RADIO TEST REPORT

FCC ID	:	2AXSZAMTNB20213
Equipment	:	NBioT iCell
Brand Name	:	verizon
Model Name	:	AMTNB202101
Applicant	:	Amantya Technologies,Inc 2803,Philadelphia Pike,Suite B 304,Claymont DELAWARE 19703
Manufacturer	:	Amantya Technologies,Inc 2803,Philadelphia Pike,Suite B 304,Claymont DELAWARE 19703
Standard	:	47 CFR Part 27

The product was received on Feb. 03, 2021, and testing was started from Apr. 26, 2021 and completed on Apr. 27, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA-603-E and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FG112912	01	Initial issue of report	Jun. 01, 2021

Summary of Test Result

Report Clause	Ref Std. Clause (FCC Rule)	Test Items	Result (PASS/FAIL)	Remark
3.1	2.1046	Conducted Output Power	Reporting only	-
	27.50(b)(10)	Effective Radiated Power	PASS	-
3.2	-	Peak-to-Average Ratio	PASS	-
3.3	2.1049	Occupied Bandwidth	PASS	-
3.4	2.1051 27.53(c)	Conducted Band Edge	PASS	-
3.5	2.1051 27.53(c)	Conducted Spurious Emission	PASS	-
3.6	2.1053 27.53(c)(f)	Radiated Spurious Emission	PASS	-
3.7	2.1055 27.54	Frequency Stability for Temperature & Voltage	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan

1 General Description

1.1 Information

1.1.1 RF General Information

Items	Description
EUT Power Type	From power adapter
TX Frequency (MHz)	Band 13: 746.2
RX Frequency (MHz)	Band 13: 746.2
Bandwidth (kHz)	Band 13: 200
Antenna Information	Antenna Type: Dipole Antenna Gain: 0.6 dBi
Type of Modulation	QPSK

Note: The above information was declared by manufacturer.

1.1.2 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

Band	Bandwidth (kHz)	TX Frequency (MHz)	Type of Modulation	Max. Conducted Power		Max. ERP Power		99% Occupied Bandwidth (MHz)	Emission Designator	Frequency Tolerance (ppm)
				(dBm)	(W)	(dBm)	(W)			
13	200	746.2	QPSK	4.49	0.003	2.94	0.0019	172k	172KG7D	1.21

1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 27
- ANSI/TIA-603-E (2016)
- ANSI C63.26-2015
- FCC KDB 971168 D01 v03r01

The following reference test guidance is not within the scope of accreditation of TAF.

- 47 CFR FCC Part 2
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.3 Testing Location

Testing Location Information	
Test Lab.：Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH03-CB	Lucas Huang	22.1-22.6 / 56-59	Apr. 26, 2021
Radiated	03CH05-CB	Eason Chen	23.1-24.5 / 59-62	Apr. 27, 2021

1.4 Measurement Uncertainty

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	2.5 dB	Confidence levels of 95%

2 Test Configuration of Equipment Under Test

2.1 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Conducted Output Power Effective Radiated Power (ERP) Peak-to-Average Ratio Occupied Bandwidth Conducted Band Edge Conducted Spurious Emission Frequency Stability
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Radiated Spurious Emission
Test Condition	Radiated measurement
Operating Mode < 1GHz	The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.
1	EUT in Z axis
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.	
Operating Mode > 1GHz	The EUT was performed at X axis, Y axis and Z axis, and the worst case was found at Z axis. So the measurement will follow this same test configuration.
1	EUT in Z axis

2.2 Accessories

Accessories					
No.	**Equipment Name**	**Brand Name**	**Model Name**	**Rating**	**DC Power cable**
1	Adapter	Huntkey	HKA09019047-6U	INPUT: 100-240V ~ 50/60Hz, 1.5A OUTPUT: 19.0V, 4.74A, 90.06W	Non-Shielded 1.8m
Other					
Power cable*1: Non-Shielded, 0.7m					

