Report No.: DDT-R19050916-1E1

Issued Date: Jun. 25, 2019

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	LJ ELECTRONICS TECHNOLOGY LIMITED
Address	:	Suite 1003,10/F.,Chung Sheung Building,9 Queen Victoria Street,Centra,HONG KONG
Equipment under Test	:	Sub GHz FSK/OOK Transceiver Module
Model No.	:	LJ1269HC-915
Trade Mark	:	LJelect
FCC ID	:	2ATKS-1269HC
Manufacturer	:	GONGGUAN HOLCHAN ELECTRONICS TECHNOLOGY LIMITED
Address	:	The 2nd Floor (west side),JieAn Industrial Park, The 1st Industrial Road,TuTang Village,ChangPing Town,DongGuan City, GuangDong, ChinaChangPing Town,DongGuan City, GuangDong, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel: +86-0769-38826678, **E-mail:** ddt@dgddt.com, http://www.dgddt.com

REPORT

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TEST REPORT DECLARE

Applicant	:	LJ ELECTRONICS TECHNOLOGY LIMITED
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Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C.

Test procedure used:

ANSI C63.10:2013.

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R19050916-1E1		
Date of Receipt:	May 30, 2019	**Date of Test:**	May 30, 2019 ~ Jun. 25, 2019

Prepared By: ***Approved By:***

Ella Gong Damon Hu

Ella Gong/Engineer ***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision history

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jun. 25, 2019	

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Results**
20dB Bandwidth	FCC Part 15: 15.215 ANSI C63.10:2013	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10:2013	PASS
Band Edge Compliance	FCC Part 15: 15.205 FCC Part 15: 15.249 ANSI C63.10:2013	PASS
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10:2013	N/A
Antenna requirement	FCC Part 15: 15.203	PASS
Note: N/A represents not applicable		

2. General test information

2.1. Description of EUT

EUT* Name	:	Sub GHz FSK/OOK Transceiver Module
Model Number	:	LJ1269HC-915
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 3.3V
Operation frequency	:	902.495 MHz, 915.495 MHz, 927.495 MHz
Modulation	:	FSK, OOK
Antenna Type	:	Dedicated Antenna, maximum PK gain: 1.2 dBi
Sample Type	:	Series production

Note : EUT is the ab. of equipment under test.

2.2. Accessories of EUT

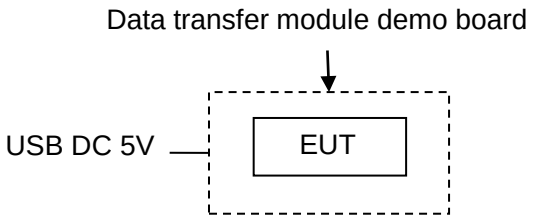
Description of Accessories	Manufacturer	Model number	Serial No.	Other
N/A	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Serial No.	Other
Data transfer module demo board	LJ ELECTRONICS TECHNOLOGY LIMITED	DEMO_SX12M	N/A	N/A
Pinboard	LJ ELECTRONICS TECHNOLOGY LIMITED	S12_T	N/A	N/A

2.4. Block diagram of EUT configuration for test

Tx Mode:



Data transfer module demo board can control the EUT work in RF test mode at specified test channel as below:

Tested mode, channel, information		
Mode	Channel	Frequency (MHz)
FSK Tx mode	CH1	902.495
	CH2	915.495
	CH3	927.495
OOK Tx mode	CH1	902.495
	CH2	915.495
	CH3	927.495

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25℃
Humidity range:	40-75%
Pressure range:	86-106kPa

2.6. Deviations of test standard

No Deviation.

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

FCC Designation Number: CN1182; FCC Test Firm Registration Number: 540522

Industry Canada site registration number: 10288A-1

2.8. Measurement uncertainty

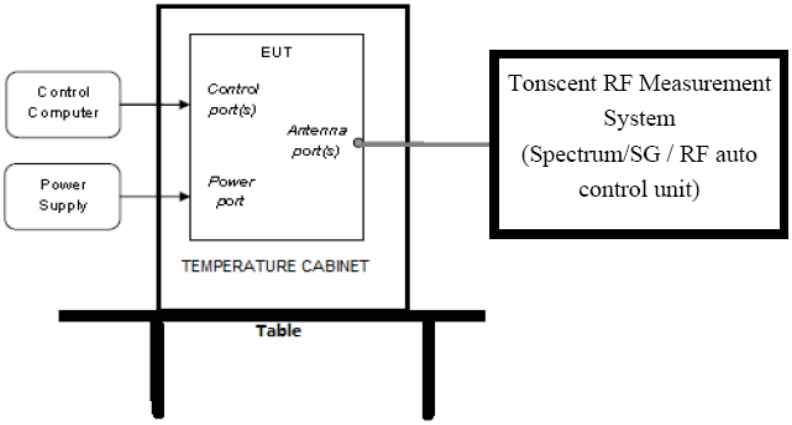
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86dB (10 MHz ≤ f < 3.6GHz);
	1.38dB (3.6GHz≤ f < 8GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74dB
Power Spectral Density	0.74dB (10 MHz ≤ f < 3.6GHz);
	1.38dB (3.6GHz≤ f < 8GHz)
Conducted spurious emissions	0.86dB (10 MHz ≤ f < 3.6GHz);
	1.40dB (3.6GHz≤ f < 8GHz)
	1.66dB (8GHz≤ f < 22GHz)
Uncertainty for radio frequency (RBW<20kHz)	3×10^{-8}
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-18GHz)	4.10dB(1-6GHz)
	4.40dB (6GHz-18Gz)
Uncertainty for Power line conduction emission test	3.32dB (150kHz-30MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Oct. 12, 2018	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jun. 29, 2018	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Oct. 12, 2018	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jun. 29, 2018	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Oct. 21, 2018	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Oct. 23, 2018	1 Year
DC Power Source	Ouyuan electronic technology co., LTD	ADC50-20	990406	Oct. 12, 2018	1 Year
Attenuator	Mini-Circuits	BW-S10W2	101109	Aug. 18, 2018	1 Year
RF Cable	Micable	C10-01-01-1	100309	Oct. 21, 2018	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Oct. 21, 2018	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
Radiation 1#chamber					
EMI Test Receiver	R&S	ESU8	100316	Oct. 12, 2018	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 29, 2018	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 09, 2018	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Oct. 20, 2018	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 16, 2018	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Oct. 25, 2018	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Oct. 12, 2018	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Oct. 21, 2018	1 Year
RF Cable	N/A	SMAJ-SMA J-1M+ 11M	17070133+17070131	Nov. 08, 2018	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Oct. 21, 2018	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
Test Receiver	R&S	ESU8	100316	Oct. 12, 2018	1 Year
LISN 1	R&S	ENV216	101109	Oct. 12, 2018	1 Year
LISN 2	R&S	ESH2-Z5	100309	Oct. 12, 2018	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Oct. 12, 2018	1 Year
CE Cable 1	HUBSER	ESU8/RF2	W10.01	Oct. 12, 2018	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 20dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3. Test Procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

RBW:	3 kHz
VBW:	10 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

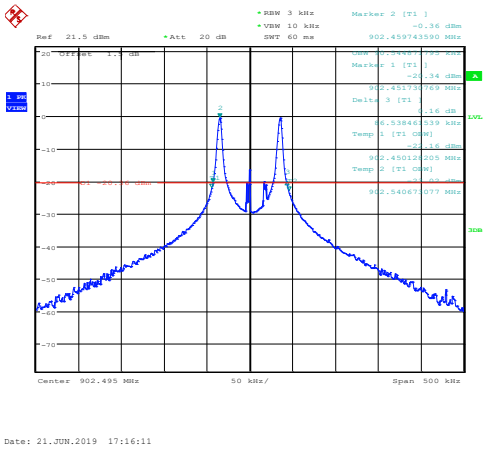
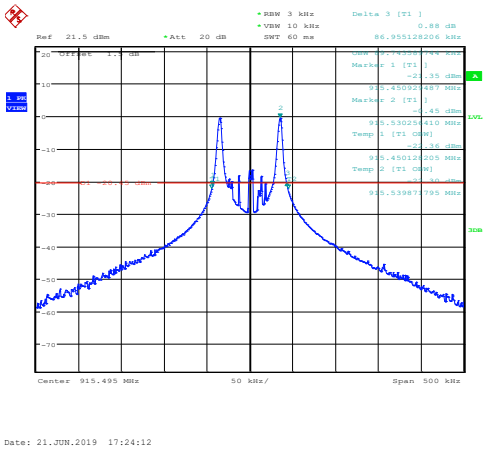
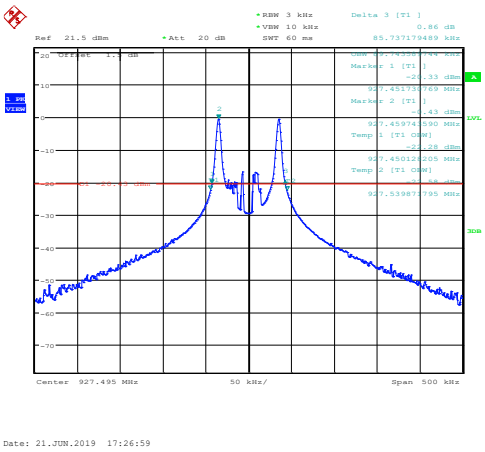
(3) Allow the trace to stabilize, measure the 20dB bandwidth of signal.

4.4. Test Result

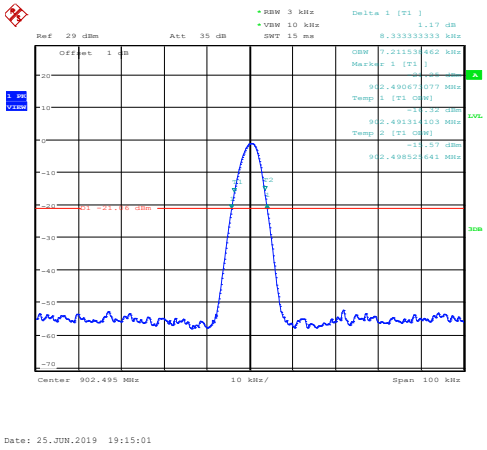
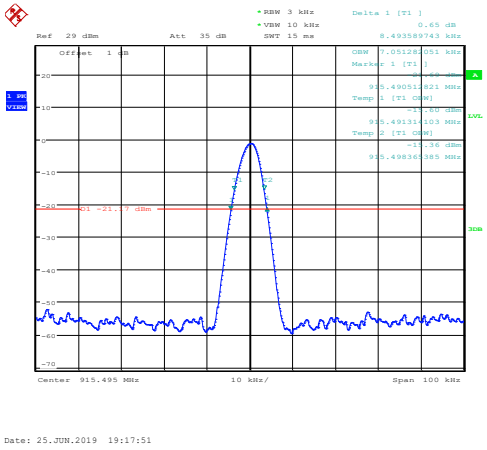
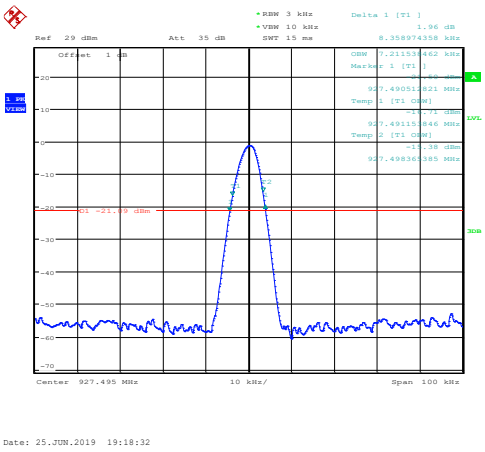
Mode	Freq (MHz)	20dB bandwidth Result (kHz)	Limit (kHz)	Conclusion
FSK	902.495	86.538	/	PASS
	915.495	86.955	/	PASS
	927.495	85.737	/	PASS
OOK	902.495	8.333	/	PASS
	915.495	8.494	/	PASS
	927.495	8.359	/	PASS

