

Prüfbericht-Nr.: <i>Test report No.:</i>	50317543 001	Auftrags-Nr.: <i>Order No.:</i>	168134662	Seite 1 von 28 <i>Page 1 of 28</i>
Kunden-Referenz-Nr.: <i>Client reference No.:</i>	N/A	Auftragsdatum: <i>Order date.:</i>	09.10.2019	
Auftraggeber: <i>Client:</i>	Binatone Electronics International Ltd. Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong			
Prüfgegenstand: <i>Test item:</i>	Baby Unit (4.3" / 5" HD Wi-Fi® video baby monitor)			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	CONNECTVIEW65BU, LUX64CONNECTBU, LUX65CONNECTBU (Trademark: motorola)			
Auftrags-Inhalt: <i>Order content:</i>	FCC and IC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 CFR47 FCC Part 2: Section 2.1091 RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 April 2018 ICES-003 Issue 6 January 2016 RSS-102 Issue 5 March 2015			
Wareneingangsdatum: <i>Date of receipt:</i>	09.10.2019	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000999977-001~003			
Prüfzeitraum: <i>Testing period:</i>	10.10.2019 - 14.11.2019			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 14.01.2020 Ryan Yang / Assistant Project Manager		 14.01.2020 Winnie Hou / Technical Certifier		
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:				
FCC ID: VLJ-LUX64BU IC: 4522A-LUX64BU HVIN: LUX64CONNECTBU, LUX65CONNECTBU				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
Legend:	1 = very good P(ass) = passed a.m. test specifications(s)	2 = good F(ail) = failed a.m. test specifications(s)	3 = satisfactory F(ail) = failed a.m. test specifications(s)	4 = sufficient N/A = not applicable
				5 = mangelhaft N/T = nicht getestet
				5 = poor 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>				

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 6dB BANDWIDTH

RESULT: Pass

5.1.5 99% BANDWIDTH

RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.8 20dB BANDWIDTH

RESULT: Pass

5.1.9 CARRIER FREQUENCY SEPARATION

RESULT: Pass

5.1.10 NUMBER OF HOPPING FREQUENCY

RESULT: Pass

5.1.11 TIME OF OCCUPANCY

RESULT: Pass

5.1.12 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

5.1.13 RADIATED EMISSION

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of 2.4GHz FHSS

Appendix C: Test Results of Wi-Fi 802.11 b/g/n

Appendix D: Test Results of Part 15B and ICES 003

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

1F East & 2-4F, Cybio Technology Building No. 1, No. 16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, Shenzhen, 518057

FCC Accreditation Designation No.: CN1260

ISED wireless device testing laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

TÜV Rheinland (Shenzhen) Co., Ltd.

Radio Spectrum Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wireless Connectivity Tester	R&S	CMW270	101375	20.08.2020
Signal Analyzer	R&S	FSV 40	101441	20.08.2020
Vector Signal Generator	R&S	SMBV100A	263301	21.08.2020
Signal Generator	R&S	SMB100A	115186	21.08.2020
OSP	R&S	OSP 150	101017	20.12.2019
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V10.40.10)	N/A	N/A
Power Meter	R&S	NRP2	107105	20.12.2019
Wideband Power Sensor	R&S	NRP-Z81	105350	20.12.2019
Spurious Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Signal Generator	R&S	SMB100A	180840	20.08.2020
Wideband Radio Communication Tester	R&S	CMW500	165339	20.08.2020
Signal Analyzer	R&S	FSV 40	101440	20.08.2020
System Controller Interface	R&S	SCI-100	S10010036	N/A
Filterbank	R&S	CDMA	100751	21.08.2020
Filterbank	R&S	GSM	100811	21.08.2020
OSP	R&S	OSP 120	102041	N/A

OSP	R&S	OSP 150	101385	N/A
Pre-amplifier	R&S	SCU08F1	08320030	20.08.2020
Amplifier	R&S	SCU-18F	180079	20.08.2020
Amplifier	R&S	SCU40A	100450	20.08.2020
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	192	02.09.2020
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	02.09.2020
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	02.09.2020
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19066	02.09.2020
Conducted Emission on AC Mains				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	19.08.2020
Artificial Mains Network	R&S	ENV216	102333	19.08.2020
Radiated Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR7	102022	19.08.2020
Bilog Antenna	TESEQ	CBL6112D	51321	29.08.2020

