



REPORT No. : SZ19120381W02

TEST REPORT

APPLICANT : Rakuten Mobile,Inc
PRODUCT NAME : 屋外通信ユニット 1
MODEL NAME : PEAA9021
BRAND NAME : NA
STANDARD(S) : MIC Ordinance Article 2 Paragraph 1 of Item 11-19-2
RECEIPT DATE : 2019-12-30
TEST DATE : 2020-02-26 to 2020-03-15
ISSUE DATE : 2020-04-02

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MORLAB

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Change History		
Version	Date	Reason for change
1.0	2020-04-02	First edition



1. Technical Information

Note: Provide by Applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Rakuten Mobile, Inc
Applicant Address:	1 Chome-14-1 Tamagawa, Setagaya City, Tokyo 158-0094
Manufacturer:	Shenzhen WeWins Wireless Co., Ltd.
Manufacturer Address:	17/F., Mid Wing, Yuehai Building, Nanhai Blvd, Nanshan, Shenzhen, China

1.2. Equipment Under Test (EUT) Description

Frequency Bands	FDD 03
Modulation Mode	QPSK, BPSK
Power Class	E-UTRA :3
Frequency range	1710.335-1784.665MHz
Total Channel Number	743
Channel interval	100kHz

1.2.1 Photographs of the EUT

Please reference ANNEX H.

1.2.2 Identification of all used EUTs

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
A01	NA	NA



2. Test Results

2.1. Test Conditions

Test Environment Conditions:

Relative Humidity:	30 ... 75 %
Air Pressure:	98 ... 102 kPa
Temperature:	Normal Temperature (NT)= +20 °C to +25 °C Low Temperature (LT) = -20°C High Temperature (HT) = 85°C Humidity =35°C / 95%
Voltage of the EUT:	Normal Voltage (NV) = 12V Low Voltage (LV) = 9V High Voltage (HV) = 15V

2.2. Test Results lists

2.2.1 Terms in the column “Verdict” for the test results list of this section:

Verdict	Description
PASS	EUT passed this test case
FAIL	EUT failed this test case
Decl.	“Declaration”: Morlab has received documents from the applicant and/or manufacturer which show conformity to the applied standards for this test case.
N/A	Test case not applicable for the EUT, please see the column “Note” for detailed



Table A.1: The MIC Requirements Table

Article 2-1-11-19	Test Descriptions & Test Conditions	FDD Band III		Note
		EUT	Verdict	
Article 49-6-9	Antenna Gain	A01	<u>PASS</u>	
Article 5	Frequency Tolerance	A01	<u>PASS</u>	
Article 49-6-9	Output Power	A01	<u>PASS</u>	
Article 14	Output Power Tolerance	A01	<u>PASS</u>	
Article 6	Occupied Bandwidth	A01	<u>PASS</u>	
Article 7	Unwanted Emission Strength/ Outband Area	A01	<u>PASS</u>	
Article 7	Unwanted Emission Strength/ Spurious Area	A01	<u>PASS</u>	
Article 49-6-9	Adjacent Channel Leakage Power	A01	<u>PASS</u>	
Article 24 4-3 Article 24 5-3 Article 24 6-3 Article 24 7-3	Secondary Radiated Emission Strength	A01	<u>PASS</u>	
Article 49-6-9	Leakage Power at No-carrier Transmission	A01	<u>PASS</u>	

2.3. Construction Protection Confirmation Method

2.3.1 Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

2.3.2 Confirmation Method

The RF and modulation portions are protected against illegal modification as following method:

Protected Method	Description
special screws	This product USES special hexagon screw to protect the product, not easy to open