2.3 Support Equipment

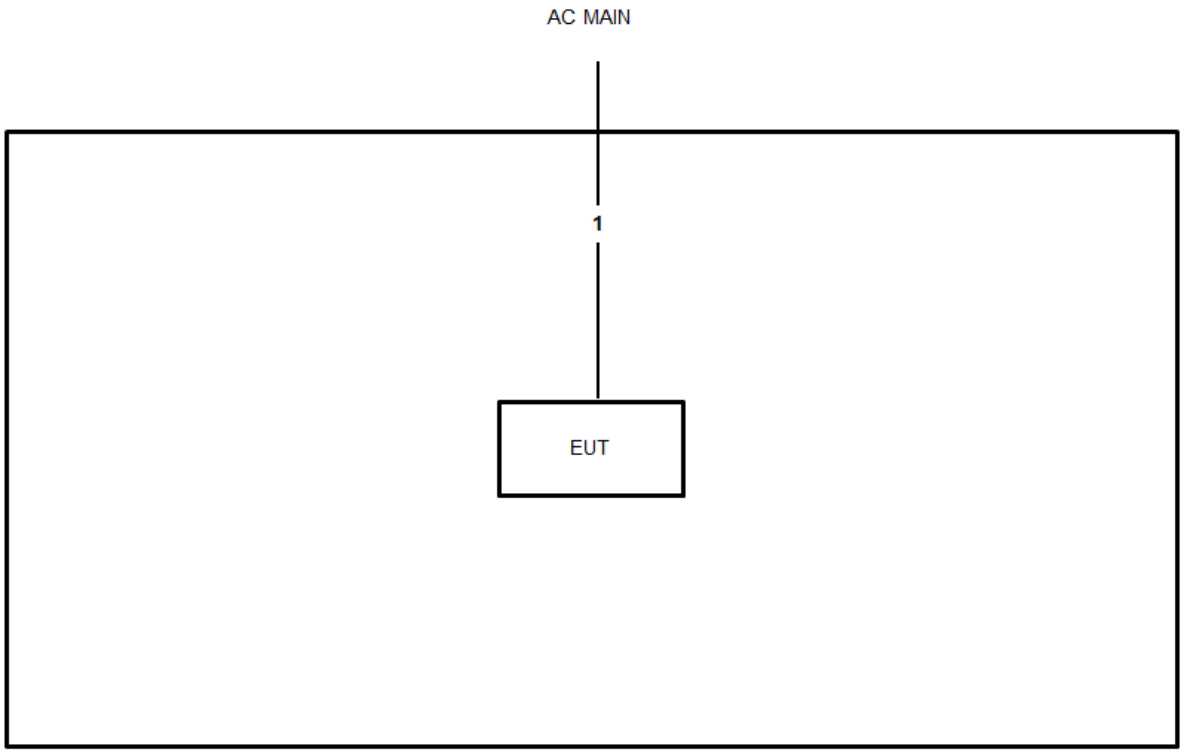
For RF Conducted test:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Keyboard	iCooky	SK068	N/A
B	Mouse	Logitech	M-U0026	N/A
C	LCD Monitor	ASUS	VP28U	N/A

For Radiated test: N/A

2.4 Test Setup Diagram

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	2.5m

2.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 1 dB and a 20dB attenuator.

Example:

Offset (dB) = RF cable loss (dB) + attenuator factor (dB).

= 1 + 20 = 21 (dB)

3 Test Result

3.1 Conducted Output Power and ERP Measurement

3.1.1 Description of the Conducted Output Power and ERP Measurement

Effective Radiated Power (ERP) Limit	
Band 13	Base Station: 1000 Watts Mobile Station: 3 Watts

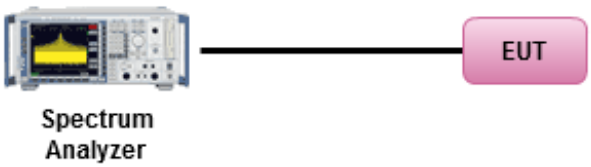
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to the spectrum.
2. Set EUT at maximum power.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level.