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power (conducted)	± 2.5 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 6 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 6 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB
Radiated Emission (3m SAC), 30MHz to 1000MHz	± 4.52 dB
Radiated Emission (3m SAC), above 1000MHz	± 4.37 dB
Temperature	± 1 °C
Humidity	± 5 %
Voltage (DC)	± 1 %
Voltage (AC, <10kHz)	± 2 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C & D of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd.. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 1F East & 2-4F, Cybio Technology Building No. 1, No. 16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, Shenzhen, 518057 is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a baby unit (camera) of one of the 4.3" / 5" HD Wi-Fi® video baby monitor, which supports 2.4GHz FHSS and Wi-Fi 802.11 b/g/n wireless technologies.

According to the declaration of the applicant, the electrical circuit design, PCB layout and components used are identical for all models, only the model number is different. The baby unit is supplied by external adapters and battery, see below table for details:

Test EUT (Model No.)	Baby Unit		Supplier
	Supported	Tested	
Adapter #1 (S005BNU0500100)	☑	☑	Tenpao
Adapter #2 (YWK-AD050100-U)	☑	☑	YWK
Adapter #3 (BQ06A-0501000-U)	☑	☑	BECKY

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Baby Unit (4.3" / 5" HD Wi-Fi® video baby monitor)
Type Designation	CONNECTVIEW65BU, LUX64CONNECTBU, LUX65CONNECTBU
Trade Mark	motorola
FCC ID	VLJ-LUX64BU
IC	4522A-LUX64BU
HVIN	LUX64CONNECTBU, LUX65CONNECTBU
Operating Voltage	DC 5.0V@1000mA input via AC/DC adapter
Testing Voltage	AC 120V@60Hz
AC/DC Adapter #1	Model: S005BNV0500100 (Tenpao) Input: AC 100-240V~50/60Hz, 150mA Output: DC 5.0V@1.0A
AC/DC Adapter #2	Model: YWK-AD050100-U(YWK) Input: AC 100-240V~50/60Hz, 0.3A Output: DC 5.0V@1.0A
AC/DC Adapter #3	Model: BQ06A-0501000-G(BECKY) Input: AC 100-240V~50/60Hz, 300mA Output: DC 5.0V@1.0A

Technical Specification of 2.4GHz FHSS	
Operating Frequency	2402 - 2477 MHz
Type of Modulation	GFSK
Channel Number	22 channels
Channel Separation	2 MHz, 5 MHz
Antenna Type	Integral antenna
Gain1 of FHSS	0 dBi
Technical Specification of Wi-Fi 802.11 b/g/n	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20) 2422 - 2452 MHz for 802.11n(HT40)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number	11 channels for 802.11b/g/n(HT20) 7 channels for 802.11n(HT40)
Channel Separation	5 MHz
Antenna Type	Integral antenna
Gain2 of Wi-fi	0 dBi

Table 3: RF Channel and Frequency of 2.4GHz FHSS

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
01	2402	07	2420	13	2450	19	2471
02	2404	08	2425	14	2455	20	2473
03	2406	09	2430	15	2460	21	2475
04	2408	10	2435	16	2465	22	2477
05	2410	11	2440	17	2467	/	/
06	2415	12	2445	18	2469	/	/

Test frequencies are lowest channel: 2402 MHz, middle channel: 2440 MHz and highest channel: 2477 MHz for 2.4GHz FHSS.

Table 4: RF Channel and Frequency of Wi-Fi 802.11 b/g/n

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
	Frequency (MHz)	Frequency (MHz)
01	2412	/
02	2417	/
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	/
11	2462	/

Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, 2.4GHz FHSS wireless transmitting mode
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Wi-Fi 802.11 b/g/n wireless transmitting mode
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- C. On, Transmitting on hopping channel
- D. On, Normal operation with 2.4GHz FHSS mode
- E. On, Normal operation with Wi-Fi mode
- F. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- FCC/IC Label and Location Info

- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014.