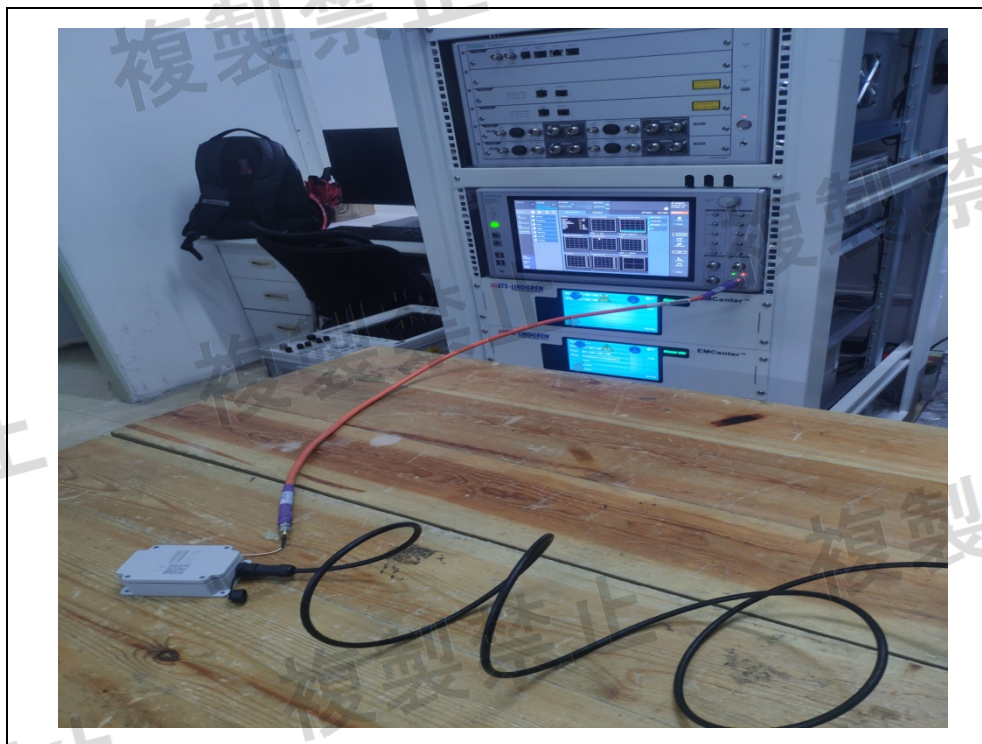
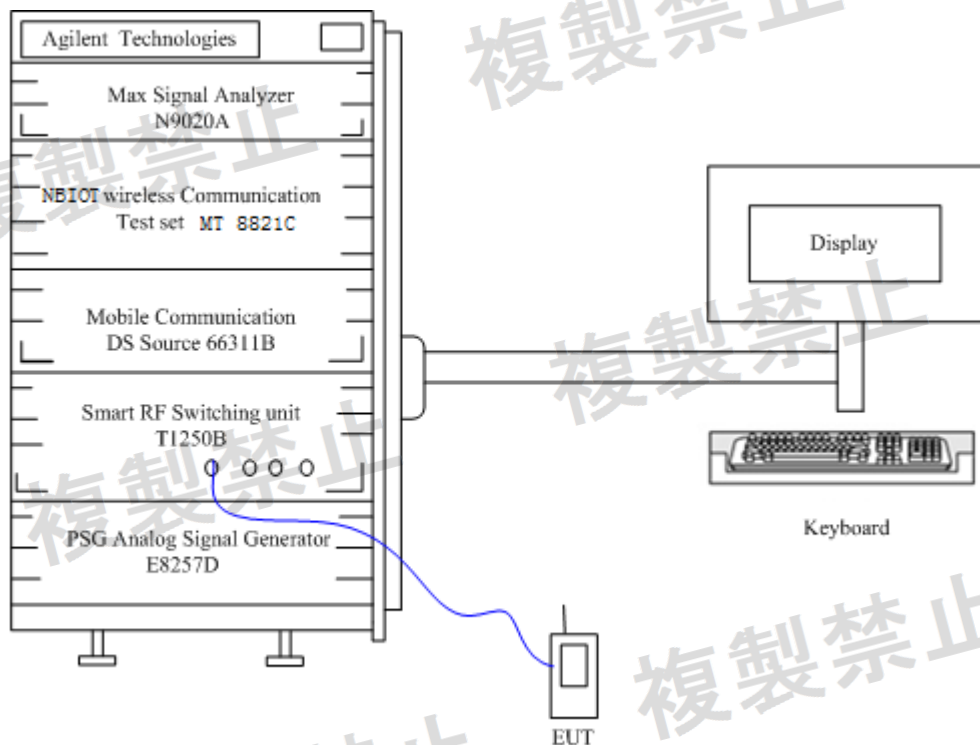
Reference Documents	Item
Photo	



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Annex A Test Setup

Test Setup



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Annex B Antenna PIFA

Band	Limit (dBi)	Value (dBi)	Verdict
3	3	2.2	Pass



Annex C Frequency Tolerance

NB-IOT FDD Band 3	NB-IOTfor 15kHz subcarrier spacing				
Center Frequency (cf)	1710.335(MHz)	1740.090(MHz)	1784.665(MHz)	result	Regulation
Normal(Hz)	19.7	15.9	17.6	pass	1710.335 ~ 1784.665 MHz
Vibration(Hz)	19.3	15.1	17.2	pass	
Low Temperature(Hz)	18.7	15.5	16.2	pass	
HIGH Temperature(Hz)	18.9	15.2	17.1	pass	
Humidity(Hz)	19.2	15.1	17.3	pass	
Limit(Hz)	± 186.0335 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$	± 189.009 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$	± 193.4665 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$		

NB-IOT FDD Band 3	NB-IOTfor 3.75kHz subcarrier spacing				
Center Frequency (cf)	1710.335(MHz)	1740.090(MHz)	1784.665(MHz)	result	Regulation
Normal(Hz)	19.7	15.9	17.6	pass	1710.335 ~ 1784.665 MHz
Vibration(Hz)	19.3	15.1	17.2	pass	
Low Temperature(Hz)	18.7	15.5	16.2	pass	
HIGH Temperature(Hz)	18.9	15.2	17.1	pass	
Humidity(Hz)	19.2	15.1	17.3	pass	
Limit(Hz)	± 186.0335 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$	± 189.009 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$	± 193.4665 $\pm (0.1 \times cf \times 10E-6 + 15) \text{ Hz}$		



Annex D Declaration Output Power

Technology	Frequency	ITU	Power	Power Tolerance	Note
NB-IOT FDD Band 3	1710.335 MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	23dBm	+87%,-47%	
NB-IOT FDD Band 3	1740.090MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	23dBm	+87%,-47%	
NB-IOT FDD Band 3	1784.665MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	23dBm	+87%,-47%	

Output Power

Technology	Frequency	ITU	Power	NB-IOTfor 15kHz subcarrier spacing
NB-IOT FDD Band 3	1710.335 MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.73dBm	
NB-IOT FDD Band 3	1740.090MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.69dBm	
NB-IOT FDD Band 3	1784.665MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.75dBm	