4.5. Original test data

FSK:

Bandwidth	
902.495 MHz	
915.495 MHz	
927.495 MHz	

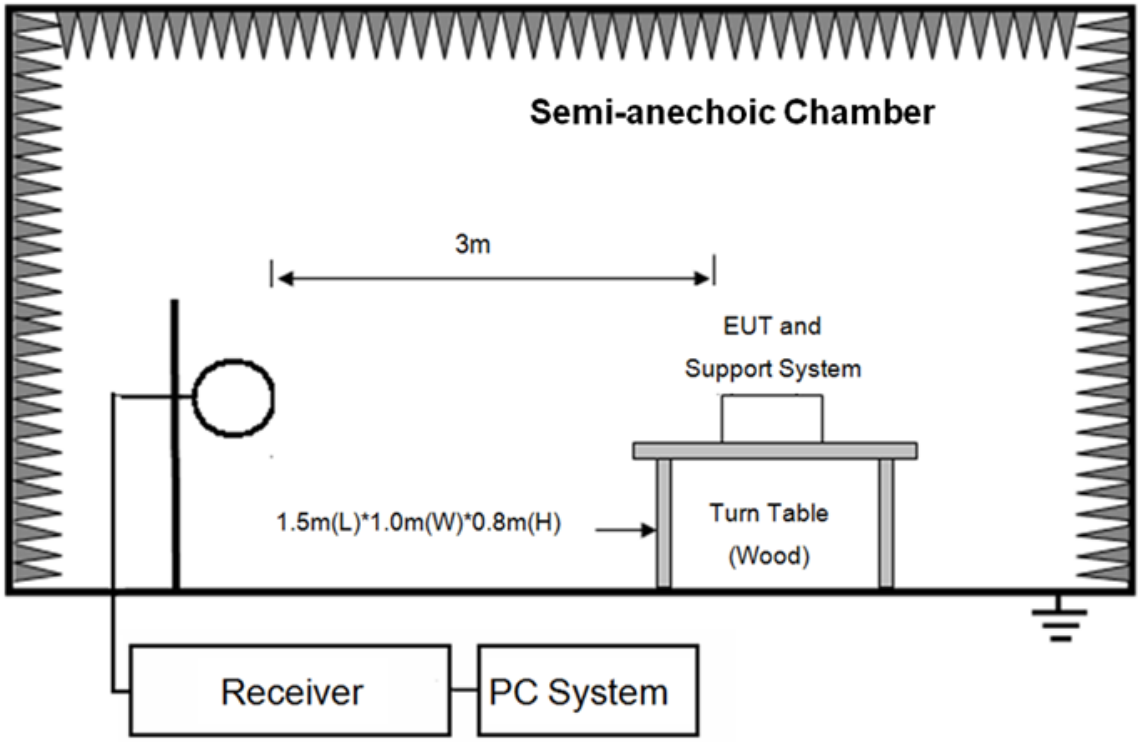
OOK:

Bandwidth	
902.495 MHz	
915.495 MHz	
927.495 MHz	

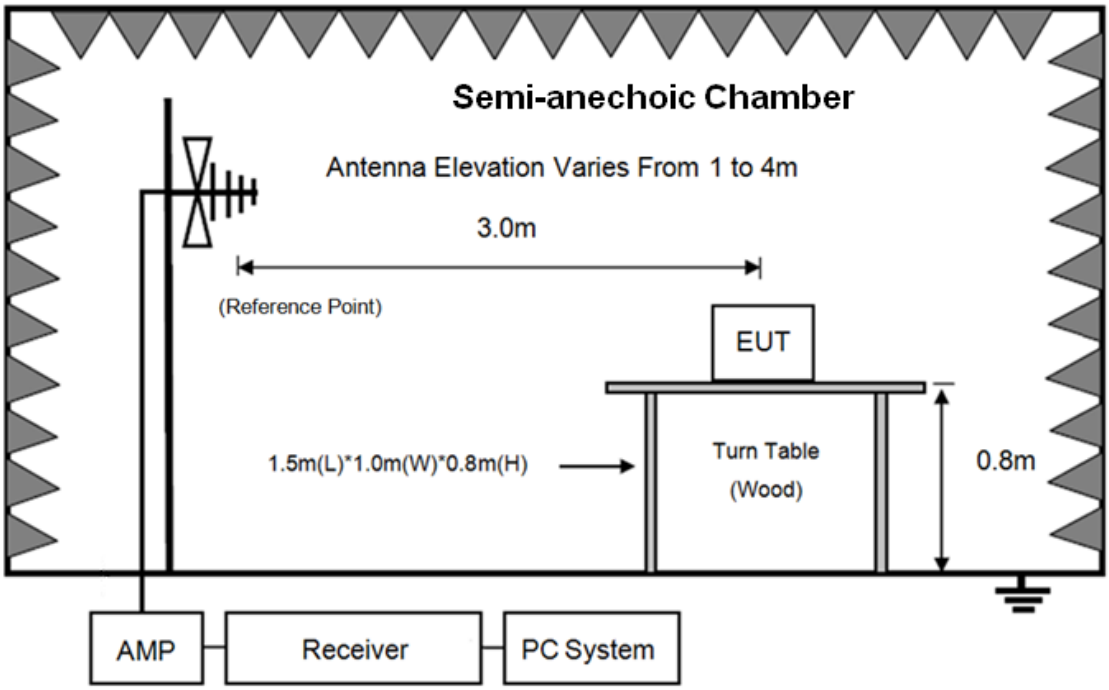
5. Radiated emission

5.1. Block diagram of test setup

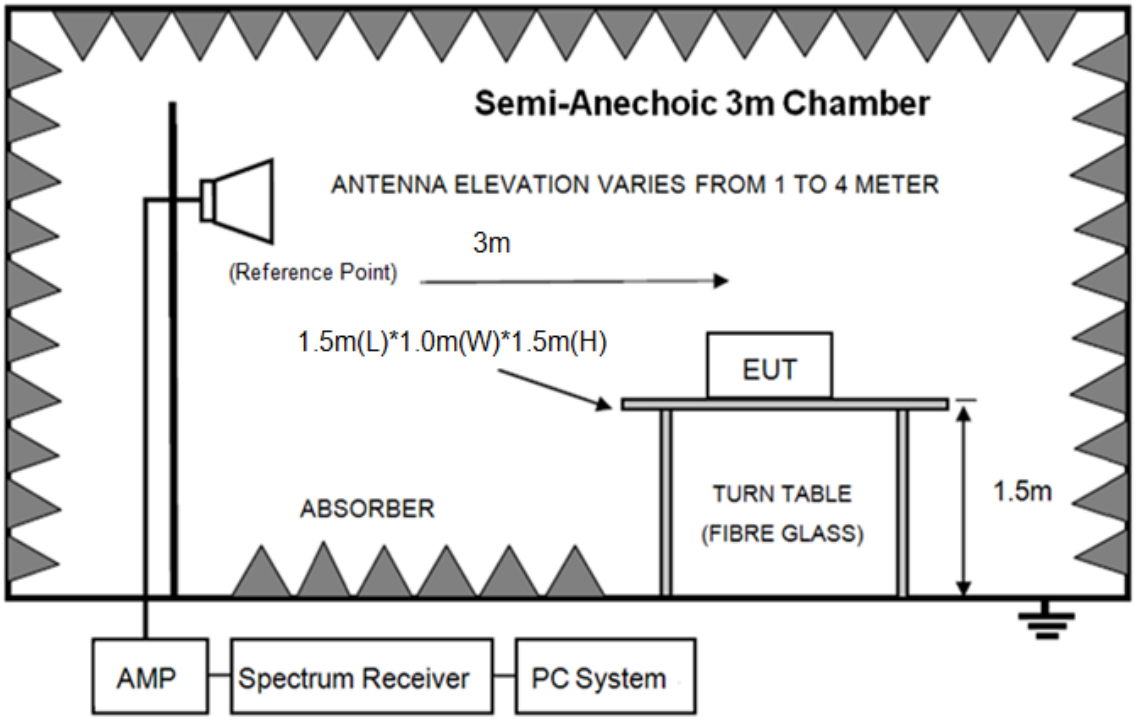
In 3m Anechoic Chamber Test Setup Diagram for 9kHz-30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz-1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

5.2. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Field Strength of Fundamental emission for 902 MHz-928 MHz	3	94.0 dB(μV)/m (Average) 114.0 dB(μV)/m(Peak)	
Field Strength of Harmonics	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark:

(1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz, radiated emission limits in these three bands are based on measurements employing an average detector.

5.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.

(2) Setup EUT and assistant system according clause 2.3 and 4.2

(3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.

(a) Change work frequency or channel of device if practicable.

(b) Change modulation type of device if practicable.

(c) Change power supply range from 85% to 115% of the rated supply voltage

(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions

(4) Spectrum frequency from 9kHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9kHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.

(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

(6) For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.

(7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure. Peak detector is used for both PK and AV test.

(8) For fundamental frequency test, set spectrum analyzer’s RBW=3MHz, VBW=10MHz. peak detector for PK, RMS detector for AV, Read the Level in spectrum analyzer and record.

5.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9kHz to 25GHz were comply with 15.209 limit.

Note 1: According exploratory test no any obvious emission was detected from 9kHz to 30MHz and 18GHz to 25GHz, so the final test was performed with frequency range from 30MHz to 18GHz and recorded in below.