3.1.4 Test Setup

Conducted Output Power/ERP


3.1.5 Test Result of Conducted Output Power/ERP

Refer as Appendix A

3.2 Peak-to-Average Ratio Measurement

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.2.2 Measuring Instruments

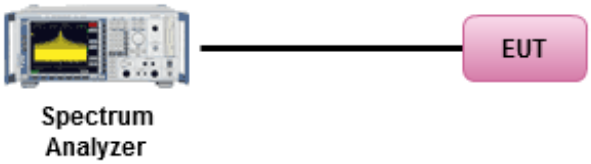
The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows ANSI C63.26-2015 Section 5.2.6
2. The EUT was connected to spectrum.
3. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup

Peak-to-Average Ratio



3.2.5 Test Result of Peak-to-Average Ratio

Refer as Appendix B

3.3 Occupied Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

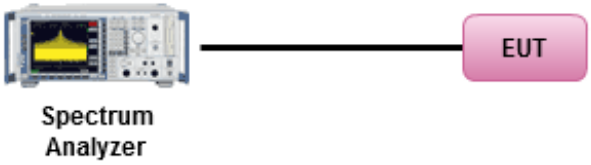
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)
2. The EUT was connected to spectrum analyzer.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
   The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.3.4 Test Setup

Occupied Bandwidth


3.3.5 Test Result of Occupied Bandwidth

Refer as Appendix C

3.4 Conducted Band Edge Measurement

3.4.1 Description of Conducted Band Edge Measurement

Conducted Band Edge	
27.53 (c)	For operations in the 776-788 MHz band, the FCC limit is 43 + 10log$_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least 65 + 10 log10 p(watts), dB, for mobile and portable equipment.
Note : Limit : 10 log P – {43 + 10 log P} dBW = -43dBW = -13dBm.	

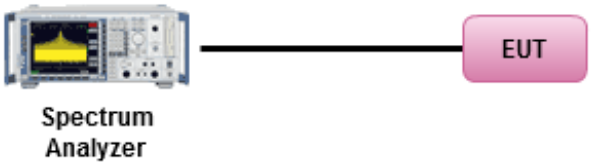
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.
2. The EUT was connected to spectrum analyzer.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

3.4.4 Test Setup

Conducted Band Edge


3.4.5 Test Result of Conducted Band Edge

Refer as Appendix D

3.5 Conducted Spurious Emission Measurement

3.5.1 Description of Conducted Spurious Emission Measurement

Conducted Spurious Emission
The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

Note : Limit : 10 log P – {43 + 10 log P} dBW = -43dBW = -13dBm.

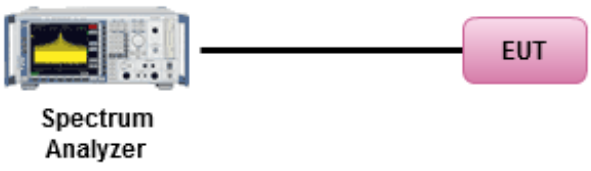
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.
2. The EUT was connected to spectrum analyzer.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
   The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.5.4 Test Setup

Conducted Spurious Emission


3.5.5 Test Result of Conducted Spurious Emission

Refer as Appendix D

3.6 Radiated Spurious Emission Measurement

3.6.1 Description of Radiated Spurious Emission Measurement

Radiated Spurious Emission	
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.	
Band 13	For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

Note :

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

Conducted Limit : 10 log P – {43 + 10 log P} dBW = -43dBW = -13dBm.

Radiated Limit = -13 dBm + 95.2 dB = 82.2 dBuV/m at 3m.