Technology	Frequency	ITU	Power	NB-IOTfor 3.75kHz subcarrier spacing
NB-IOT FDD Band 3	1710.335 MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.21dBm	
NB-IOT FDD Band 3	1740.090MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.17dBm	
NB-IOT FDD Band 3	1784.665MHz	G1A,G1B,G1C,G1D, G1F,G1X,G7W	20.26dBm	



Annex E Occupied Bandwidth

Band	UL Channel Frequency MHz	OBW MHz	Verdict	NB-IOTfor 15kHz subcarrier spacing
3	1710.335	0.171	Pass	
3	1740.090	0.169	Pass	
3	1784.665	0.163	Pass	

Band	UL Channel Frequency MHz	OBW MHz	Verdict	NB-IOTfor 3.75kHz subcarrier spacing
3	1710.335	0.123	Pass	
3	1740.090	0.109	Pass	
3	1784.665	0.102	Pass	

Annex F Unwanted Emission Strength/Spurious Aera

NB-IOT FDD Band 3	NB-IOTfor 15kHz subcarrier spacing Unwanted Emission Intensity / Outband Area					
Center Frequency (cf)	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
cf - (100 ~ 200) kHz	dBm/30kHz	-19.36	-21.25	-20.33	Pass	27.5 - (31 / 100 x Δf) dBm / 30kHz
	MHz	1710.155	1739.892	1784.48		
cf + (100 ~ 200) kHz	dBm/30kHz	-19.47	-21.31	-20.31	Pass	
	MHz	1710.465	1740.307	1784.757		
cf - (200 ~ 250) kHz	dBm/30kHz	-24.77	-25.01	-24.77	Pass	-3.5 - (3 / 50) x (Δf - 100) dBm / 30kHz
	MHz	1710.122	1739.863	1784.535		
cf + (200 ~ 250) kHz	dBm/30kHz	-22.09	-25.21	-25.29	Pass	
	MHz	1710.545	1740.311	1784.875		
cf - (250 ~ 400) kHz	dBm/30kHz	-41.66	-42.08	-41.77	Pass	-6.5 - (7 / 50) x (Δf - 150) dBm / 30kHz
	MHz	1710.005	1739.680	1984.355		
cf + (250 ~ 400) kHz	dBm/30kHz	-42.09	-41.97	-42.11	Pass	
	MHz	1710.625	1740.411	1784.986		
cf - (400 ~ 600) kHz	dBm/30kHz	-45.21	-45.27	-45.33	Pass	-27.5 - (3 / 100) x (Δf-300) dBm / 30kHz
	MHz	1709.755	1739.585	1784.515		
cf + (400 ~ 600) kHz	dBm/30kHz	-45.46	-45.73	-44.96	Pass	
	MHz	1710.815	1740.605	1785.175		
cf - (600 ~ 1800) kHz	dBm/30kHz	-46.11	-45.85	-46.33	Pass	-33.5dBm/30k Hz
	MHz	1709.435	1739.085	1783.655		
cf + (600 ~ 1800) kHz	dBm/30kHz	-46.17	-45.37	-45.81	Pass	
	MHz	1711.355	1740.785	1785.365		
Note	Mistuned frequency (Δf) : Frequency of the difference from the "end of a transmit frequency range(Limited to the near end ofmeasurement of the unwanted emission Intensity)" to the "end of the measurement range of the unwanted emissionIntensity (Limited to the near end of a transmit frequency range)".					

NB-IOT FDD Band 3		NB-IOTfor 3.75kHz subcarrier spacing Unwanted Emission Intensity / Outband Area				
Center Frequency (cf)	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
cf - (100 ~ 200) kHz	dBm/30kHz	-19.78	-21.33	-20.42	Pass	27.5 - (31 / 100 x Δf) dBm / 30kHz
	MHz	1710.155	1739.905	1784.48		
cf + (100 ~ 200) kHz	dBm/30kHz	-20.53	-21.31	-20.31	Pass	
	MHz	1710.535	1740.307	1784.757		
cf - (200 ~ 250) kHz	dBm/30kHz	-24.72	-25.09	-24.77	Pass	-3.5 - (3 / 50) x (Δf - 100) dBm / 30kHz
	MHz	1710.125	1739.863	1784.535		
cf + (200 ~ 250) kHz	dBm/30kHz	-22.09	-25.21	-25.29	Pass	
	MHz	1710.545	1740.311	1784.875		
cf - (250 ~ 400) kHz	dBm/30kHz	-41.66	-42.08	-41.77	Pass	-6.5 - (7 / 50) x (Δf - 150) dBm / 30kHz
	MHz	1710.005	1739.680	1984.355		
cf + (250 ~ 400) kHz	dBm/30kHz	-42.09	-41.97	-42.11	Pass	
	MHz	1710.625	1740.411	1784.986		
cf - (400 ~ 600) kHz	dBm/30kHz	-45.21	-45.27	-45.33	Pass	-27.5 - (3 / 100) x (Δf-300) dBm / 30kHz
	MHz	1709.755	1739.585	1784.515		
cf + (400 ~ 600) kHz	dBm/30kHz	-45.46	-45.73	-44.96	Pass	
	MHz	1710.815	1740.605	1785.175		
cf - (600 ~ 1800) kHz	dBm/30kHz	-46.11	-45.81	-46.72	Pass	-33.5dBm/30k Hz
	MHz	1709.455	1739.095	1783.675		
cf + (600 ~ 1800) kHz	dBm/30kHz	-46.17	-45.41	-45.86	Pass	
	MHz	1711.535	1740.755	1785.355		
Note	Mistuned frequency (Δf) : Frequency of the difference from the "end of a transmit frequency range(Limited to the near end of measurement of the unwanted emission Intensity)" to the "end of the measurement range of the unwanted emissionIntensity (Limited to the near end of a transmit frequency range)".					