Note 2: For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Field Strength of the Fundamental Signal

FSK:

Freq. (MHz)	Read level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector type	Polarization
902.495	64.47	21.74	6.93	93.14	94.00	-0.86	Average	HORIZONTAL
902.495	68.19	21.74	6.93	96.86	114.00	-17.14	Peak	HORIZONTAL
902.495	60.34	21.74	6.93	89.01	94.00	-4.99	Average	VERTICAL
902.495	62.72	21.74	6.93	91.39	114.00	-22.61	Peak	VERTICAL
915.495	64.68	21.88	6.99	93.55	94.00	-0.45	Average	HORIZONTAL
915.495	68.42	21.88	6.99	97.29	114.00	-16.71	Peak	HORIZONTAL
915.495	62.14	21.88	6.99	91.01	94.00	-2.99	Average	VERTICAL
915.495	64.32	21.88	6.99	93.19	114.00	-20.81	Peak	VERTICAL
927.495	64.00	22.03	7.06	93.09	94.00	-0.91	Average	HORIZONTAL
927.495	67.55	22.03	7.06	96.64	114.00	-17.36	Peak	HORIZONTAL
927.495	60.50	22.03	7.06	89.59	94.00	-4.41	Average	VERTICAL
927.495	62.04	22.03	7.06	91.13	114.00	-22.87	Peak	VERTICAL
Result: Pass								

OOK:

Freq. (MHz)	Read level (dBµV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector type	Polarization
902.495	63.41	21.74	6.93	92.08	94.00	-1.92	Average	HORIZONTAL
902.495	67.25	21.74	6.93	95.92	114.00	-18.08	Peak	HORIZONTAL
902.495	54.47	21.74	6.93	83.14	94.00	-10.86	Average	VERTICAL
902.495	58.11	21.74	6.93	86.78	114.00	-27.22	Peak	VERTICAL
915.495	61.42	21.88	6.99	90.29	94.00	-3.71	Average	HORIZONTAL
915.495	65.92	21.88	6.99	94.79	114.00	-19.21	Peak	HORIZONTAL
915.495	55.24	21.88	6.99	84.11	94.00	-9.89	Average	VERTICAL
915.495	57.71	21.88	6.99	86.58	114.00	-27.42	Peak	VERTICAL
927.495	63.64	22.03	7.06	92.73	94.00	-1.27	Average	HORIZONTAL
927.495	65.44	22.03	7.06	94.53	114.00	-19.47	Peak	HORIZONTAL
927.495	54.32	22.03	7.06	83.41	94.00	-10.59	Average	VERTICAL
927.495	56.66	22.03	7.06	85.75	114.00	-28.25	Peak	VERTICAL
Result: Pass								

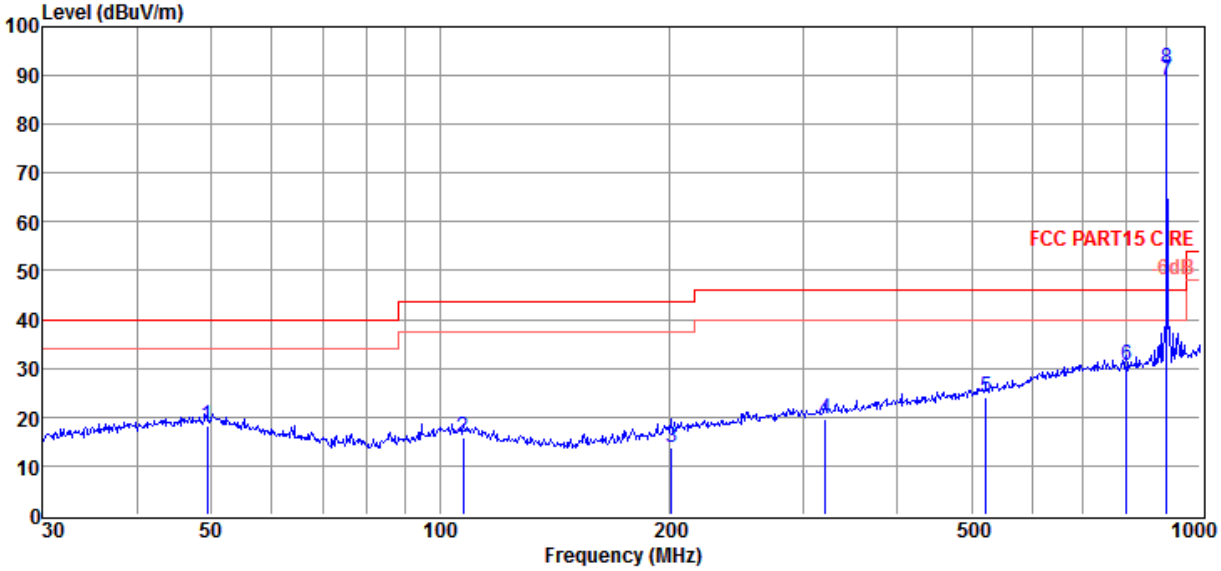
Note: Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

Radiated Emission test (below 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: FSK 902.495 MHz		

Data: 11



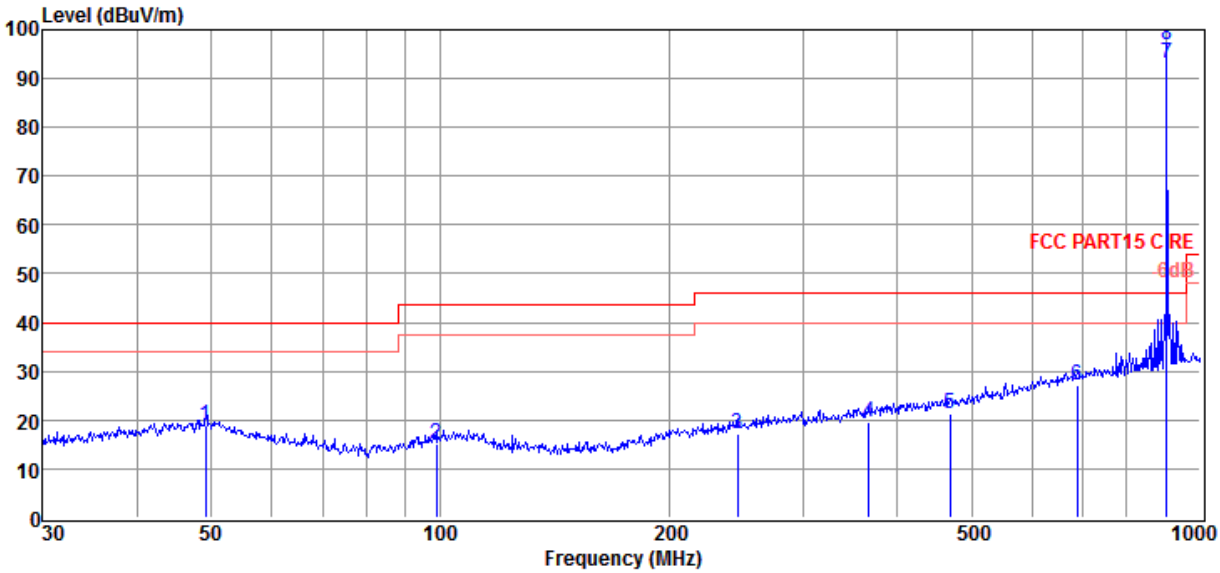
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	49.36	-0.29	14.53	3.86	18.10	40.00	-21.90	QP	VERTICAL
2	107.13	-0.37	11.77	4.24	15.64	43.50	-27.86	QP	VERTICAL
3	201.39	-2.57	11.44	4.82	13.69	43.50	-29.81	QP	VERTICAL
4	321.06	0.01	14.38	5.26	19.65	46.00	-26.35	QP	VERTICAL
5	522.72	0.65	17.44	5.89	23.98	46.00	-22.02	QP	VERTICAL
6	798.98	3.46	20.69	6.60	30.75	46.00	-15.25	QP	VERTICAL
7	902.00	60.34	21.74	6.93	89.01	/	/	Average	VERTICAL
8	902.00	62.72	21.74	6.93	91.39	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: FSK 902.495 MHz		

Data: 12



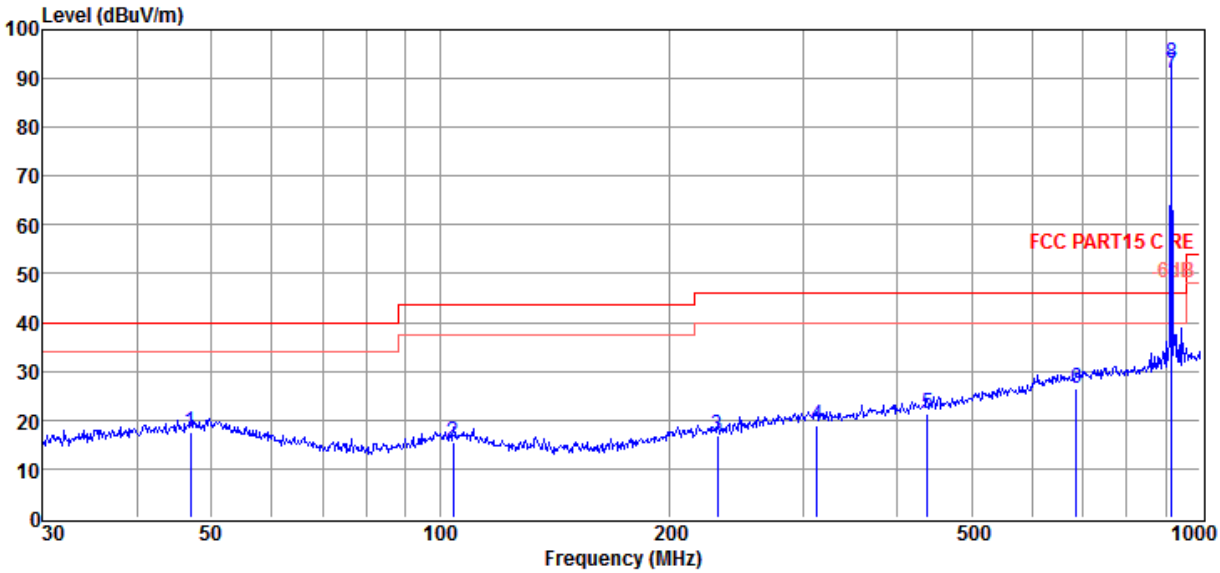
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	49.19	0.39	14.51	3.86	18.76	40.00	-21.24	QP	HORIZONTAL
2	98.83	-0.75	11.51	4.20	14.96	43.50	-28.54	QP	HORIZONTAL
3	245.95	-0.53	12.73	4.98	17.18	46.00	-28.82	QP	HORIZONTAL
4	366.82	-0.83	15.12	5.40	19.69	46.00	-26.31	QP	HORIZONTAL
5	468.88	-1.03	16.67	5.73	21.37	46.00	-24.63	QP	HORIZONTAL
6	689.57	0.88	19.94	6.35	27.17	46.00	-18.83	QP	HORIZONTAL
7	902.00	64.47	21.74	6.93	93.14	/	/	Average	HORIZONTAL
8	902.00	68.19	21.74	6.93	96.86	/	/	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: FSK 915.495 MHz		