According to clause 3.1, all tests were performed on model LUX65CONNECTBU in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	T480	PF-16A6N8	N/A
5" HD Wi-Fi® video baby monitor (Parent Unit)	King Chuang	LUX65CONNECTPU	N/A	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

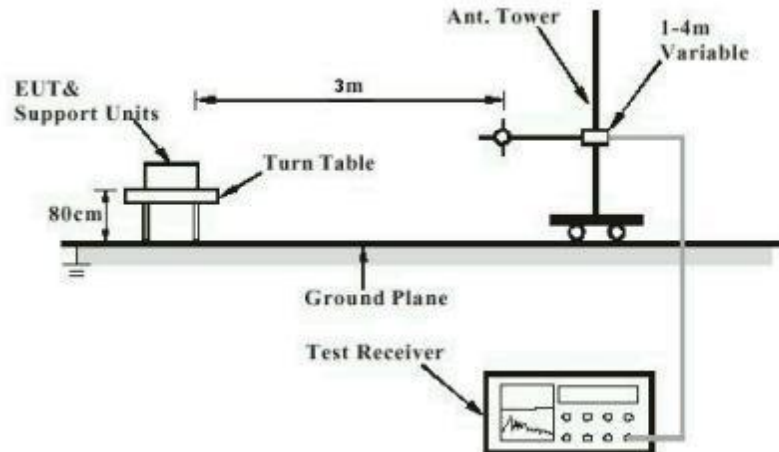


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

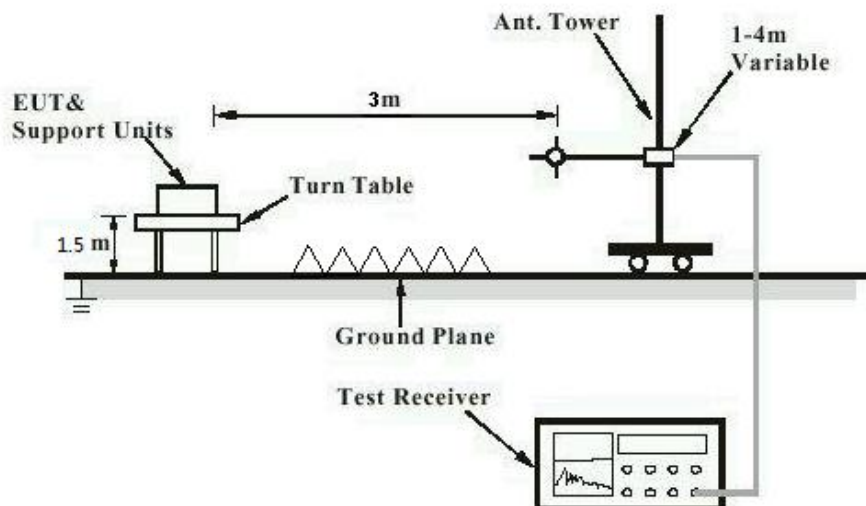


Diagram of Measurement Configuration for Mains Conduction Measurement

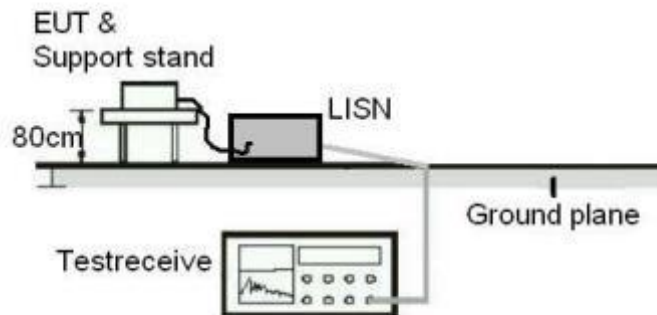
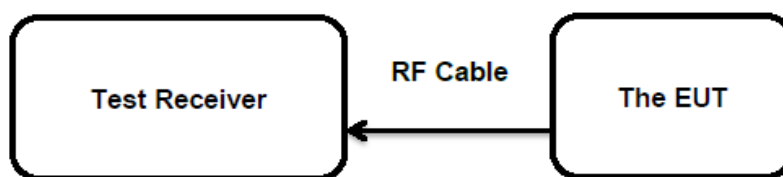


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has two internal antennas, the directional gain of antenna are 0 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(1)&(3)
RSS-247 Clause 5.4(b)&(d)

Basic standard : ANSI C63.10: 2013

Limits : FHSS < 0.125 Watts, DTS < 1.0 Watts

Kind of test site : Shielded Room

Test Setup

Date of testing : 04.11.2019

Input voltage : AC 120V@60Hz

Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature : 25 °C

Relative humidity : 56 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 6: Test Result of Maximum Peak Conducted Output Power, 2.4GHz FHSS