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NB-IOT FDD Band 3		NB-IOTfor 15kHz subcarrier spacing Secondary Radiated Emissions				
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
30 ~ 1000 MHz	dBm/100kHz	-72.36	-71.08	-69.33	Pass	-57dBm/100kHz
	MHz	556.81	672.811	684.45		
1000 ~ 12750 MHz	dBm/MHz	-65.47	-67.38	-67.31	Pass	-47dBm/MHz
	MHz	4511.98	5105.31	5184.62		

NB-IOT FDD Band 3		NB-IOTfor 3.75kHz subcarrier spacing Secondary Radiated Emissions				
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
30 ~ 1000 MHz	dBm/100kHz	-71.33	-71.55	-69.45	Pass	-57dBm/100kHz
	MHz	577.66	739.892	761.41		
1000 ~ 12750 MHz	dBm/MHz	-65.47	-67.38	-67.31	Pass	-47dBm/MHz
	MHz	4511.98	5105.31	5184.62		



NB-IOT FDD Band 3	NB-IOTfor 15kHz subcarrier spacing					
	Unwanted Emission Intensity / Spurious Area (~ 1GHz)					
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
9 kHz ~ 150 kHz	dBm/1kHz	-89.36	-81.21	-88.63	Pass	-36dBm/1kHz
	kHz	30.155	31.012	25.77		
150 kHz ~ 30 MHz	dBm/10kHz	-89.47	-81.31	-81.31	Pass	-36dBm/10kHz
	MHz	1.210	1.341	1.384		
30 ~ 470 MHz	dBm/100kHz	-84.77	-85.07	-83.77	Pass	-36dBm/ 100kHz
	MHz	379.122	373.863	381.535		
470 ~ 710 MHz	dBm/100kHz	-72.09	-65.26	-65.21	Pass	
	MHz	650.235	647.311	684.873		
710 ~ 773 MHz	dBm/100kHz	-61.63	-62.08	-61.77	Pass	
	MHz	711.305	719.280	733.215		
773 ~ 803 MHz	(*1), (*2)	-62.09	-61.93	-62.17	Pass	-50dBm/MHz (*1), -36dBm/ 100kHz(*2)
	MHz	770.615	747.433	782.036		
803 ~ 860 MHz	dBm/100kHz	-59.29	-65.22	-61.31	Pass	-36dBm/ 100kHz
	MHz	809.755	956.583	843.517		
860 ~ 890 MHz	dBm/MHz	-59.46	-61.72	-64.93	Pass	-50dBm/MHz
	MHz	870.819	881.622	885.275		
890 ~ 945 MHz	dBm/100kHz	-60.11	-61.25	-63.37	Pass	-36dBm/ 100kHz
	MHz	901.439	908.577	913.652		
945 ~ 960 MHz	(*1), (*2)	-60.17	-61.37	-61.21	Pass	-50dBm/MHz (*1), -36dBm/ 100kHz(*2)
	MHz	951.355	950.785	955.362		
960 ~ 1000 MHz	dBm/100kHz	-62.33	-65.37	-67.29	Pass	-36dBm/ 100kHz
	MHz	953.425	989.457	991.223		
Note	* Applies to the frequency range that offset is 1.8MHz or more from center frequency. (*1) In case of using range 1750MHz or less, unit is dBm/MHz. (*2) In case of using range more than 1750MHz, unit is dBm/100kHz.					



NB-IOT FDD Band 3		NB-IOTfor 3.75kHz subcarrier spacing Unwanted Emission Intensity / Spurious Area (~ 1GHz)				
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
9 kHz ~ 150 kHz	dBm/1kHz	-88.31	-81.29	-88.63	Pass	-36dBm/1kHz
	kHz	30.155	31.016	25.77		
150 kHz ~ 30 MHz	dBm/10kHz	-89.33	-81.19	-81.27	Pass	-36dBm/10kHz
	MHz	1.210	1.349	1.384		
30 ~ 470 MHz	dBm/100kHz	-84.77	-85.07	-83.77	Pass	-36dBm/ 100kHz
	MHz	379.122	373.863	381.535		
470 ~ 710 MHz	dBm/100kHz	-72.16	-65.26	-65.21	Pass	
	MHz	650.218	647.311	684.873		
710 ~ 773 MHz	dBm/100kHz	-61.63	-62.08	-61.77	Pass	
	MHz	711.305	719.280	733.215		
773 ~ 803 MHz	(*1), (*2)	-62.09	-61.55	-62.22	Pass	-50dBm/MHz (*1), -36dBm/ 100kHz(*2)
	MHz	770.615	747.397	782.182		
803 ~ 860 MHz	dBm/100kHz	-59.29	-65.22	-61.31	Pass	-36dBm/ 100kHz
	MHz	809.753	956.583	843.517		
860 ~ 890 MHz	dBm/MHz	-59.46	-61.72	-64.93	Pass	-50dBm/MHz
	MHz	870.819	881.622	885.275		
890 ~ 945 MHz	dBm/100kHz	-60.17	-61.25	-63.37	Pass	-36dBm/ 100kHz
	MHz	901.428	908.577	913.652		
945 ~ 960 MHz	(*1), (*2)	-60.17	-61.37	-61.21	Pass	-50dBm/MHz (*1), -36dBm/ 100kHz(*2)
	MHz	951.355	950.785	955.362		
960 ~ 1000 MHz	dBm/100kHz	-62.39	-65.37	-67.26	Pass	-36dBm/ 100kHz
	MHz	956.425	989.457	995.223		
Note	* Applies to the frequency range that offset is 1.8MHz or more from center frequency. (*1) In case of using range 1750MHz or less, unit is dBm/MHz. (*2) In case of using range more than 1750MHz, unit is dBm/100kHz.					