3.6.2 Measuring Instruments

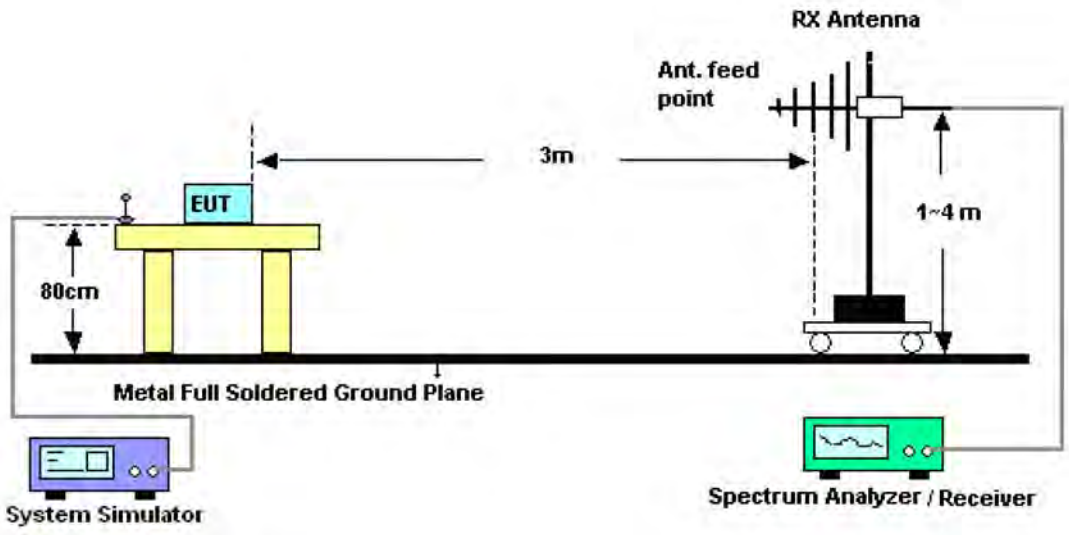
The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

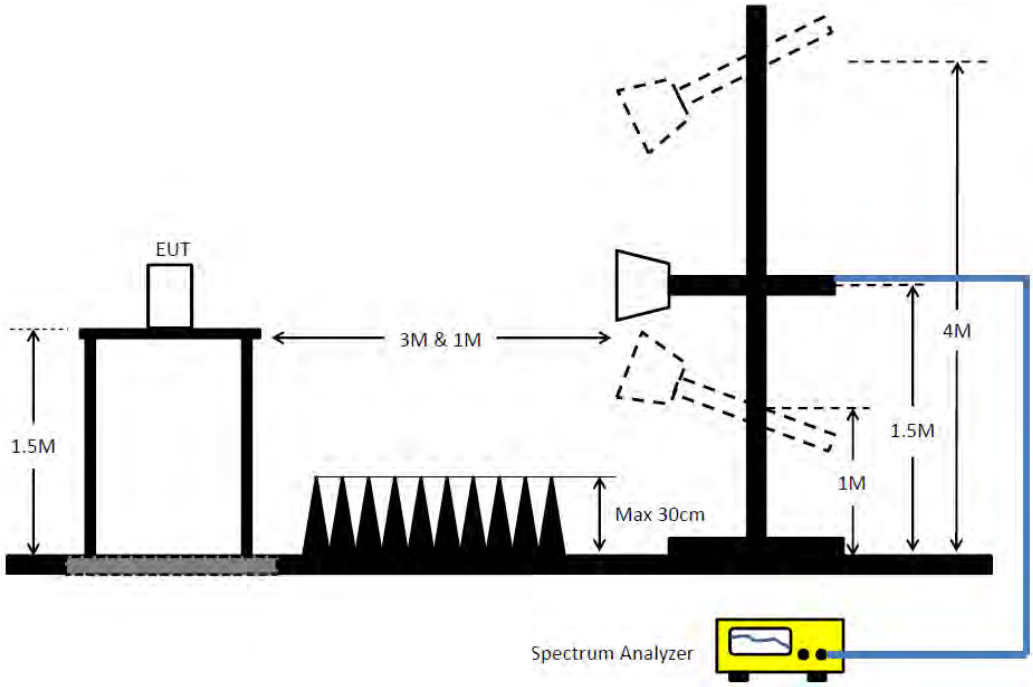
1. The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI/TIA-603-E (2016) Section 2.2.12.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 8 to step 9 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.6.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Test Result of Radiated Spurious Emission (Below 1GHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to FCC KDB 414788, and the result came out very similar.