Data: 13



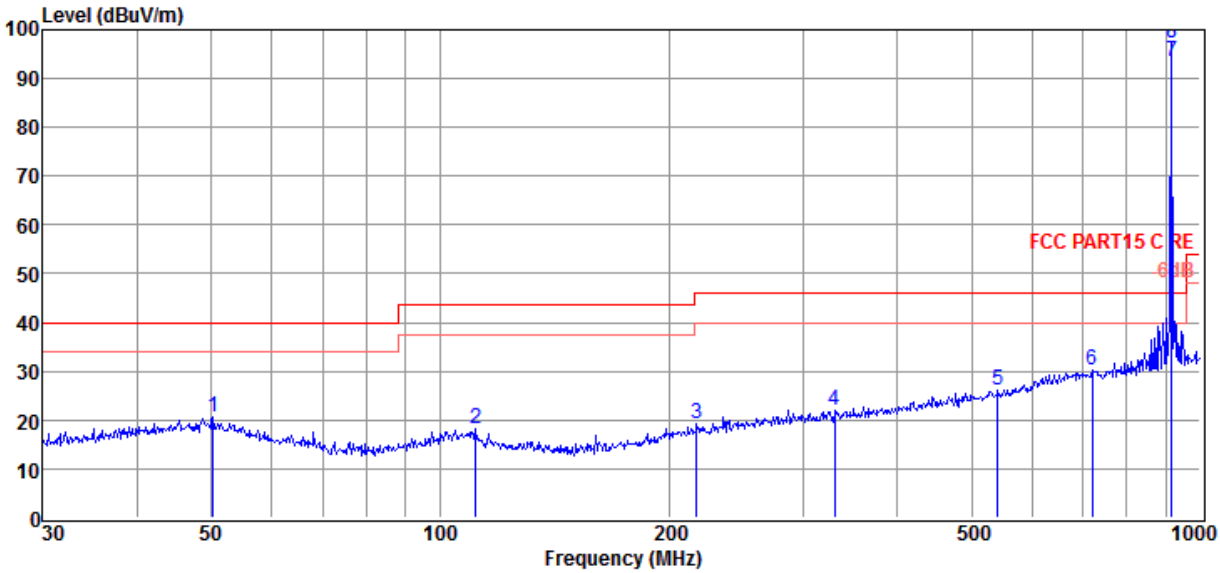
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	47.00	-0.59	14.27	3.84	17.52	40.00	-22.48	QP	VERTICAL
2	104.17	-0.51	11.74	4.23	15.46	43.50	-28.04	QP	VERTICAL
3	231.72	-0.58	12.34	4.93	16.69	46.00	-29.31	QP	VERTICAL
4	313.28	-0.72	14.24	5.23	18.75	46.00	-27.25	QP	VERTICAL
5	437.12	-0.66	16.20	5.63	21.17	46.00	-24.83	QP	VERTICAL
6	687.15	0.34	19.91	6.34	26.59	46.00	-19.41	QP	VERTICAL
7	916.00	62.14	21.88	6.99	91.01	/	/	Average	VERTICAL
8	916.00	64.32	21.88	6.99	93.19	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: FSK 915.495 MHz		

Data: 14



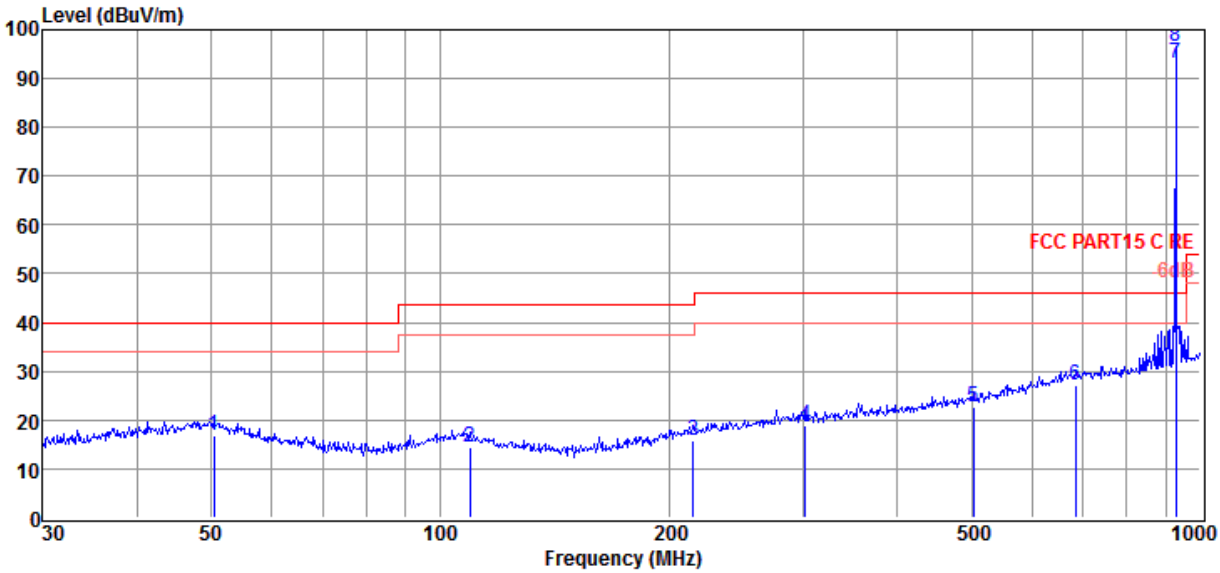
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	50.23	2.36	14.52	3.87	20.75	40.00	-19.25	QP	HORIZONTAL
2	111.35	2.34	11.51	4.26	18.11	43.50	-25.39	QP	HORIZONTAL
3	217.54	2.33	11.94	4.88	19.15	46.00	-26.85	QP	HORIZONTAL
4	330.20	2.19	14.53	5.29	22.01	46.00	-23.99	QP	HORIZONTAL
5	541.37	2.30	17.71	5.94	25.95	46.00	-20.05	QP	HORIZONTAL
6	721.73	3.60	20.24	6.44	30.28	46.00	-15.72	QP	HORIZONTAL
7	916.00	64.68	21.88	6.99	93.55	/	/	Average	HORIZONTAL
8	916.00	68.42	21.88	6.99	97.29	/	/	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: FSK 927.495 MHz		

Data: 15



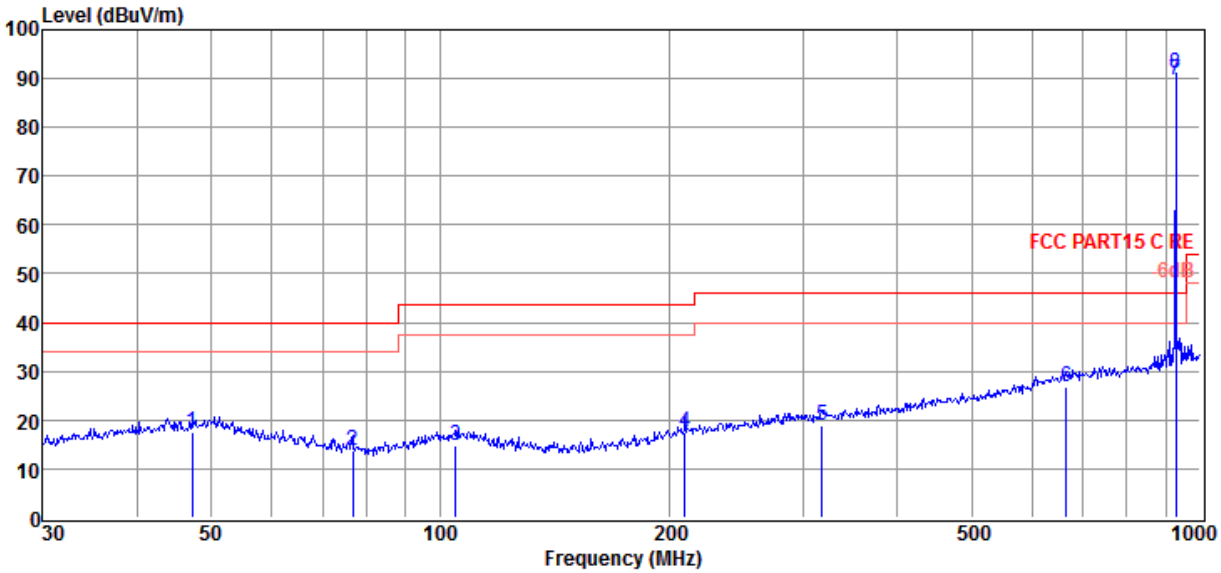
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	50.41	-1.50	14.46	3.87	16.83	40.00	-23.17	QP	HORIZONTAL
2	109.41	-1.49	11.79	4.25	14.55	43.50	-28.95	QP	HORIZONTAL
3	215.27	-1.01	11.87	4.87	15.73	43.50	-27.77	QP	HORIZONTAL
4	302.48	-0.38	14.05	5.19	18.86	46.00	-27.14	QP	HORIZONTAL
5	502.94	-0.24	17.15	5.83	22.74	46.00	-23.26	QP	HORIZONTAL
6	684.75	1.00	19.87	6.33	27.20	46.00	-18.80	QP	HORIZONTAL
7	928.00	64.00	22.03	7.06	93.09	/	/	Average	HORIZONTAL
8	928.00	67.55	22.03	7.06	96.64	/	/	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: FSK 927.495 MHz		

Data: 16



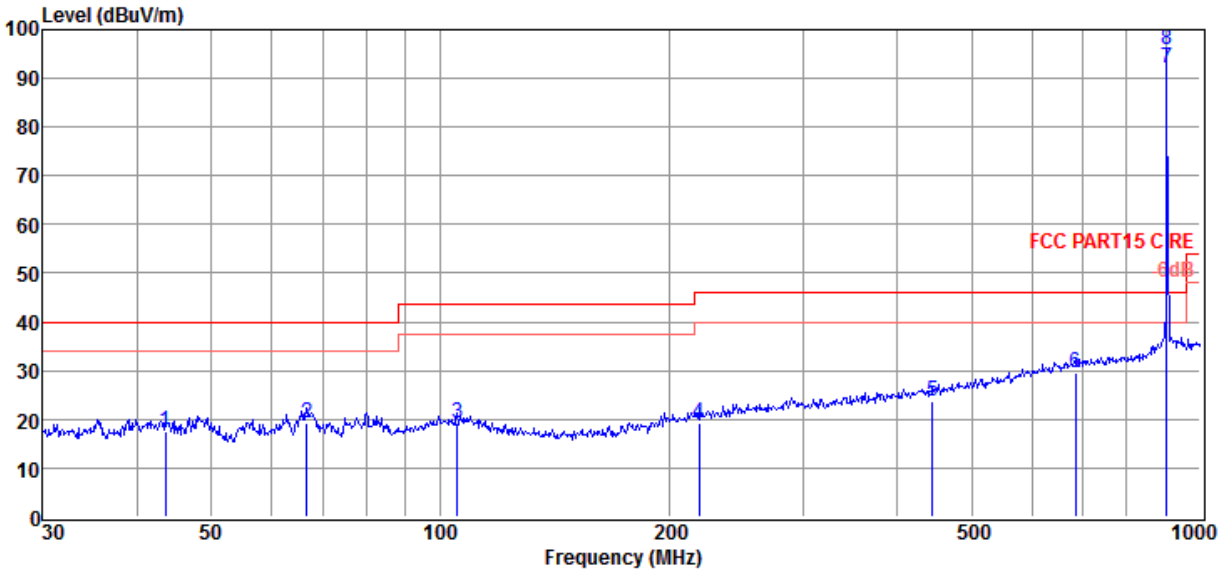
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	47.16	-0.56	14.29	3.84	17.57	40.00	-22.43	QP	VERTICAL
2	76.78	0.58	9.08	4.06	13.72	40.00	-26.28	QP	VERTICAL
3	104.90	-1.15	11.75	4.23	14.83	43.50	-28.67	QP	VERTICAL
4	210.05	1.06	11.71	4.85	17.62	43.50	-25.88	QP	VERTICAL
5	317.70	-0.67	14.32	5.25	18.90	46.00	-27.10	QP	VERTICAL
6	665.80	0.88	19.58	6.28	26.74	46.00	-19.26	QP	VERTICAL
7	928.00	60.50	22.03	7.06	89.59	/	/	Average	VERTICAL
8	928.00	62.04	22.03	7.06	91.13	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 902.495 MHz		

