

RADIO TEST REPORT

FCC ID: 2AQ64EMLLC

Product: BaldurTouch II
Trade Mark: E-MAGA
Model No.: EMLLC-B10-915A11-G0
Family Model: EMLLC-B10
Report No.: SER180507709001E
Issue Date: 06 Sep. 2018

Prepared for

Emaga InterConnect Technologies Co.,Ltd
8/F, jinfulai Mansion, No.49-1, Dabao Road, Baoan 28 District,
Shenzhen, China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
1/F, Building E, Fenda Science Park, Sanwei Community,
Xixiang Street Bao'an District, Shenzhen 518126 P.R. China
Tel.: +86-755-6115 6588
Fax.: +86-755-6115 6599
Website:<http://www.ntek.org.cn>

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1 TEST RESULT CERTIFICATION

Applicant's name	Emaga InterConnect Technologies Co.,Ltd
Address	8/F, jinfulai Mansion, No.49-1, Dabao Road, Baoan 28 District, Shenzhen, China
Manufacturer's Name	Emaga InterConnect Technologies Co.,Ltd
Address	8/F, jinfulai Mansion, No.49-1, Dabao Road, Baoan 28 District, Shenzhen, China
Product description	
Product name	BaldurTouch II
Model and/or type reference	EMLLC-B10-915A11-G0
Family Model	EMLLC-B10

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD/ TEST PROCEDURE	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C FCC KDB 558074 D01 DTS Meas Guidance v04 KDB 174176 D01 Line Conducted FAQ v01r01 ANSI C63.10-2013	Complied

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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The test results of this report relate only to the tested sample identified in this report.

Date of Test : 08 May. 2018 ~ Sep 06, 2018

Testing Engineer : Eileen Liu.
(Eileen Liu)

Technical Manager : Jason chen
(Jason Chen)

Authorized Signatory : Sam. chen
(Sam Chen)

2 SUMMARY OF TEST RESULTS

FCC Part15 (15.247), Subpart C

Standard Section	Test Item	Verdict	Remark
15.207	Conducted Emission	PASS	
15.209 (a) 15.205 (a)	Radiated Spurious Emission& Restricted Band Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(b)(2)(3)	Peak Output Power	PASS	
15.247(a)(i)	Number of Hopping Frequency	PASS	
15.247(f)	Dwell Time	PASS	
15.247(a)(i)	20 dB bandwidth	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (f)	Power Spectral Density	PASS	
15.247 (d)	Band Edge& Conducted Spurious Emission	PASS	
15.203	Antenna Requirement	PASS	

Remark:

1. "N/A" denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.

3 FACILITIES AND ACCREDITATIONS

3.1 FACILITIES

All measurement facilities used to collect the measurement data are located at 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

3.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description
 CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
 The Certificate Registration Number is L5516.

IC-Registration : The Certificate Registration Number is 9270A-1.

FCC- Accredited : Test Firm Registration Number: 463705.
 Designation Number: CN1184

A2LA-Lab. : The Certificate Registration Number is 4298.01
 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.
 This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Name of Firm : Shenzhen NTEK Testing Technology Co., Ltd.
 Site Location : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

3.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.80\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(30MHz~1GHz)	$\pm 2.64\text{dB}$
5	All emissions, radiated(1GHz~6GHz)	$\pm 2.40\text{dB}$
6	All emissions, radiated(>6GHz)	$\pm 2.52\text{dB}$
7	Temperature	$\pm 0.5^\circ\text{C}$
8	Humidity	$\pm 2\%$

4 GENERAL DESCRIPTION OF EUT

Product Feature and Specification	
Equipment	BaldurTouch II
Trade Mark	E-MAGA
FCC ID	2AQ64EMLLC
Model No.	EMLLC-B10-915A11-G0
Family Model	EMLLC-B10
Model Difference	All the model are the same circuit and RF module. Except the model name.
Operating Frequency	902MHz~928MHz
Modulation	CSS
System	The EUT is a Hybrid mode system: including FHSS mode and DTS mode.
Number of Channels	For FHSS: 64CH; For DTS: 8CH. The channel list please refer to Page 8.
Antenna Type	PIFA Antenna
Antenna Gain	-1 dBi
Power supply	<input checked="" type="checkbox"/> AC supply: AC 100-277V, 50/60Hz
	<input type="checkbox"/> Adapter supply:
HW Version	EMLLC-B10-V1.0
SW Version	V1.0.0

Note: Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.