3.6.7 Test Result of Radiated Spurious Emission (Above 1GHz)

Refer as Appendix E

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

Frequency Stability	
27.54	The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures for Temperature Variation

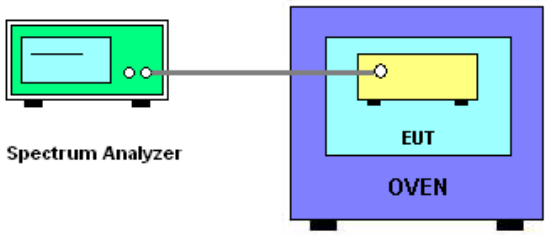
1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the spectrum.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.4 Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
2. The EUT was placed in a temperature chamber at 20±5° C and connected with the spectrum.
3. The power supply voltage to the EUT was varied from 85 to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

3.7.5 Test Setup

Frequency Stability



3.7.6 Test Result of Frequency Stability

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09, 2021	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 08, 2020	Nov. 07, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 26, 2021	Mar. 25, 2022	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Sep. 05, 2020	Sep. 04, 2021	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jul. 03, 2020	Jul. 02, 2021	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Nov. 10, 2020	Nov. 09, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
Test Software	Audix	E3	6.120210m	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Dec. 31, 2020	Dec. 30, 2021	Conducted (TH03-CB)
Signal analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 13, 2021	Jan. 12, 2022	Conducted (TH03-CB)
Temp. and Humidity Chamber	Gaint Force	GTH-408-40-CP-AR	MAA1410-011	-40~100 degree	Sep. 09, 2020	Sep. 08, 2021	Conducted (TH03-CB)

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-11	1 GHz –18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-12	1 GHz –18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-13	1 GHz –18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz –18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz –18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
Power Sensor	Anritsu	MA2411B	1726195	300MHz~40GHz	Aug. 17, 2020	Aug. 16, 2021	Conducted (TH03-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Aug. 17, 2020	Aug. 16, 2021	Conducted (TH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH03-CB)
MW Analog Signal Generator	Keysight	N5183A	MY50142965	100kHz~20GHz	Nov. 22, 2020	Nov. 21, 2021	Conducted (TH03-CB)
Vector Signal Generator	Keysight	N5182B	MY53052408	9kHz~6GHz	Jan. 20, 2021	Jan. 19, 2022	Conducted (TH03-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.

Summary

Mode	Power (dBm)	Power (W)	ERP (dBm)	ERP (W)
Band 13	-	-	-	-
NB-IoT_200kHz_Nss1,Tone 1_1TX	4.49	0.003	2.94	0.0019

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Power (dBm)	Power (W)	ERP (dBm)	ERP (W)	ERP Lim. (W)
Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX	-	-	-	-	-	-	-	-
746.2MHz_0	Pass	0.6	4.49	4.49	0.003	2.94	0.0019	1000