Data: 1



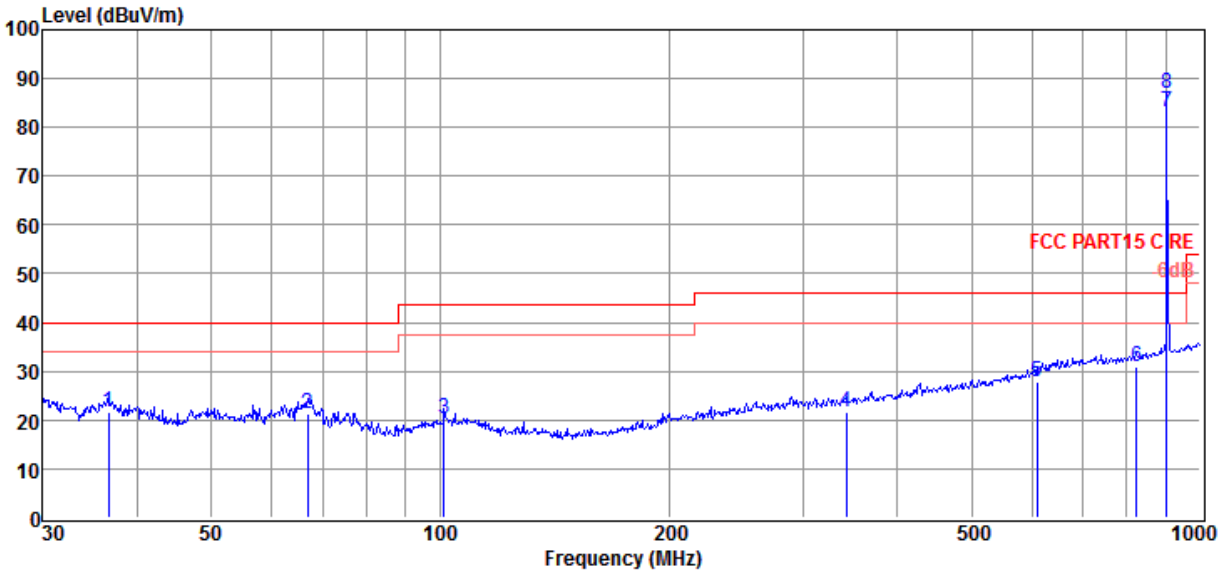
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	43.51	-0.18	13.85	3.81	17.48	40.00	-22.52	QP	VERTICAL
2	66.73	5.08	10.09	4.00	19.17	40.00	-20.83	QP	VERTICAL
3	105.27	3.25	11.75	4.23	19.23	43.50	-24.27	QP	VERTICAL
4	219.08	2.35	11.98	4.88	19.21	46.00	-26.79	QP	VERTICAL
5	444.85	1.76	16.31	5.66	23.73	46.00	-22.27	QP	VERTICAL
6	684.75	3.46	19.87	6.33	29.66	46.00	-16.34	QP	VERTICAL
7	902.00	63.41	21.74	6.93	92.08	/	/	Average	VERTICAL
8	902.00	67.25	21.74	6.93	95.92	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 902.495 MHz		

Data: 2



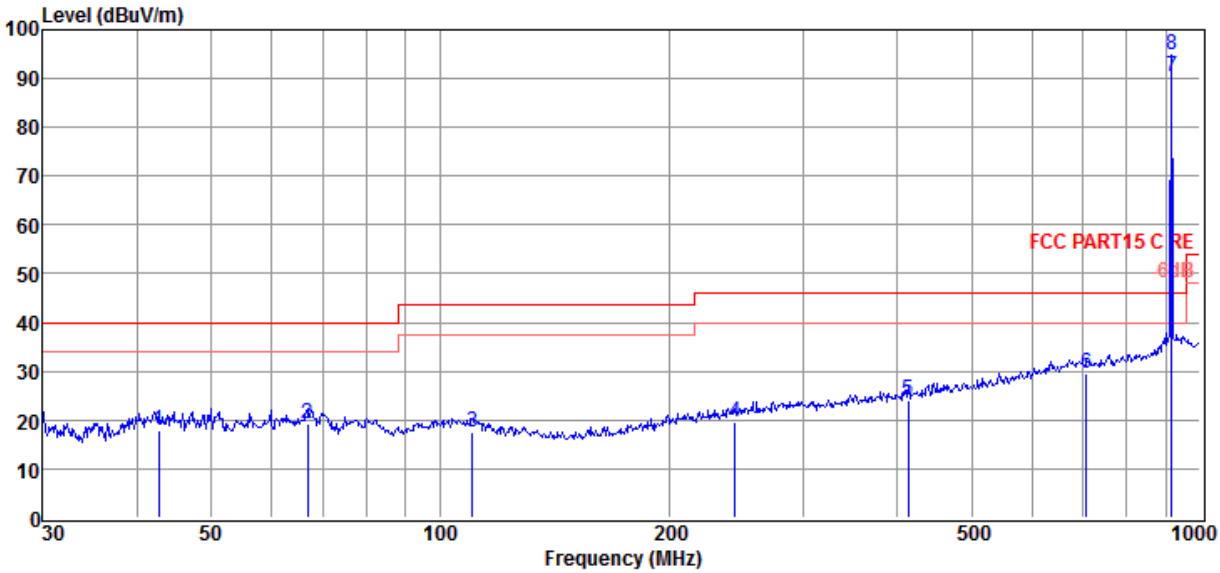
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	36.64	5.21	12.70	3.73	21.64	40.00	-18.36	QP	VERTICAL
2	66.97	7.30	10.05	4.00	21.35	40.00	-18.65	QP	VERTICAL
3	101.29	4.37	11.71	4.21	20.29	43.50	-23.21	QP	VERTICAL
4	341.98	1.71	14.73	5.33	21.77	46.00	-24.23	QP	VERTICAL
5	609.92	3.15	18.67	6.12	27.94	46.00	-18.06	QP	VERTICAL
6	824.60	3.19	20.96	6.66	30.81	46.00	-15.19	QP	VERTICAL
7	902.00	54.47	21.74	6.93	83.14	/	/	Average	VERTICAL
8	902.00	58.11	21.74	6.93	86.78	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: OOK 915.495 MHz		

Data: 3



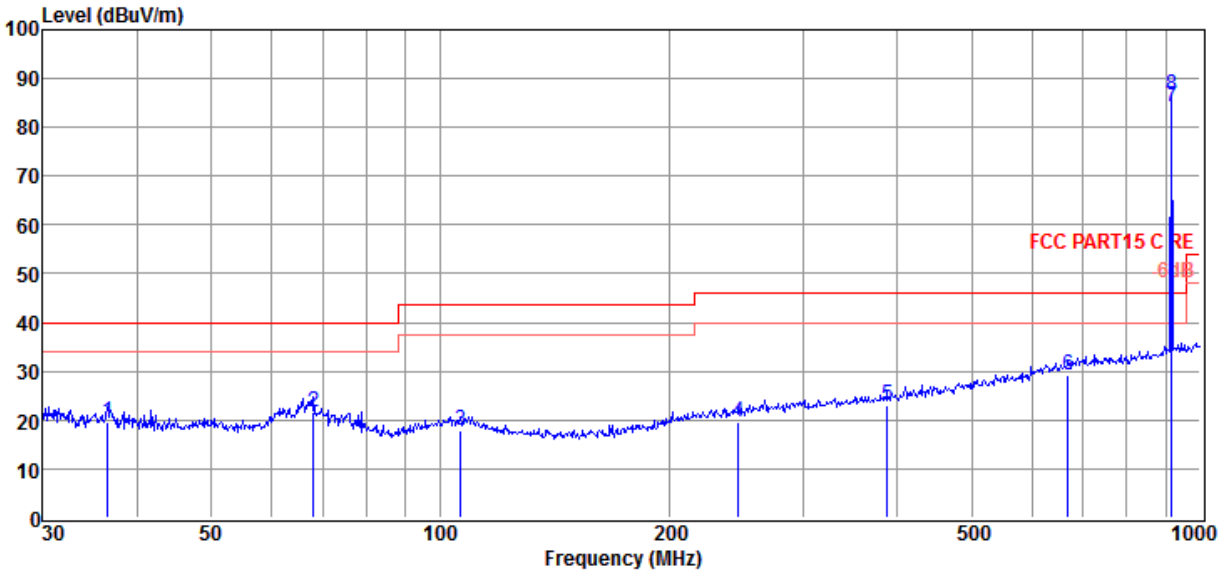
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	42.60	0.20	13.74	3.80	17.74	40.00	-22.26	QP	HORIZONTAL
2	66.97	5.17	10.05	4.00	19.22	40.00	-20.78	QP	HORIZONTAL
3	110.18	1.36	11.76	4.26	17.38	43.50	-26.12	QP	HORIZONTAL
4	244.23	1.82	12.68	4.98	19.48	46.00	-26.52	QP	HORIZONTAL
5	413.27	2.55	15.82	5.56	23.93	46.00	-22.07	QP	HORIZONTAL
6	709.18	2.95	20.16	6.40	29.51	46.00	-16.49	QP	HORIZONTAL
7	916.00	61.42	21.88	6.99	90.29	/	/	Average	HORIZONTAL
8	916.00	65.92	21.88	6.99	94.79	/	/	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 915.495 MHz		

Data: 4



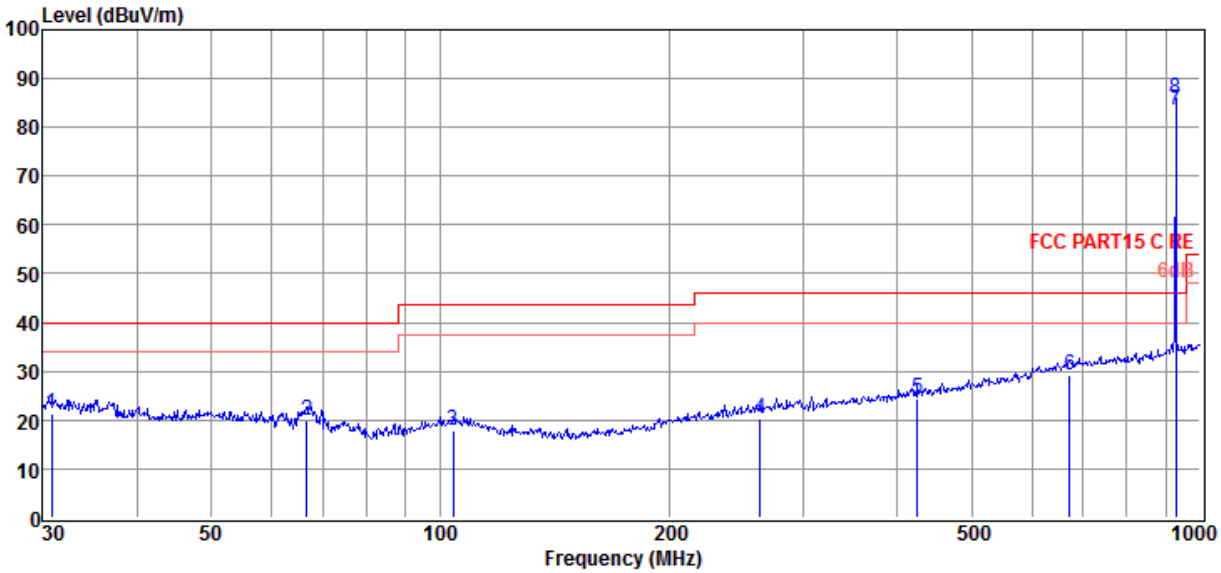
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	36.51	3.36	12.67	3.73	19.76	40.00	-20.24	QP	VERTICAL
2	68.15	7.94	9.83	4.01	21.78	40.00	-18.22	QP	VERTICAL
3	106.39	1.79	11.76	4.24	17.79	43.50	-25.71	QP	VERTICAL
4	246.82	1.83	12.75	4.99	19.57	46.00	-26.43	QP	VERTICAL
5	387.99	2.02	15.43	5.47	22.92	46.00	-23.08	QP	VERTICAL
6	670.49	3.18	19.65	6.29	29.12	46.00	-16.88	QP	VERTICAL
7	916.00	55.24	21.88	6.99	84.11	/	/	Average	VERTICAL
8	916.00	57.71	21.88	6.99	86.58	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 927.495 MHz		