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
FHSS	Low CH	18.60	0.0724	< 0.125
	Middle CH	18.40	0.0692	
	High CH	17.00	0.0501	
Maximum Measured Value		18.60	0.0724	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of FHSS: 0 dBi,
e.i.r.p. = $P_{(Peak\ power)} + G$, which is far below the 4 W

Table 7: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power		Limit (W)
			(dBm)	(W)	
802.11b	1 Mbps	2412	15.70	0.0372	< 1.0
		2437	16.00	0.0398	
		2462	14.20	0.0263	
802.11g	6 Mbps	2412	18.80	0.0759	
		2437	17.90	0.0617	
		2462	15.60	0.0363	
802.11n (HT20)	MCS0	2412	18.30	0.0676	
		2437	14.90	0.0309	
		2462	14.80	0.0302	
802.11n (HT40)	MCS0	2422	16.20	0.0417	
		2437	13.30	0.0214	
		2452	13.00	0.0200	
Maximum Measured Value			18.80	0.0759	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G) of 802.11 b/g/n: 0 dBi,
e.i.r.p. = $P_{(\text{Peak power})} + G$, which is far below the 4 W

For the measurement records, refer to the appendix B & C.

5.1.3 Conducted Power Spectral Density

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(e)
RSS-247 Clause 5.2(b)

Basic standard : ANSI C63.10: 2013

Limits : < 8 dBm / 3kHz

Kind of test site : Shielded Room

Test Setup

Date of testing : Refer to test result

Input voltage : AC 120V@60Hz

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature : 25 °C

Relative humidity : 56 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 8: Test Result of Power Spectral Density, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	1 Mbps	2412	-8.29	8 dBm / 3kHz
		2437	-9.99	
		2462	-10.59	
802.11g	6 Mbps	2412	-15.34	
		2437	-16.58	
		2462	-18.37	
802.11n (HT20)	MCS0	2412	-18.08	
		2437	-17.47	
		2462	-17.81	
802.11n (HT40)	MCS0	2422	-21.44	
		2437	-21.40	
		2452	-21.67	
Maximum Measured Value			-8.29	

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix C.

5.1.4 6dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(2)
RSS-247 Clause 5.2(a)

Basic standard : ANSI C63.10: 2013

Limits : > 500 KHz

Kind of test site : Shielded Room

Test Setup

Date of testing : 08.11.2019

Input voltage : AC 120V@60Hz

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature : 25 °C

Relative humidity : 56 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 9: Test Result of 6dB Bandwidth, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)
802.11b	1 Mbps	2412	7950.00	> 500
		2437	7650.00	
		2462	9300.00	
802.11g	6 Mbps	2412	16500.00	
		2437	16500.00	
		2462	16550.00	
802.11n (HT20)	MCS0	2412	17150.00	
		2437	17650.00	
		2462	17650.00	
802.11n (HT40)	MCS0	2422	35500.00	
		2437	35700.00	
		2452	35850.00	
Minimum Measured Value			7650.00	

For the measurement records, refer to the appendix C.

5.1.5 99% Bandwidth

RESULT:
Pass
Test Specification

Test standard : RSS-Gen Clause 6.6
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded Room

Test Setup

Date of testing : 08.11.2019
Input voltage : AC 120V@60Hz
Operation mode : A, B
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 10: Test Result of 99% Bandwidth, 2.4GHz FHSS

Test Mode	Test Channel (MHz)	99% Bandwidth (MHz)	Limit
FHSS	Low CH	1.66	/
	Middle CH	1.68	
	High CH	1.68	
Maximum Measured Value		1.68	

Table 11: Test Result of 99% Bandwidth, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Test Channel (MHz)	99% Bandwidth (MHz)	Limit
802.11b	1 Mbps	2412	13.30	/
		2437	13.30	
		2462	13.40	
802.11g	6 Mbps	2412	16.60	
		2437	16.60	
		2462	16.50	
802.11n (HT20)	MCS0	2412	17.70	
		2437	17.60	
		2462	17.60	
802.11n (HT40)	MCS0	2422	36.25	
		2437	36.25	
		2452	36.50	
Maximum Measured Value			36.50	

For the measurement records, refer to the appendix B & C.