DG = Directional Gain; **Port n** = Port n output power

Summary

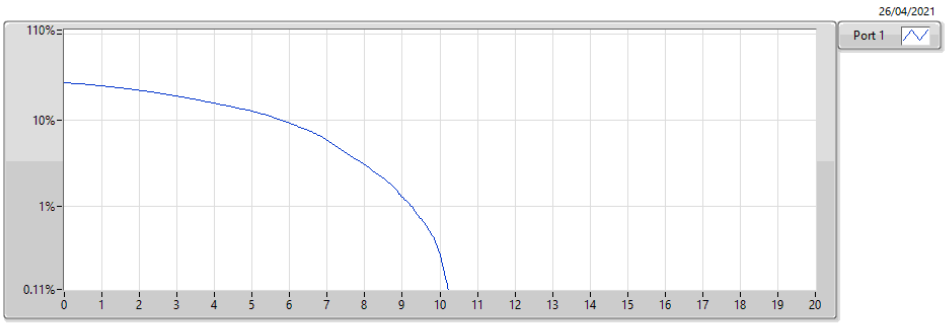
Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band 13	-	-	-	-	-
NB-IoT_200kHz_Nss1,Tone 1_1TX	Pass	746.2	13.00	10.24	1

Result

Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX	-	-	-	-	-
746.2MHz_0	Pass	746.2	13.00	10.24	1

Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX **PAR**

746.2MHz_Tone 1_0



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
746.2	10M	10.24	-2.76	13.00	1

Summary

Mode	Max-NdB (Hz)	Max-OBW (Hz)	ITU-Code	Min-NdB (Hz)	Min-OBW (Hz)
Band 13	-	-	-	-	-
NB-IoT_200kHz_Nss1,Tone 1_1TX	198.5k	172k	172KG7D	198.5k	172k

Max-N dB = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

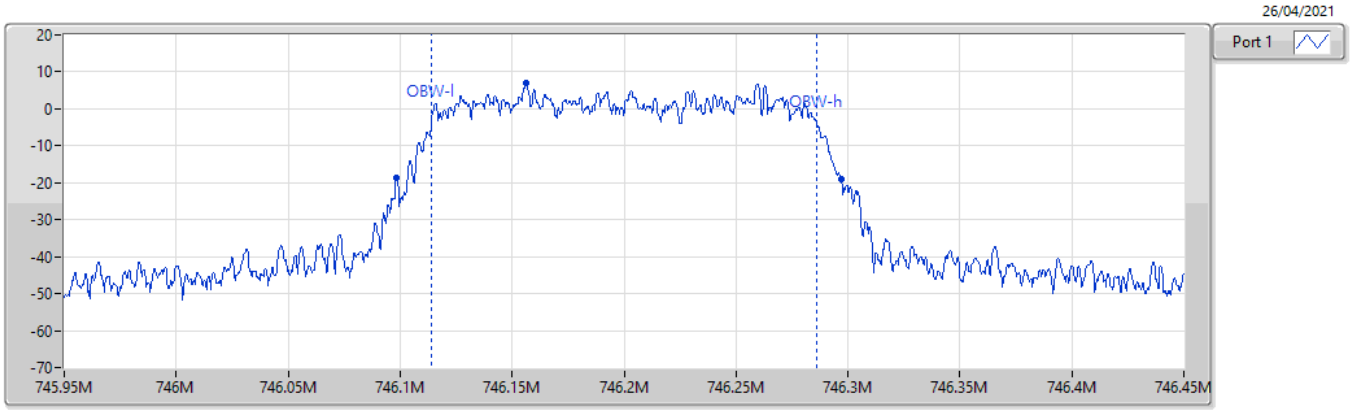
Result

Mode	Result	Port 1-NdB (Hz)	Port 1-OBW (Hz)	Limit (Hz)
Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX	-	-	-	-
746.2MHz_0	Pass	198.5k	172k	Inf

Port X-N dB = Port **X** 26dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX **EBW**

746.2MHz_Tone 1_0



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
198.5k	746.0985M	746.297M	172k	746.11425M	746.28625M	1	746.2M	500k	3k	10k