Data: 5



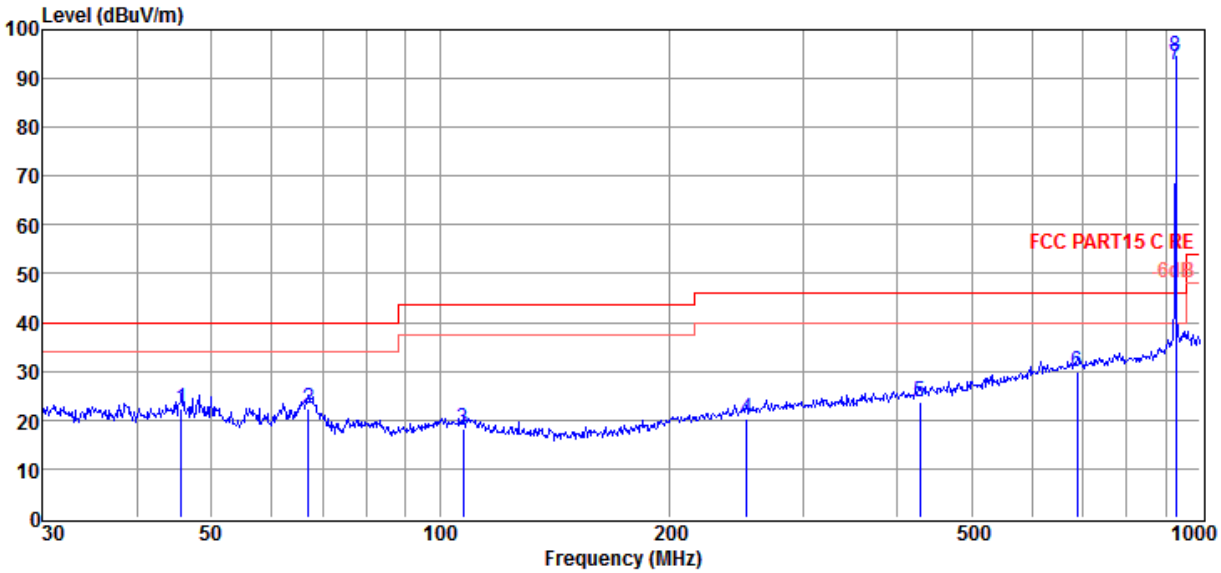
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	30.85	6.42	11.32	3.65	21.39	40.00	-18.61	QP	VERTICAL
2	66.73	5.76	10.09	4.00	19.85	40.00	-20.15	QP	VERTICAL
3	104.17	1.76	11.74	4.23	17.73	43.50	-25.77	QP	VERTICAL
4	263.82	1.94	13.18	5.05	20.17	46.00	-25.83	QP	VERTICAL
5	425.03	2.86	16.01	5.59	24.46	46.00	-21.54	QP	VERTICAL
6	672.84	3.29	19.69	6.30	29.28	46.00	-16.72	QP	VERTICAL
7	928.00	54.32	22.03	7.06	83.41	/	/	Average	VERTICAL
8	928.00	56.66	22.03	7.06	85.75	/	/	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: OOK 927.495 MHz		

Data: 6



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	45.70	4.49	14.12	3.83	22.44	40.00	-17.56	QP	HORIZONTAL
2	67.20	8.21	10.00	4.00	22.21	40.00	-17.79	QP	HORIZONTAL
3	107.13	2.12	11.77	4.24	18.13	43.50	-25.37	QP	HORIZONTAL
4	252.95	2.26	12.91	5.01	20.18	46.00	-25.82	QP	HORIZONTAL
5	428.02	2.17	16.06	5.60	23.83	46.00	-22.17	QP	HORIZONTAL
6	689.57	3.65	19.94	6.35	29.94	46.00	-16.06	QP	HORIZONTAL
7	928.00	63.64	22.03	7.06	92.73	/	/	Average	HORIZONTAL
8	928.00	65.44	22.03	7.06	94.53	/	/	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1GHz)

Freq. (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor(dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
FSK Tx mode 902.495 MHz									
3997.00	48.10	32.90	44.40	8.87	45.47	74.00	-28.53	Peak	HORIZONTAL
5482.00	46.84	34.29	44.10	10.83	47.86	74.00	-26.14	Peak	HORIZONTAL
6247.00	45.51	35.00	43.87	12.07	48.71	74.00	-25.29	Peak	HORIZONTAL
8002.00	44.86	36.30	43.10	14.08	52.14	74.00	-21.86	Peak	HORIZONTAL
8605.00	44.42	36.80	43.43	14.45	52.24	74.00	-21.76	Peak	HORIZONTAL
1810.00	51.69	27.26	43.94	3.71	38.72	74.00	-35.28	Peak	VERTICAL
4168.00	46.77	33.14	44.36	9.05	44.60	74.00	-29.40	Peak	VERTICAL
5482.00	46.42	34.29	44.10	10.83	47.44	74.00	-26.56	Peak	VERTICAL
6427.00	46.10	35.22	43.78	12.03	49.57	74.00	-24.43	Peak	VERTICAL
7912.00	43.99	36.23	43.13	13.83	50.92	74.00	-23.08	Peak	VERTICAL
FSK Tx mode 915.495 MHz									
1828.00	50.56	27.36	43.95	3.73	37.70	74.00	-36.30	Peak	HORIZONTAL
3097.00	48.01	31.39	44.40	6.04	41.04	74.00	-32.96	Peak	HORIZONTAL
4105.00	47.63	33.05	44.38	9.30	45.60	74.00	-28.40	Peak	HORIZONTAL
6445.00	47.46	35.24	43.78	12.00	50.92	74.00	-23.08	Peak	HORIZONTAL
8722.00	45.69	36.80	43.49	14.15	53.15	74.00	-20.85	Peak	HORIZONTAL
1828.00	54.31	27.36	43.95	3.73	41.45	74.00	-32.55	Peak	VERTICAL
3952.00	48.73	32.83	44.40	8.59	45.75	74.00	-28.25	Peak	VERTICAL
5527.00	46.38	34.32	44.09	10.98	47.59	74.00	-26.41	Peak	VERTICAL
7372.00	44.52	35.83	43.36	12.97	49.96	74.00	-24.04	Peak	VERTICAL
8497.00	44.30	36.80	43.37	14.05	51.78	74.00	-22.22	Peak	VERTICAL
FSK Tx mode 927.495 MHz									
1855.00	49.49	27.52	43.96	3.78	36.83	74.00	-37.17	Peak	HORIZONTAL
3502.00	46.94	32.10	44.40	7.05	41.69	74.00	-32.31	Peak	HORIZONTAL
5518.00	46.82	34.32	44.09	10.96	48.01	74.00	-25.99	Peak	HORIZONTAL
7012.00	45.30	35.61	43.51	12.64	50.04	74.00	-23.96	Peak	HORIZONTAL
8020.00	45.84	36.32	43.11	13.96	53.01	74.00	-20.99	Peak	HORIZONTAL
1855.00	54.84	27.52	43.96	3.78	42.18	74.00	-31.82	Peak	VERTICAL
3880.00	47.31	32.72	44.40	8.24	43.87	74.00	-30.13	Peak	VERTICAL
4807.00	46.67	33.79	44.24	11.24	47.46	74.00	-26.54	Peak	VERTICAL
6310.00	46.29	35.08	43.84	11.83	49.36	74.00	-24.64	Peak	VERTICAL
8038.00	45.15	36.34	43.12	13.85	52.22	74.00	-21.78	Peak	VERTICAL
Result: Pass									

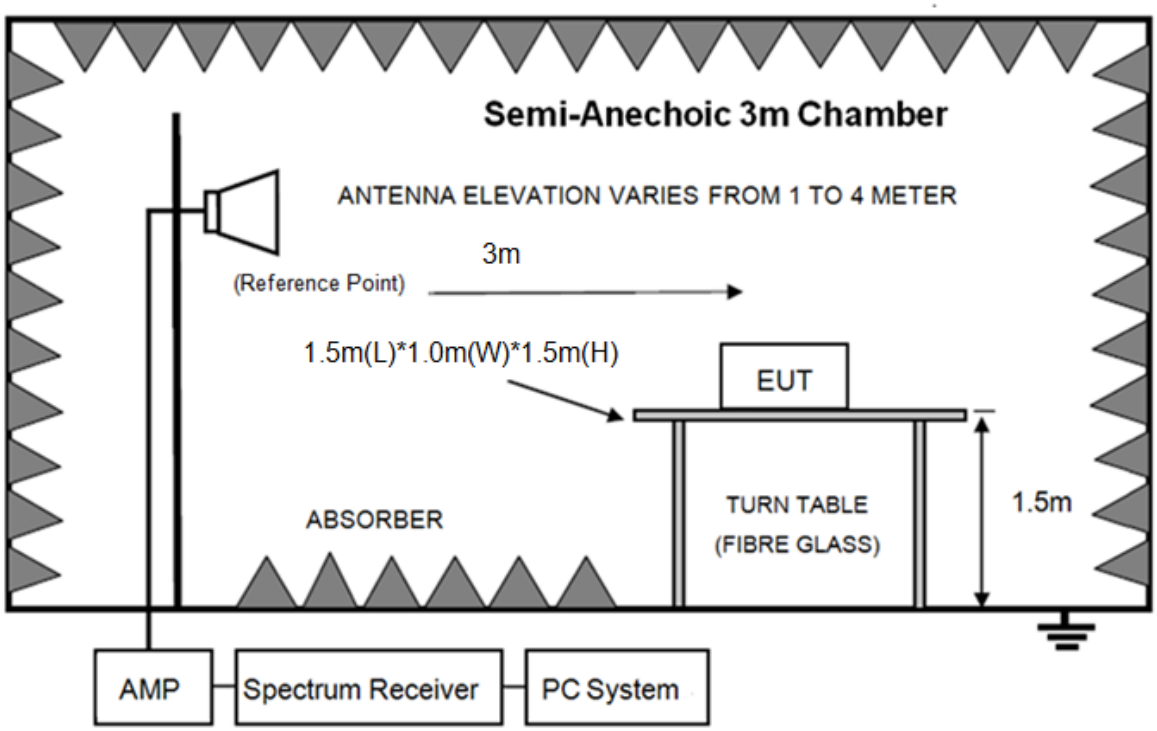
Note 1: Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2: For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

3. For OOK and FSK modulation, by pre-scanning, FSK mode was the worst case, and only the worst case is shown in report.

6. Band Edge Compliance

6.1. Block diagram of test setup



6.2. Limit

All the lower and upper band-edges emissions appearing within 608 MHz to 614 MHz and 960 MHz to 1240 MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 608 MHz to 614 MHz and 960MHz to 1240 MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

