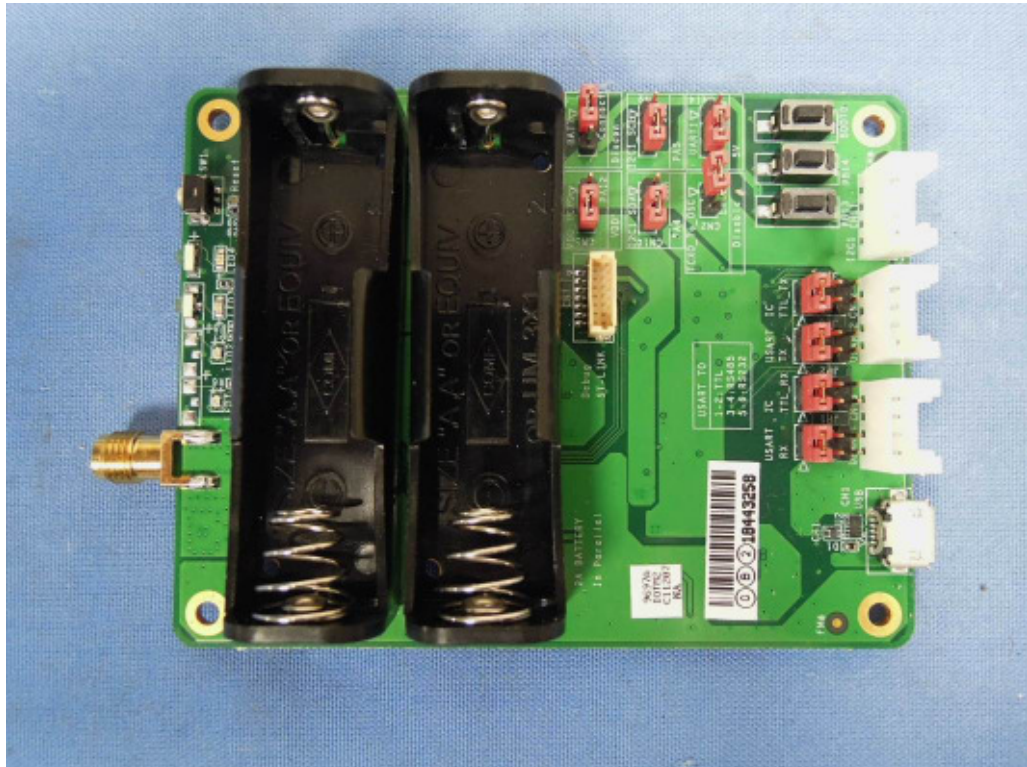
Product: LoRa Long Range Node System

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