Revision History

Report No.	Version	Description	Issued Date
SER180507709001E	Rev.01	Initial issue of report	Sep 06, 2018

5 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Data rate of the EUT:

System mode	Data rate(DR)	Configuration	Byte rate(bit/s)
FHSS	0	SF=10/BW=125KHz	980
	1	SF=9/BW=125KHz	1760
	2	SF=8/BW=125KHz	3125
	3	SF=7/BW=125KHz	5470
DTS	4	SF=8/BW=500KHz	12500

Those data rates were used for all test. For FHSS: The data rate DR=0 is the worst case, all the test data except the Dwell Time just report the worst data rate data.

The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

Carrier Frequency and Channel list:

FHSS Mode		DTS Mode	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
CH0	902.3	CH64	903
CH1	902.5	CH65	904.6
CH2	902.7	CH66	906.2
CH3	902.9	CH67	907.8
CH4	903.1	CH68	909.4
k	902.3+0.2k	CH69	911
CH61	914.5	CH70	912.6
CH62	914.7	CH71	914.2
CH63	914.9		

The following summary table is showing all test modes to demonstrate in compliance with the standard.

For AC Conducted Emission	
Final Test Mode	Description
Mode 8	normal link mode

Note: AC power line Conducted Emission was tested under maximum output power.

For Radiated Test Cases

Final Test Mode		Description
FHSS	Mode 1	CH0(902.3MHz)
	Mode 2	CH31(908.5MHz)
	Mode 3	CH63(914.9MHz)
DTS	Mode 4	CH64(903MHz)
	Mode 5	CH68(909.4MHz)
	Mode 6	CH71(914.2MHz)

Note: For radiated test cases, the worst mode data rate (DR=0) was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

For Conducted Test Cases

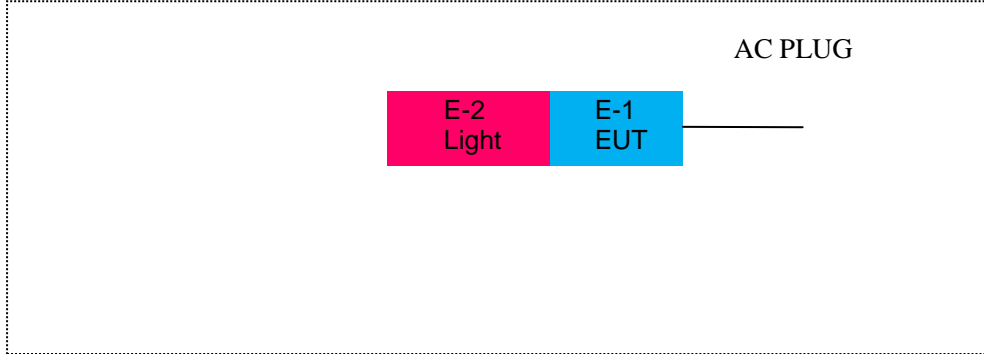
Final Test Mode		Description
FHSS	Mode 7	Hopping mode
	Mode 1	CH0(902.3MHz)
	Mode 2	CH31(908.5MHz)
	Mode 3	CH63(914.9MHz)
DTS	Mode 4	CH64(903MHz)
	Mode 5	CH68(909.4MHz)
	Mode 6	CH71(914.2MHz)

Note: The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.