6.3. Test Procedure

Same with clause 8.3 except change investigated frequency range from 600MHz to 1000MHz and 900MHz to 1000MHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

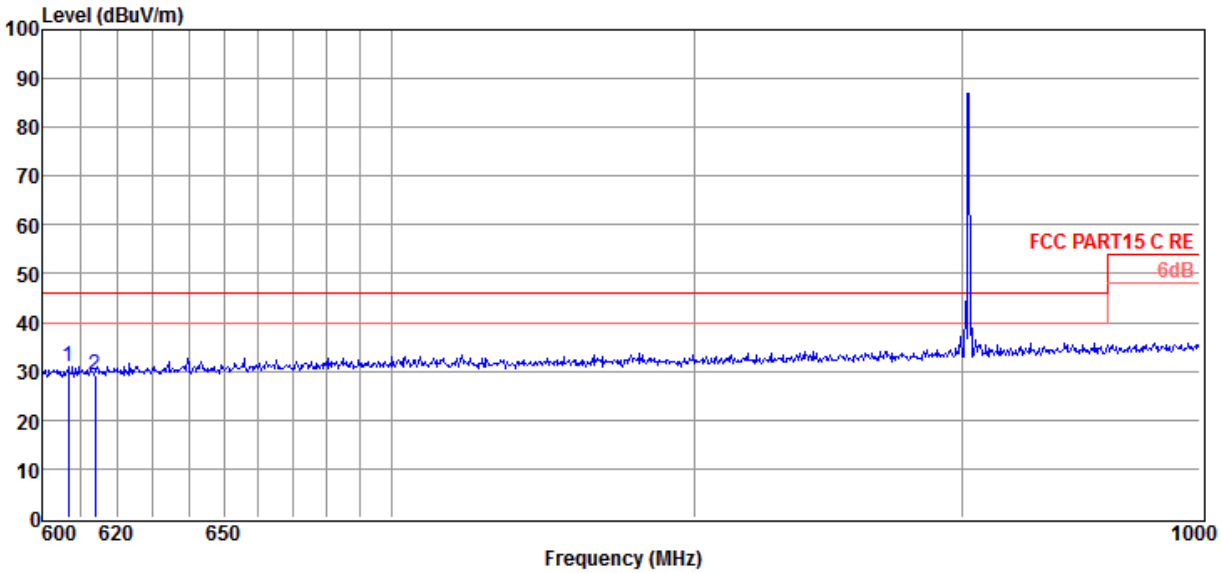
6.4. Test result

PASS. (See below detailed test result)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 902.495 MHz		

Data: 7



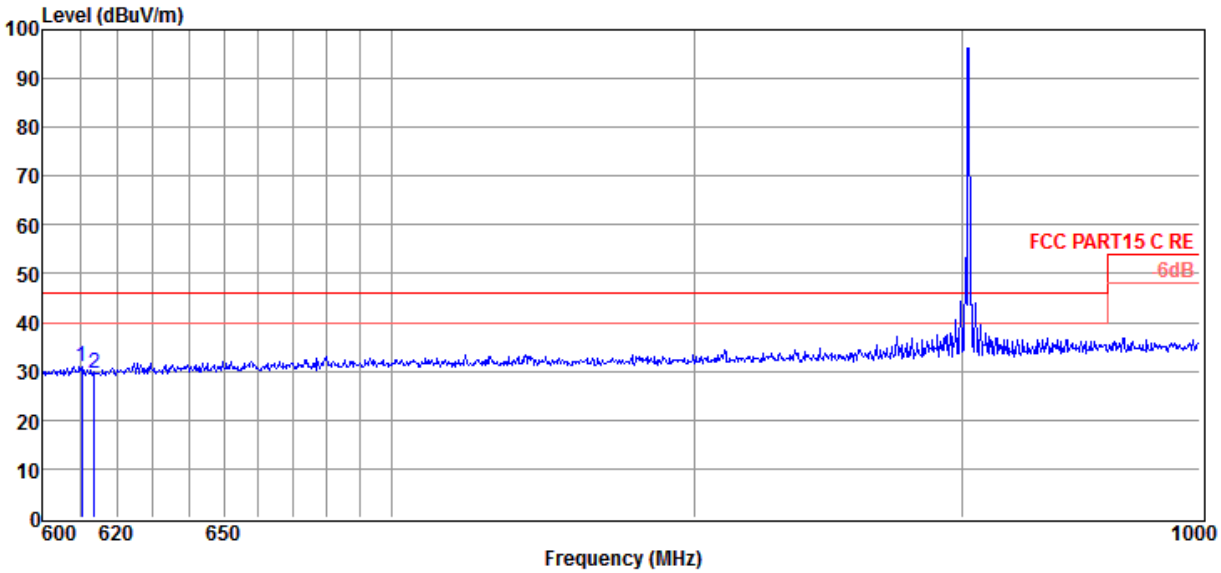
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	606.78	6.19	18.62	6.11	30.92	46.00	-15.08	Peak	VERTICAL
2	614.00	4.28	18.74	6.13	29.15	46.00	-16.85	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: OOK 902.495 MHz		

Data: 8



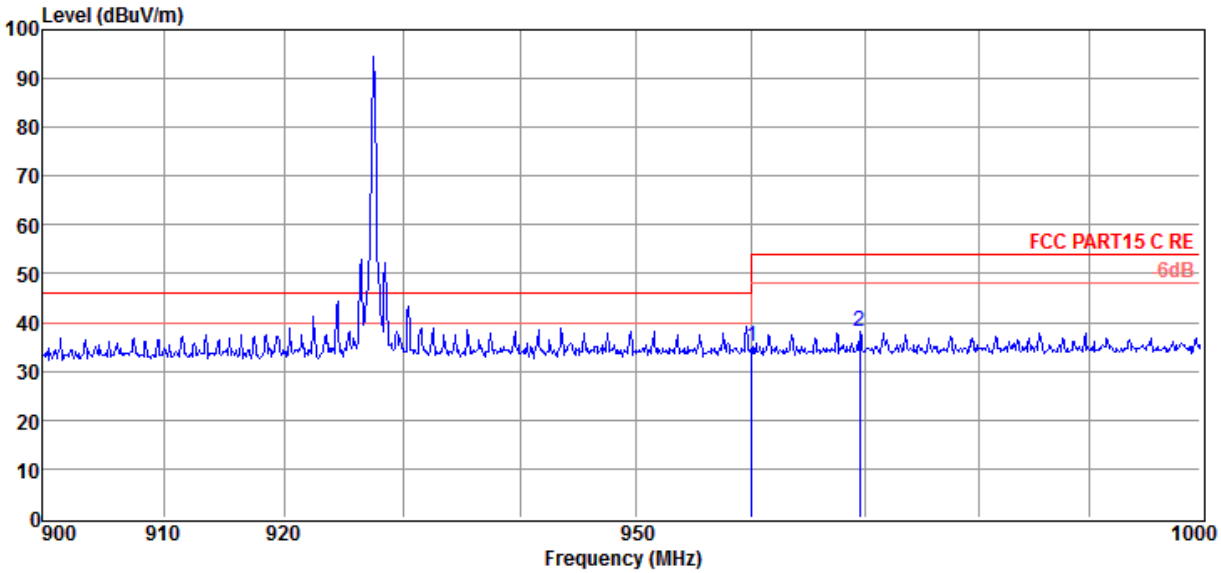
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	610.51	6.26	18.68	6.12	31.06	46.00	-14.94	Peak	HORIZONTAL
2	613.95	4.60	18.74	6.13	29.47	46.00	-16.53	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: OOK 927.495 MHz		

Data: 9



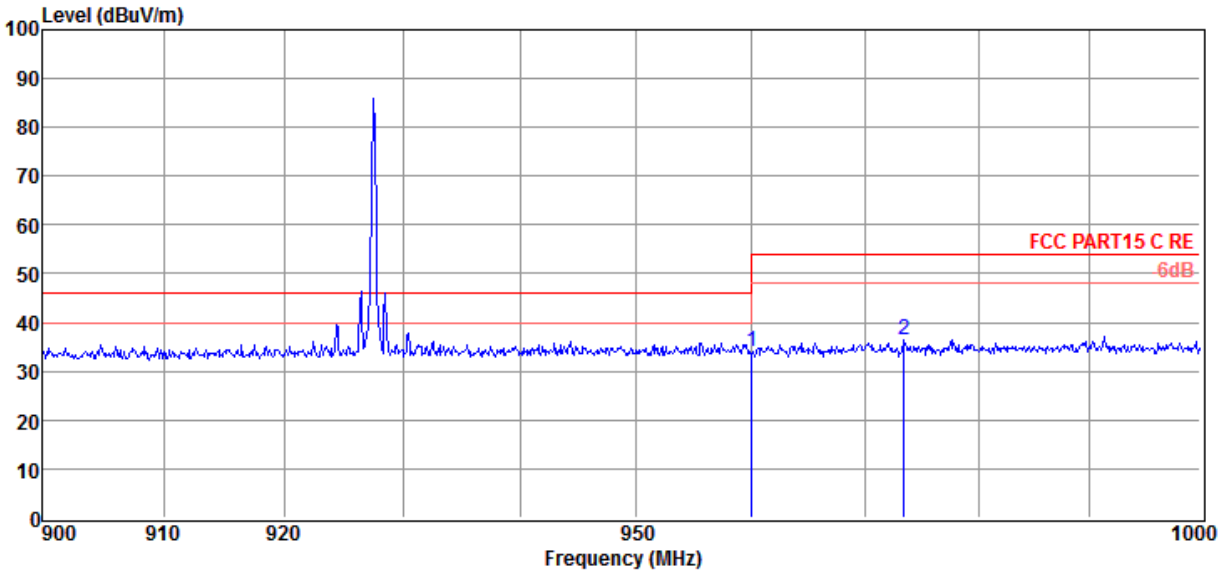
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	960.00	5.53	22.37	7.06	34.96	46.00	-11.04	Peak	HORIZONTAL
2	969.50	8.45	22.48	7.06	37.99	54.00	-16.01	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-02	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: OOK 927.495 MHz		

Data: 10



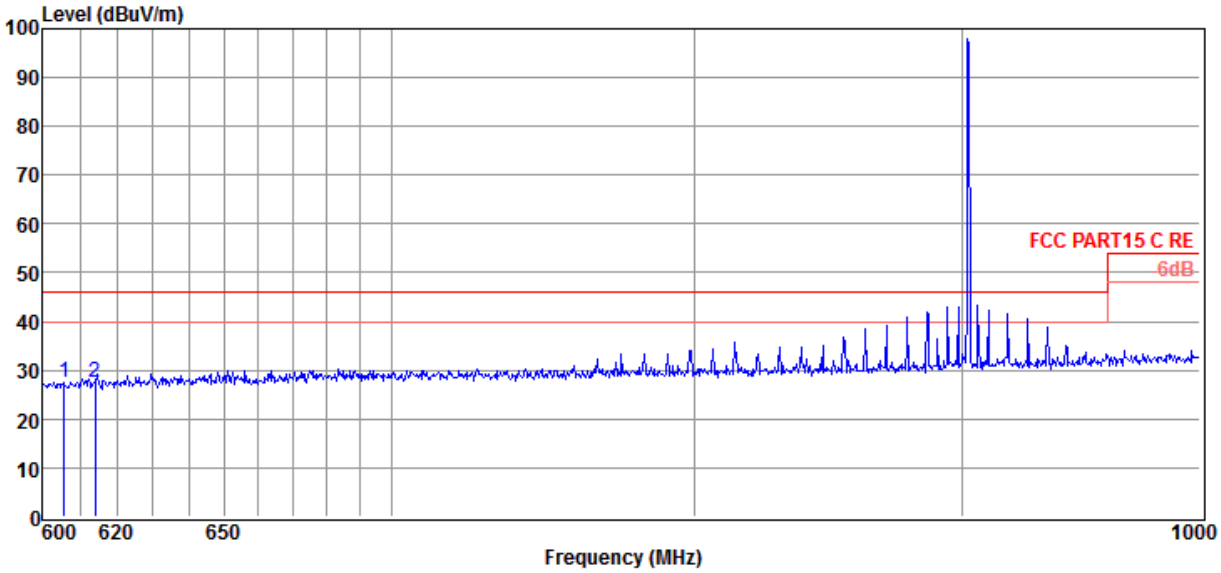
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	960.00	4.61	22.37	7.06	34.04	46.00	-11.96	Peak	VERTICAL
2	973.39	6.87	22.52	7.06	36.45	54.00	-17.55	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: FSK 902.495 MHz		