NB-IOT FDD Band 3	NB-IOTfor 15kHz subcarrier spacing					
	Unwanted Emission Intensity / Spurious Area (1GHz ~)					
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
1000.0 ~ 1475.9 MHz	dBm/MHz	-42.36	-41.23	-42.31	Pass	-30dBm/MHz
	MHz	1391.233	1391.519	1391.672		
1475.9 ~ 1496.6 MHz	dBm/MHz	-52.47	-52.39	-52.46	Pass	-50dBm/MHz
	MHz	1479.251	1478.362	1484.292		
1496.6 ~ 1510.9 MHz	dBm/MHz	-57.77	-57.81	-57.69	Pass	-50dBm/MHz
	MHz	1498.563	1499.631	1510.355		
1510.9 ~ 1805.0 MHz	dBm/MHz	--	--	--	--	-30dBm/MHz
	MHz	--	--	--		
1805.0 ~ 1845.0 MHz	dBm/MHz	-57.33	-57.06	-55.79	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	1825.321	1830.218	1810.192		
1845.0 ~ 1880.0 MHz	dBm/MHz	-59.22	-61.93	-60.111	Pass	-50dBm/MHz
	MHz	1855.183	1849.675	1846.39		
1880.0 ~ 1884.5 MHz	dBm/MHz	-59.29	-62.17	-60.31	Pass	-30dBm/MHz
	MHz	1882.752	1882.583	1884.45		
1884.5 ~ 1915.7 MHz	dBm/300kHz	-57.46	-55.72	-57.61	Pass	-41dBm/300kHz
	MHz	1912.713	1913.528	1912.613		
1915.7 ~ 2010.0 MHz	dBm/MHz	-60.11	-61.25	-57.35	Pass	-30dBm/MHz
	MHz	1941.455	1942.582	1933.651		
2010.0 ~ 2025.0 MHz	dBm/MHz	-60.17	-61.37	-61.21	Pass	-50dBm/MHz
	MHz	2015.661	2016.332	2015.877		
2025.0 ~ 2110.0 MHz	dBm/MHz	-60.02	-58.37	-60.19	Pass	-30dBm/MHz
	MHz	2053.433	2055.572	2051.255		
2110.0 ~ 2153.6 MHz	dBm/MHz	-60.98	-61.77	-61.26	Pass	-50dBm/MHz
	MHz	2114.613	2114.792	2115.233		
2153.6 ~ 2170.0 MHz	dBm/MHz	-61.12	-62.07	-61.11	Pass	-50dBm/MHz
	MHz	2155.632	2155.693	2159.061		
2170.0 ~ 3400.0 MHz	dBm/MHz	-60.23	-58.65	-60.21	Pass	-30dBm/MHz
	MHz	2436.335	2580.611	2580.771		
3400.0 ~ 3419.4 MHz	dBm/MHz	-52.13	-57.62	-58.36	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	3419.386	3418.777	3418.892		
3419.4 ~ 3500.6 MHz	dBm/MHz	-54.09	-53.49	-53.23	Pass	-30dBm/MHz
	MHz	3459.621	3459.697	3459.672		



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3500.6 ~ 3600.0 MHz	dBm/MHz	-60.77	-61.23	-57.19	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	3592.711	3592.663	3595.285		
3600.0 ~ 6000.0 MHz	dBm/MHz	-57.61	-56.92	-57.23	Pass	-30dBm/MHz
	MHz	5131.292	5167.561	5233.111		
6000 ~ 12750 MHz	dBm/MHz	-58.33	-59.13	-58.27	Pass	-30dBm/MHz
	MHz	6842.312	6840.79	6840.331		
1510.9 ~ (cf - 1.8) MHz	dBm/MHz	-39.23	-39.42	-40.13	Pass	-30dBm/MHz
	MHz	1708.035	1738.085	1782.771		
(cf + 1.8) ~ 1805.0 MHz	dBm/MHz	-40.83	-40.78	-40.1	Pass	-30dBm/MHz
	MHz	1782.36	1782.59	1792.06		
Note	* Applies to the frequency range that offset is 1.8MHz or more from center frequency. (*1) In case of using range 1750MHz or less (*2) In case of using range more than 1750MHz					