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: Refer to test result
Input voltage	: AC 120V@60Hz
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B & C.

5.1.7 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	: ANSI C63.10: 2013
Limits	: FCC Part 15.209(a) RSS-Gen Table 4
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: Refer to test result
Input voltage	: AC 120V@60Hz
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 22 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B & C.

5.1.8 20dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(1)
RSS-247 Clause 5.1(a)

Basic standard : ANSI C63.10: 2013

Kind of test site : Shielded Room

Test Setup

Date of testing : 04.11.2019

Input voltage : AC 120V@60Hz

Operation mode : A

Test channel : Low / Middle / High

Ambient temperature : 25 °C

Relative humidity : 56 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 12: Test Result of 20dB Bandwidth, 2.4GHz FHSS

Test Mode	Test Channel (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
FHSS	Low CH	1650.00	1100.00	/
	Middle CH	1510.00	1006.67	
	High CH	1600.00	1066.67	
Maximum Measured Value		1650.00	1100.00	

For the measurement records, refer to the appendix B.

5.1.9 Carrier Frequency Separation

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(1)
RSS-247 Clause 5.1(b)

Basic standard : ANSI C63.10: 2013

Limits : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater

Kind of test site : Shielded Room

Test Setup

Date of testing : 04.11.2019

Input voltage : AC 120V@60Hz

Operation mode : C

Test channel : Low / Middle / High

Ambient temperature : 25 °C

Relative humidity : 56 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 13: Test Result of Carrier Frequency Separation, 2.4GHz FHSS

Test Mode	Test Channel	Test Channel (MHz)	Measured Channel Separation (KHz)	Limit (kHz)
FHSS	Low Channel	2402.00	1930.69	≥ 25kHz or 2/3 of 20dB bandwidth
	Adjacency Channel	2404.00		
	Middle Channel	2440.00	5049.50	
	Adjacency Channel	2435.00		
	High Channel	2477.00	1930.69	
	Adjacency Channel	2475.00		

Note: The limit is maximum $2/3$ of the 20 dB bandwidth: 1100.00 KHz.

For the measurement records, refer to the appendix B.

5.1.10 Number of Hopping Frequency**RESULT:****Pass****Test Specification**

Test standard : FCC part 15.247(a)(1)(iii)
RSS-247 Clause 5.1(d)
Basic standard : ANSI C63.10: 2013
Limits : ≥ 15 non-overlapping channels
Kind of test site : Shielded Room

Test Setup

Date of testing : 04.11.2019
Input voltage : AC 120V@60Hz
Operation mode : C
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 14: Test Result of Number of Hopping Frequency, 2.4GHz FHSS

Test Mode	Frequency Range	Measured Quantity of Hopping Channel	Limit
FHSS	2402 - 2477 MHz	22	≥ 15

For the measurement records, refer to the appendix B.

5.1.11 Time of Occupancy**RESULT:****Pass****Test Specification**

Test standard : FCC part 15.247(a)(1)(iii)
RSS-247 Clause 5.1(d)
Basic standard : ANSI C63.10: 2013
Limits : < 0.4s
Kind of test site : Shielded Room

Test Setup

Date of testing : 04.11.2019
Input voltage : AC 120V@60Hz
Operation mode : C
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Note:

Dwell time = Pulse width x Number of channels in Period
Period = 0.4 (seconds/ channel) x 22 (channel) = 8.8 seconds

For the measurement records, refer to the appendix B.

5.1.12 Conducted Emission on AC Mains**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.207(a) RSS-Gen Clause 8.8
Basic standard	: ANSI C63.10: 2013
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a) RSS-Gen Table 3
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 04.11.2019
Input voltage	: AC 120V@60Hz
Operation mode	: D, E
Earthing	: Not connected
Ambient temperature	: 24 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B & D.

5.1.13 Radiated Emission**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.109(a) ICES-003
Basic standard	: ANSI C63.4: 2014
Frequency range	: 30 - 6000MHz
Classification	: Class B
Limits	: FCC Part 15.109(a) ICES-003 Table 5 & Table 7
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: Refer to test result
Input voltage	: AC 120V@60Hz
Operation mode	: D+E
Earthing	: Not connected
Ambient temperature	: 24 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix D.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

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