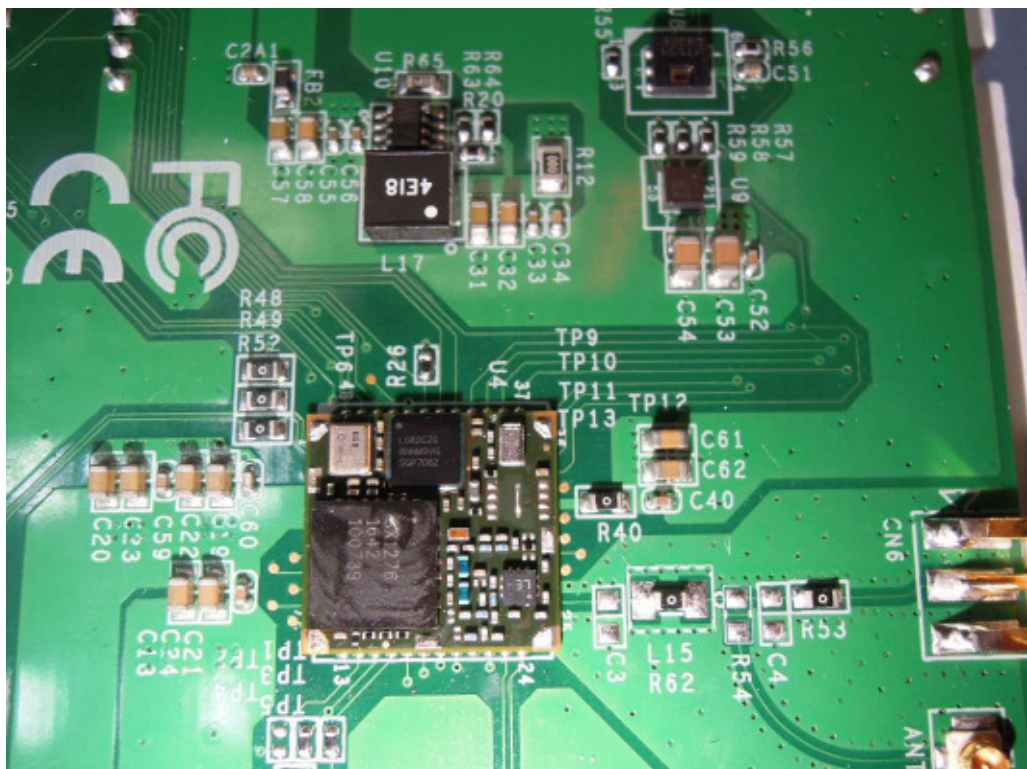
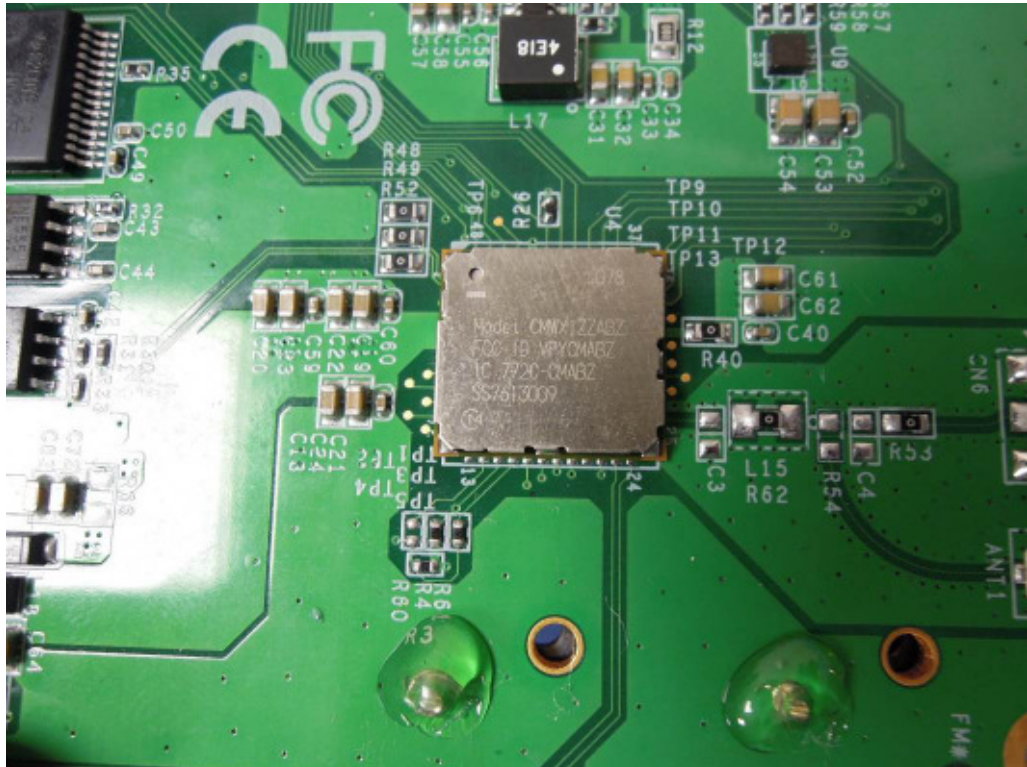
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