NB-IOT FDD Band 3	NB-IOTfor 3.75kHz subcarrier spacing					
	Unwanted Emission Intensity / Spurious Area (1GHz ~)					
Test Frequency	Unit	1710.335 (MHz)	1740.090 (MHz)	1784.665 (MHz)	result	Regulation
1000.0 ~ 1475.9 MHz	dBm/MHz	-42.25	-41.23	-42.35	Pass	-30dBm/MHz
	MHz	1391.201	1392.533	1391.672		
1475.9 ~ 1496.6 MHz	dBm/MHz	-52.47	-53.05	-52.66	Pass	-50dBm/MHz
	MHz	1479.249	1478.359	1484.292		
1496.6 ~ 1510.9 MHz	dBm/MHz	-57.77	-57.81	-57.69	Pass	-50dBm/MHz
	MHz	1498.563	1499.631	1510.355		
1510.9 ~ 1805.0 MHz	dBm/MHz	--	--	--	--	-30dBm/MHz
	MHz	--	--	--		
1805.0 ~ 1845.0 MHz	dBm/MHz	-57.33	-57.06	-55.79	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	1825.321	1830.218	1810.192		
1845.0 ~ 1880.0 MHz	dBm/MHz	-59.22	-61.93	-60.111	Pass	-50dBm/MHz
	MHz	1855.183	1849.675	1846.39		
1880.0 ~ 1884.5 MHz	dBm/MHz	-59.29	-62.17	-60.31	Pass	-30dBm/MHz
	MHz	1882.752	1882.583	1884.45		
1884.5 ~ 1915.7 MHz	dBm/300kHz	-57.46	-55.72	-57.61	Pass	-41dBm/300kHz
	MHz	1912.713	1913.528	1912.613		
1915.7 ~ 2010.0 MHz	dBm/MHz	-60.11	-61.25	-57.35	Pass	-30dBm/MHz
	MHz	1941.455	1942.582	1933.651		



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2010.0 ~ 2025.0 MHz	dBm/MHz	-60.17	-61.37	-61.21	Pass	-50dBm/MHz
	MHz	2015.661	2016.332	2015.877		
2025.0 ~ 2110.0 MHz	dBm/MHz	-60.02	-58.37	-60.19	Pass	-30dBm/MHz
	MHz	2053.433	2055.572	2051.255		
2110.0 ~ 2153.6 MHz	dBm/MHz	-60.98	-61.77	-61.31	Pass	-50dBm/MHz
	MHz	2114.613	2114.792	2115.267		
2153.6 ~ 2170.0 MHz	dBm/MHz	-61.12	-62.07	-61.11	Pass	-50dBm/MHz
	MHz	2155.632	2155.693	2159.061		
2170.0 ~ 3400.0 MHz	dBm/MHz	-60.23	-58.65	-60.21	Pass	-30dBm/MHz
	MHz	2436.335	2580.611	2580.771		
3400.0 ~ 3419.4 MHz	dBm/MHz	-52.13	-57.62	-58.36	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	3419.386	3418.777	3418.892		
3419.4 ~ 3500.6 MHz	dBm/MHz	-54.09	-53.49	-53.23	Pass	-30dBm/MHz
	MHz	3459.621	3459.697	3459.672		
3500.6 ~ 3600.0 MHz	dBm/MHz	-60.58	-61.23	-57.19	Pass	-50dBm/MHz(*1), -30dBm/MHz(*2)
	MHz	3592.699	3592.663	3595.285		
3600.0 ~ 6000.0 MHz	dBm/MHz	-57.61	-56.92	-57.23	Pass	-30dBm/MHz
	MHz	5131.292	5167.561	5233.111		
6000 ~ 12750 MHz	dBm/MHz	-58.33	-59.13	-58.27	Pass	-30dBm/MHz
	MHz	6842.312	6840.79	6840.331		
1510.9 ~ (cf - 1.8) MHz	dBm/MHz	-39.21	-39.45	-40.22	Pass	-30dBm/MHz
	MHz	1708.037	1738.086	1782.775		
(cf + 1.8) ~ 1805.0 MHz	dBm/MHz	-40.72	-40.69	-40.25	Pass	-30dBm/MHz
	MHz	1782.33	1782.66	1792.11		
Note	* Applies to the frequency range that offset is 1.8MHz or more from center frequency. (*1) In case of using range 1750MHz or less (*2) In case of using range more than 1750MHz					



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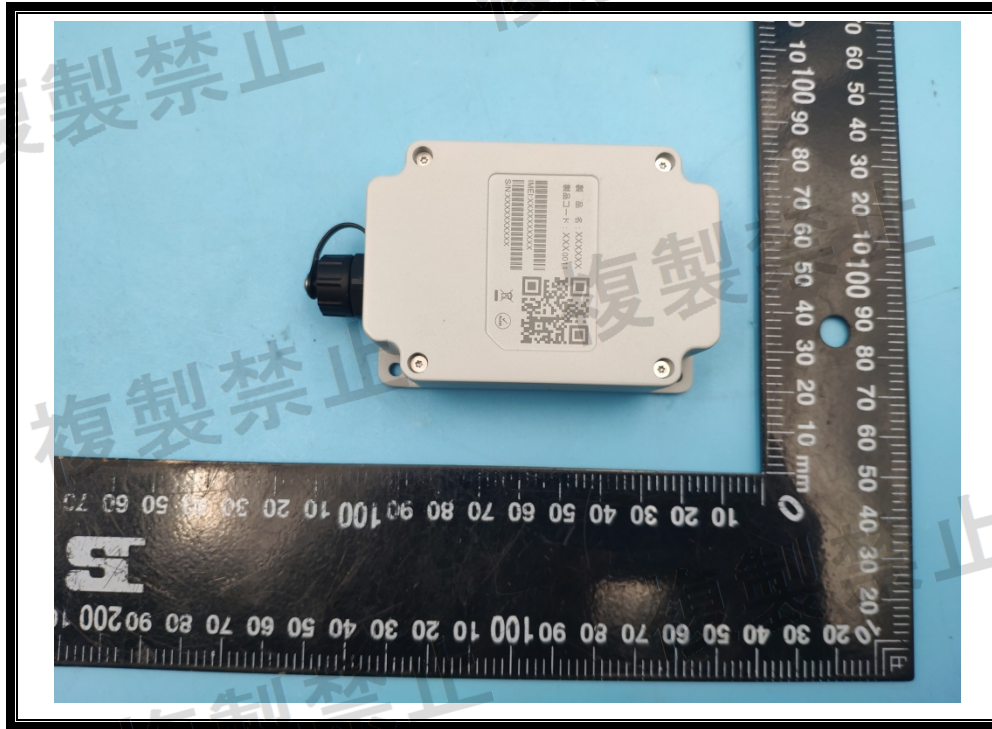
Annex G Adjacent Channel Leakage Power