Summary

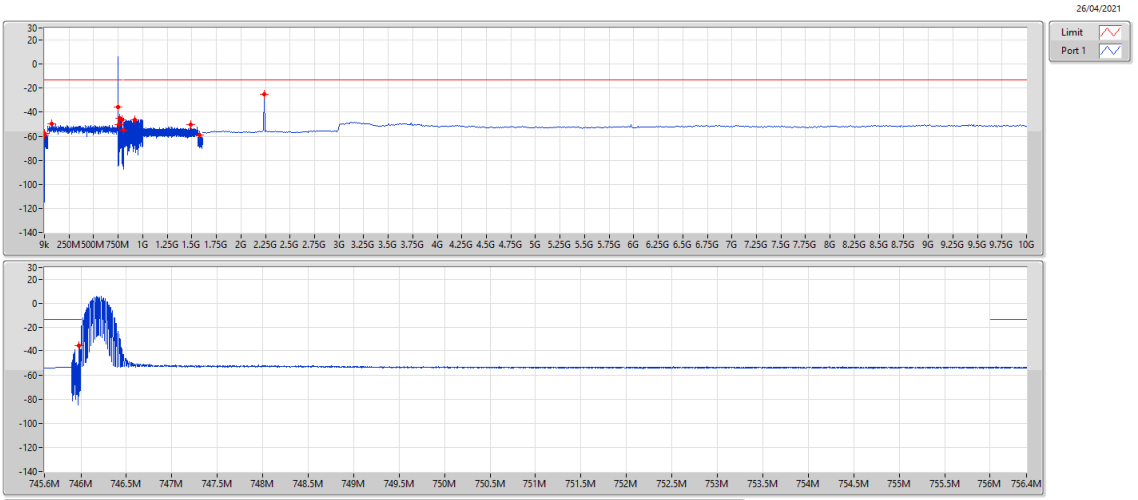
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band 13	-	-	-	-	-	-	-	-	-	-	-	-
NB-IoT_200kHz_Nss1,Tone 1_1TX	Pass	793M	805M	10k	30k	RMS	803.13M	-54.81	-46.00	-8.81	-	-

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
746.2MHz_0	Pass	9k	150k	300	1k	RMS	9k	-58.85	-13.00	-45.85	-	-
746.2MHz_0	Pass	150k	30M	10k	30k	RMS	1.016M	-57.47	-13.00	-44.47	-	-
746.2MHz_0	Pass	30M	745.9M	100k	300k	RMS	75.1M	-50.00	-13.00	-37.00	-	-
746.2MHz_0	Pass	745.9M	746M	30k	100k	RMS	745.98M	-35.97	-13.00	-22.97	-	-
746.2MHz_0	Pass	758M	758.1M	30k	100k	RMS	758.08M	-50.13	-13.00	-37.13	-	-
746.2MHz_0	Pass	758.1M	763M	100k	300k	RMS	762.99M	-45.35	-13.00	-32.35	-	-
746.2MHz_0	Pass	775M	793M	100k	300k	RMS	790.21M	-46.39	-13.00	-33.39	-	-
746.2MHz_0	Pass	793M	805M	10k	30k	RMS	803.13M	-54.81	-46.00	-8.81	-	-
746.2MHz_0	Pass	805M	1G	100k	300k	RMS	922.63M	-46.35	-13.00	-33.35	-	-
746.2MHz_0	Pass	1G	1.559G	1M	3M	RMS	1.49073G	-50.29	-13.00	-37.29	-	-
746.2MHz_0	Pass	1.559G	1.61G	10k	30k	RMS	1.5767G	-59.18	-13.00	-49.18	-	-
746.2MHz_0	Pass	1.61G	10G	1M	3M	RMS	2.23925G	-25.16	-13.00	-12.16	-	-