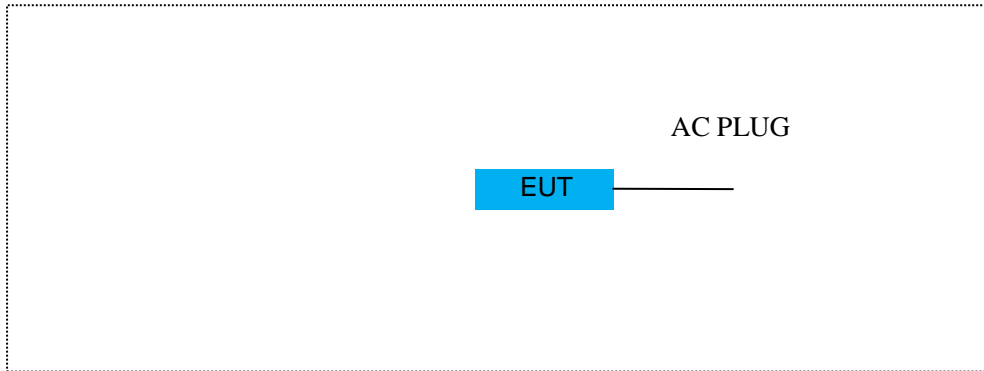
6 SETUP OF EQUIPMENT UNDER TEST

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM

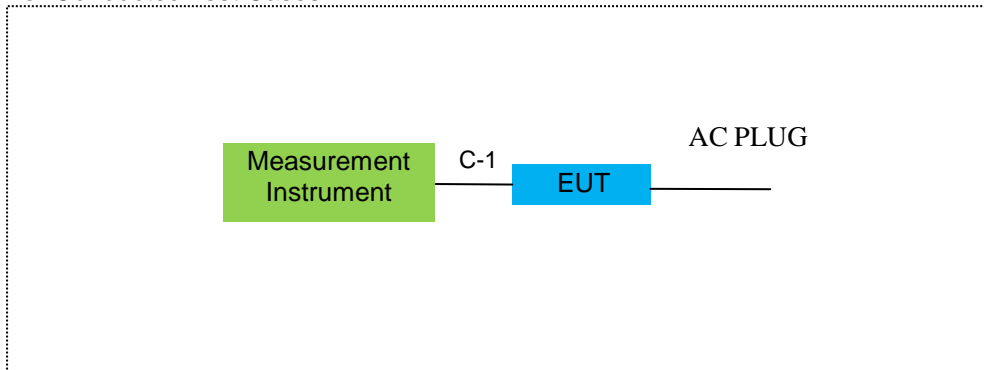
For AC Conducted Emission Mode



For Radiated Test Cases



For Conducted Test Cases



Note: 1. The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

1. EUT built-in battery-powered, the battery is fully-charged.

6.2 SUPPORT EQUIPMENT

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	BaldurTouch II	E-MAGA	EMLLC-B10-915A11-G0	N/A	EUT
E-2	Light	N/A	N/A	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	RF Cable	NO	NO	0.4m

Notes:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation& Conducted Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2018.05.19	2019.05.18	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2017.10.26	2018.10.25	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2017.10.26	2018.10.25	1 year
4	Test Receiver	R&S	ESPI7	101318	2018.05.19	2019.05.18	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2018.04.08	2019.04.07	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2018.05.19	2020.05.18	2 year
7	Horn Antenna	EM	EM-AH-10180	2011071402	2018.04.08	2019.04.07	1 year
8	Amplifier	EMC	EMC051835SE	980246	2018.08.05	2019.08.04	1 year
9	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	055	2017.12.06	2018.12.06	1 year
10	Power Meter	DARE	RPR3006W	15I00041SN084	2018.08.05	2019.08.04	1 year
11	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2017.04.21	2020.04.20	3 year
12	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2017.04.21	2020.04.20	3 year
13	High Test Cable(1G-40G Hz)	N/A	R-03	N/A	2017.04.21	2020.04.20	3 year
14	High Test Cable(1G-40G Hz)	N/A	R-04	N/A	2017.04.21	2020.04.20	3 year
15	Filter	TRILTHIC	2400MHz	29	2017.04.19	2020.04.18	3 year
16	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:

We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2018.05.19	2019.05.18	1 year
2	LISN	R&S	ENV216	101313	2018.04.18	2019.04.19	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2018.05.19	2019.05.18	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2018.05.19	2020.05.18	2 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2017.04.21	2020.04.20	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2017.04.21	2020.04.20	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2017.04.21	2020.04.20	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Aux Equipment & Test Cable which is scheduled for calibration every 2 or 3 years.