NB-IOT FDD Band 3	NB-IOTfor 15kHz subcarrier spacing				
Center Frequency (cf)	1710.335(MHz)	1740.090(MHz)	1784.665(MHz)	Limit(dBm)	result
cf - (0.68 ~ 4.52) MHz	-59.1	-58.6	-58.1	-50	Pass
cf + (0.68 ~ 4.52) MHz	-59.4	-58.9	-58.3		Pass

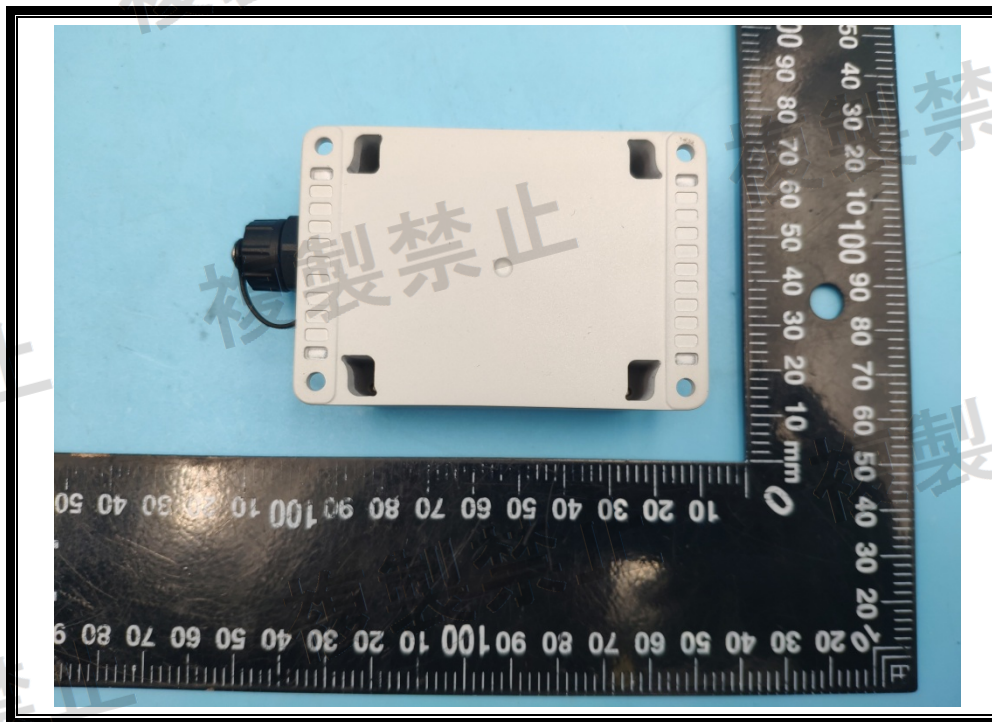
NB-IOT FDD Band 3	NB-IOTfor 3.75kHz subcarrier spacing				
Center Frequency (cf)	1710.335(MHz)	1740.090(MHz)	1784.665(MHz)	Limit(dBm)	result
cf - (0.68 ~ 4.52) MHz	-58.2	-58.5	-58.7	-50	Pass
cf + (0.68 ~ 4.52) MHz	-58.7	-58.9	-58.5		Pass