Band 13_NB-IoT_200kHz_Nss1,Tone 1_1TX **CSE-TX-Sum**

746.2MHz_Tone 1_0



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)
9k	150k	300	1k	RMS	9k	-58.85	-13.00	-45.85	-	-
150k	30M	10k	30k	RMS	1.016M	-57.47	-13.00	-44.47	-	-
30M	745.9M	100k	300k	RMS	75.1M	-50.00	-13.00	-37.00	-	-
745.9M	746M	30k	100k	RMS	745.98M	-35.97	-13.00	-22.97	-	-
758M	758.1M	30k	100k	RMS	758.08M	-50.13	-13.00	-37.13	-	-
758.1M	763M	100k	300k	RMS	762.99M	-45.35	-13.00	-32.35	-	-
775M	793M	100k	300k	RMS	790.21M	-46.39	-13.00	-33.39	-	-
793M	805M	10k	30k	RMS	803.13M	-54.81	-46.00	-8.81	-	-
805M	1G	100k	300k	RMS	922.63M	-46.35	-13.00	-33.35	-	-
1G	1.559G	1M	3M	RMS	1.49073G	-50.29	-13.00	-37.29	-	-
1.559G	1.61G	10k	30k	RMS	1.5767G	-59.18	-13.00	-49.18	-	-
1.61G	10G	1M	3M	RMS	2.23925G	-25.16	-13.00	-12.16	-	-

Radiated Spurious Emission (Above 1GHz) – Harmonic

Configurations	200kHz / QPSK

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm/m	dBm/m	dB	dBm	dB	dB/m	dB	cm	deg		
1	2238.38	-43.10	-13.00	-30.10	-39.04	4.20	28.10	36.36	114	127	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm/m	dBm/m	dB	dBm	dB	dB/m	dB	cm	deg		
1	2238.60	-34.31	-13.00	-21.31	-30.25	4.20	28.10	36.36	135	182	Peak	VERTICAL

Summary

Mode	Result	Ch (Hz)	Center (Hz)	Port	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)	Remark
Band 13	-	-	-	-	-	-	-	-	-
NB-IoT_200kHz_Nss1_1TX	Pass	746.2M	746.199494M	1	746.1127M	746.286288M	0.68	746M,756M,Inf	-

Result

Mode	Result	Ch (Hz)	Center (Hz)	Port	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)
Band 13_NB-IoT_200kHz_Nss1_1TX	-	-	-	-	-	-	-	-
746.2MHz_-30°C	Pass	746.2M	746.1997M	1	746.113038M	746.286362M	0.40	746M,756M,Inf
746.2MHz_-20°C	Pass	746.2M	746.20045M	1	746.113112M	746.287788M	0.60	746M,756M,Inf
746.2MHz_-10°C	Pass	746.2M	746.200338M	1	746.113225M	746.28745M	0.46	746M,756M,Inf
746.2MHz_0°C	Pass	746.2M	746.199775M	1	746.113112M	746.286438M	0.30	746M,756M,Inf
746.2MHz_10°C	Pass	746.2M	746.200262M	1	746.114238M	746.286288M	0.35	746M,756M,Inf
746.2MHz_20°C	Pass	746.2M	746.200562M	1	746.112962M	746.288162M	0.75	746M,756M,Inf
746.2MHz_30°C	Pass	746.2M	746.2006M	1	746.1133M	746.2879M	0.80	746M,756M,Inf
746.2MHz_40°C	Pass	746.2M	746.199775M	1	746.113525M	746.286025M	0.30	746M,756M,Inf
746.2MHz_50°C	Pass	746.2M	746.200112M	1	746.113412M	746.286812M	0.15	746M,756M,Inf
746.2MHz_126.5V	Pass	746.2M	746.199681M	1	746.112812M	746.28655M	0.43	746M,756M,Inf
746.2MHz_110V	Pass	746.2M	746.2009M	1	746.113975M	746.287825M	1.21	746M,756M,Inf
746.2MHz_93.5V	Pass	746.2M	746.199494M	1	746.1127M	746.286288M	0.68	746M,756M,Inf