Data: 17



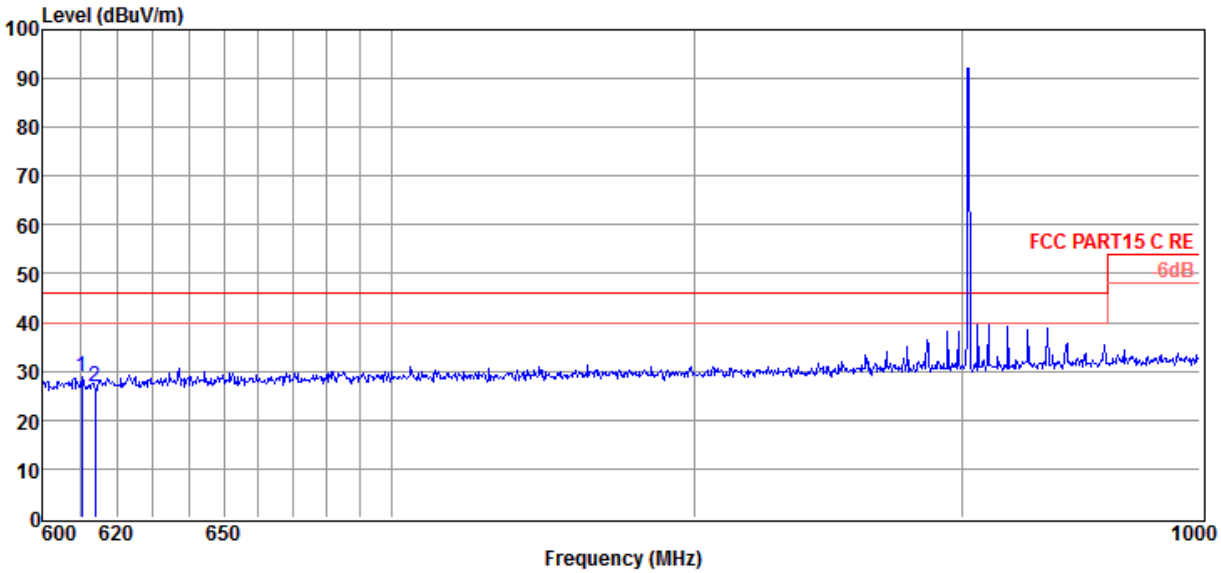
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	605.85	2.91	18.60	6.11	27.62	46.00	-18.38	Peak	HORIZONTAL
2	614.00	2.58	18.74	6.13	27.45	46.00	-18.55	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: FSK 902.495 MHz		

Data: 18



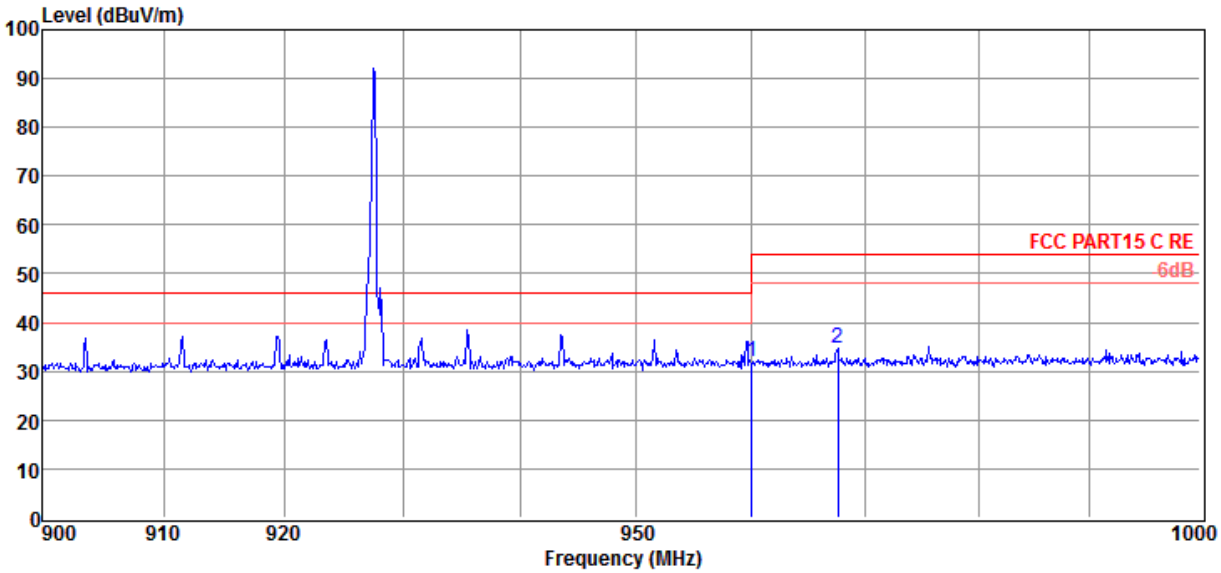
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	610.51	3.95	18.68	6.12	28.75	46.00	-17.25	Peak	VERTICAL
2	614.00	1.83	18.74	6.13	26.70	46.00	-19.30	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/VERTICAL
Memo	: FSK 927.495 MHz		

Data: 19



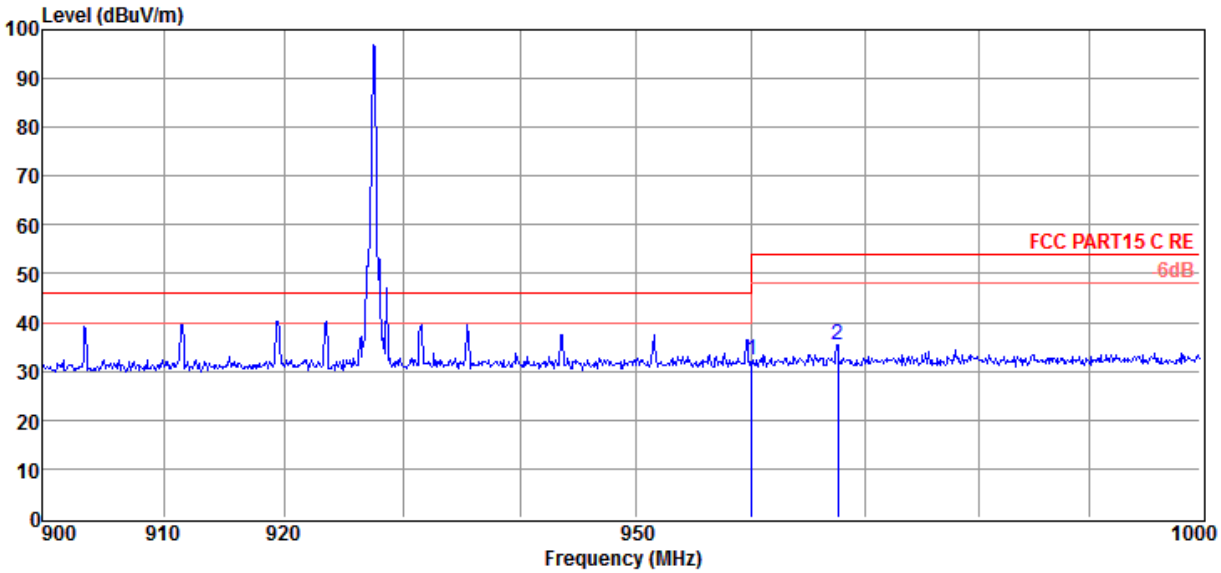
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	960.00	2.50	22.37	7.06	31.93	46.00	-14.07	Peak	VERTICAL
2	967.56	5.34	22.46	7.06	34.86	54.00	-19.14	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19050916-1E LJ1269HC-915\FCC BELOW1G .EM6	
Test Date	: 2019-06-20	**Tested By**	: Van
EUT	: Sub GHz FSK/OOK Transceiver Module	**Model Number**	: LJ1269HC-915
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	: 2018 VULB 9163 1#/3m/HORIZONTAL
Memo	: FSK 927.495 MHz		

Data: 20

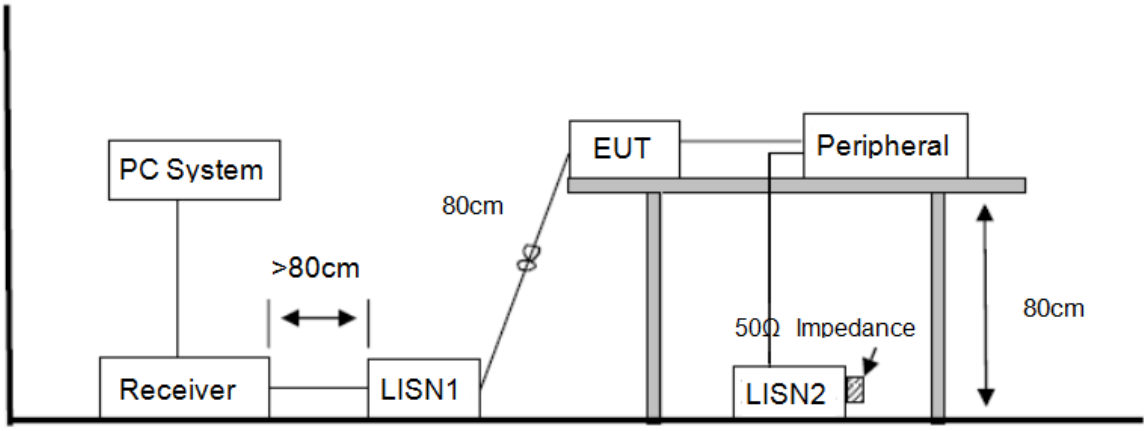


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	960.00	2.92	22.37	7.06	32.35	46.00	-13.65	Peak	HORIZONTAL
2	967.56	5.94	22.46	7.06	35.46	54.00	-18.54	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

7. Power Line Conducted Emission

7.1. Block diagram of test setup



7.2. Power Line Conducted Emission Limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

7.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.
The EUT configuration and worse cable configuration of the above highest emission levels were

recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

7.4. Test Result

PASS. (See below detailed test result)

Not Applicable

Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines according to 15.207(C)

8. Antenna Requirements

8.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2. Result

The antenna used for this product is dedicated Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 1.2 dBi.

END OF REPORT