Annex H Photographs of the EUT

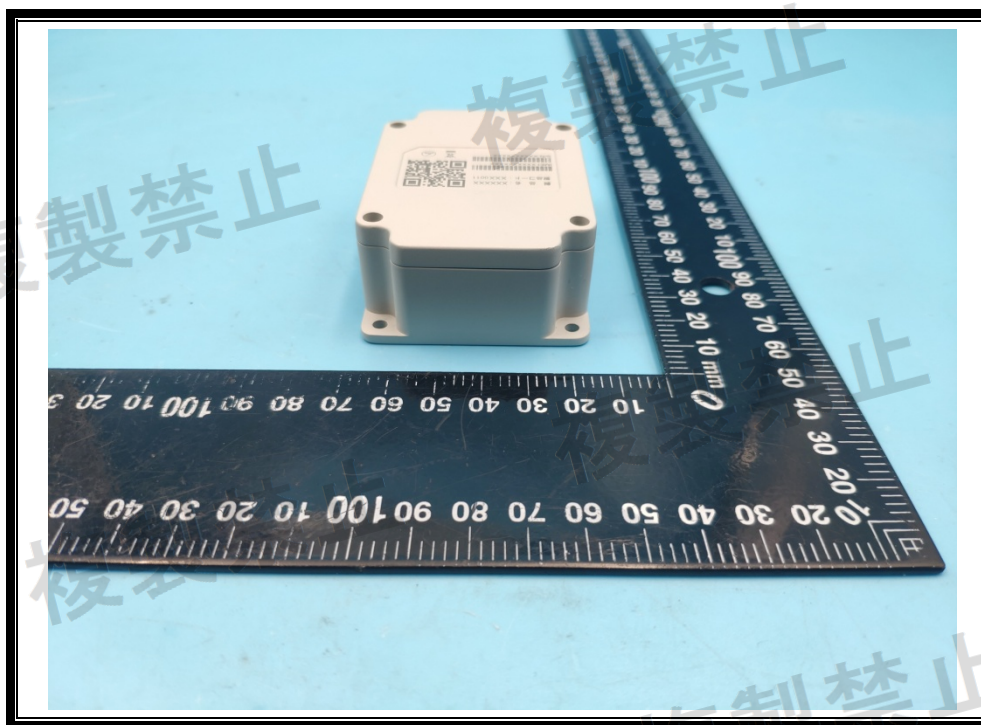
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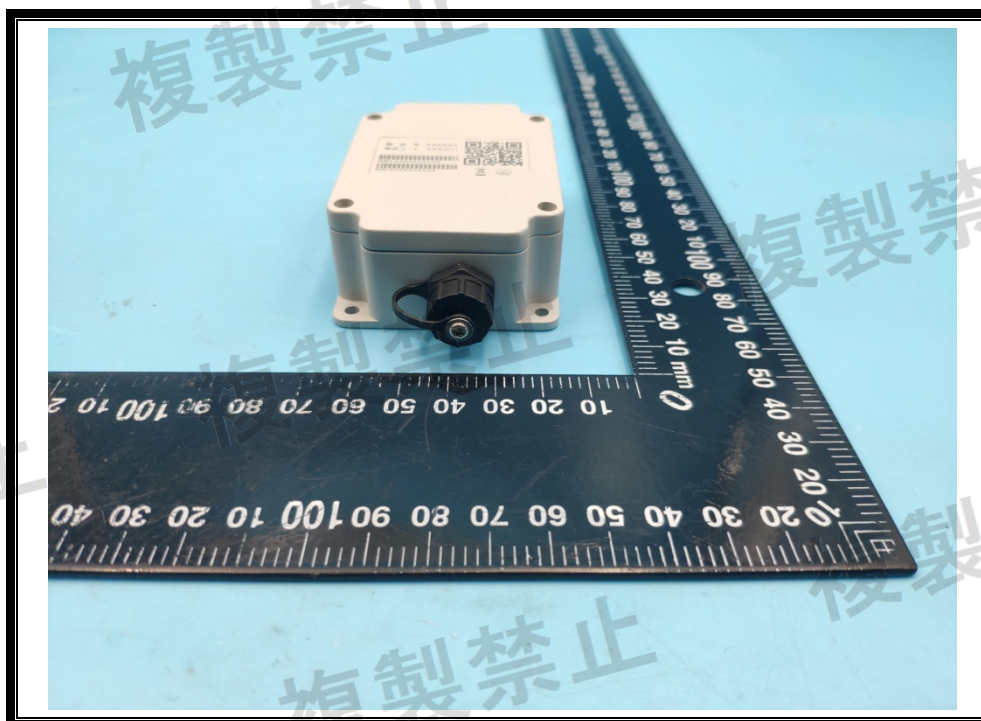
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Annex I Test Uncertainty

Test Description	Uncertainty
Frequency Tolerance	$\pm 15\text{Hz}$
Output Power	$\pm 0.7\text{dB}$
Occupied Bandwidth	1.4MHz,3MHz: $\pm 30\text{KHz}$ 5MHz,10MHz: 100KHz 15MHz,20MHz: 300KHz
Unwanted Emission Strength/Outband Area	$9\text{KHz} < f \leq 4\text{GHz}$: $\pm 2.0\text{dB}$
Unwanted Emission Strength/Spurious Area	$4\text{GHz} < f \leq 12.75\text{GHz}$: $\pm 4.0\text{dB}$
Adjacent Channel Leakage Power	$\pm 0.8\text{dB}$
Secondary Radiated Emission Strength	30MHz~180MHz: $\pm 3.74\text{dB}$ 180MHz~12.75GHz: $\pm 2.90\text{dB}$
Leakage Power at No-carrier Transmission	$\pm 0.8\text{dB}$



Annex J General Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory: Shenzhen Morlab Communications Technology Co., Ltd.

4. Test Equipments Utilized

4.1 RF Conformance Test System

Agilent T4010S LTE RF Conformance Test System						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	NB IOT Wireless Communications Test Set	6261830572	MT8821C	Anritsu	2020.02.25	2021.02.24
2	Smart RF Switching Unit	MY53301001	T1250A	Agilent	2019.04.16	2020.04.15
3	Mobile Communications DC Source	MY52000655	66311B	Agilent	2019.04.16	2020.04.15
4	MXA Signal Analyzer	MY52091436	N9020A	Agilent	2019.04.16	2020.04.15
5	PSG Analog Signal Generator	MY53400192	E8257D	Agilent	2019.04.16	2020.04.15
6	PC Monitor	57C1VBX	R410	DELL	N/A	N/A



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4.2 Climate Chamber

Climate Chamber						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Climate Chamber	12108015	DTL-003S/01	YOMA	2019.04.10	2020.04.09

4.3 Vibration Table

Vibration Table						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Vibration Table	N/A	ACT2000-S015L	CMI-COM	2019.04.10	2020.04.09

4.4 Anechoic Chamber

Anechoic Chamber						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Anechoic Chamber	N/A	9m*6m*6m	Changning	2019.04.10	2020.04.09

————— END OF REPORT —————