7 TEST REQUIREMENTS

7.1 CONDUCTED EMISSIONS TEST

7.1.1 Applicable Standard

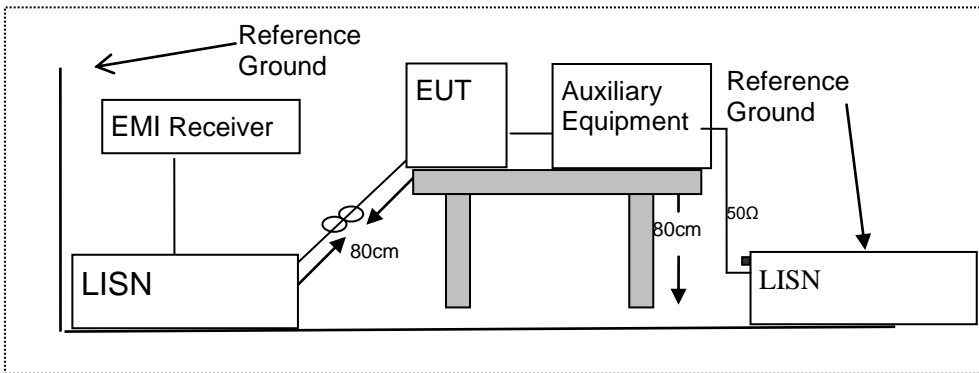
According to FCC Part 15.207(a) and KDB 174176 D01 Line Conducted FAQ v01r01

7.1.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency
 2. The lower limit shall apply at the transition frequencies
 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

7.1.3 Test Configuration



7.1.4 Test Procedure

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

7.1.5 Test Results

Pass

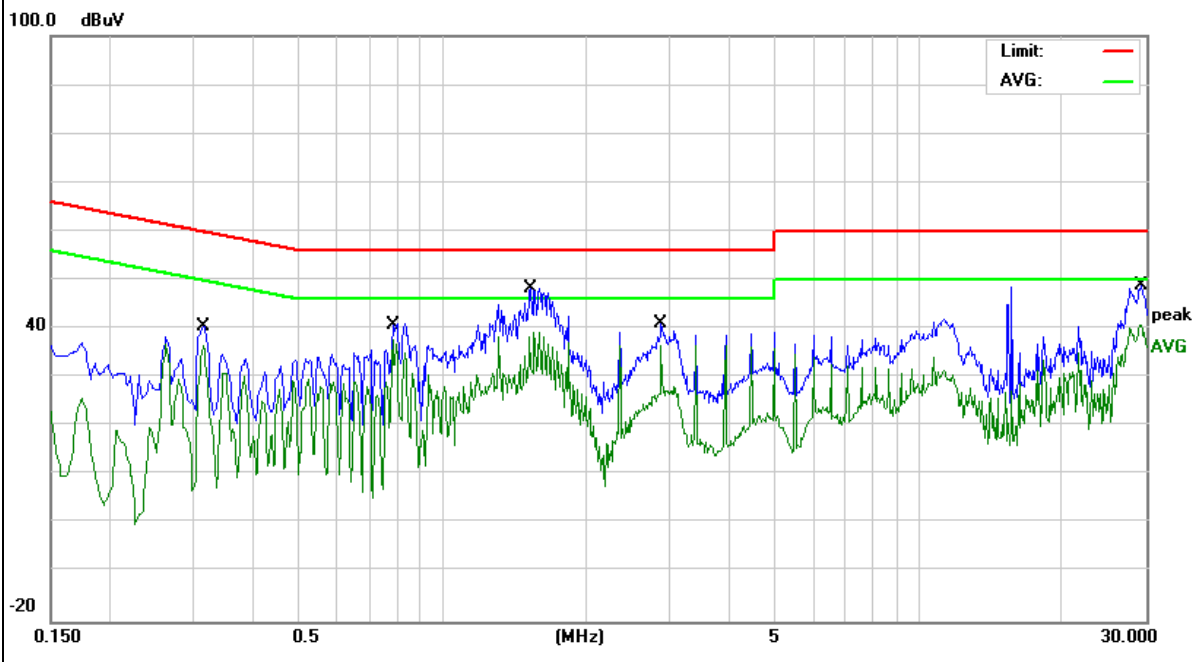
7.1.6 Test Results

EUT:	BaldurTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 8

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.3140	30.80	9.74	40.54	59.86	-19.32	QP
0.3140	26.82	9.74	36.56	49.86	-13.30	AVG
0.7860	31.43	9.74	41.17	56.00	-14.83	QP
0.7860	27.98	9.74	37.72	46.00	-8.28	AVG
1.5300	38.56	9.77	48.33	56.00	-7.67	QP
1.5300	29.57	9.77	39.34	46.00	-6.66	AVG
2.8780	31.34	9.82	41.16	56.00	-14.84	QP
2.8780	26.68	9.82	36.50	46.00	-9.50	AVG
29.2579	38.38	10.47	48.85	60.00	-11.15	QP
29.2579	30.27	10.47	40.74	50.00	-9.26	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

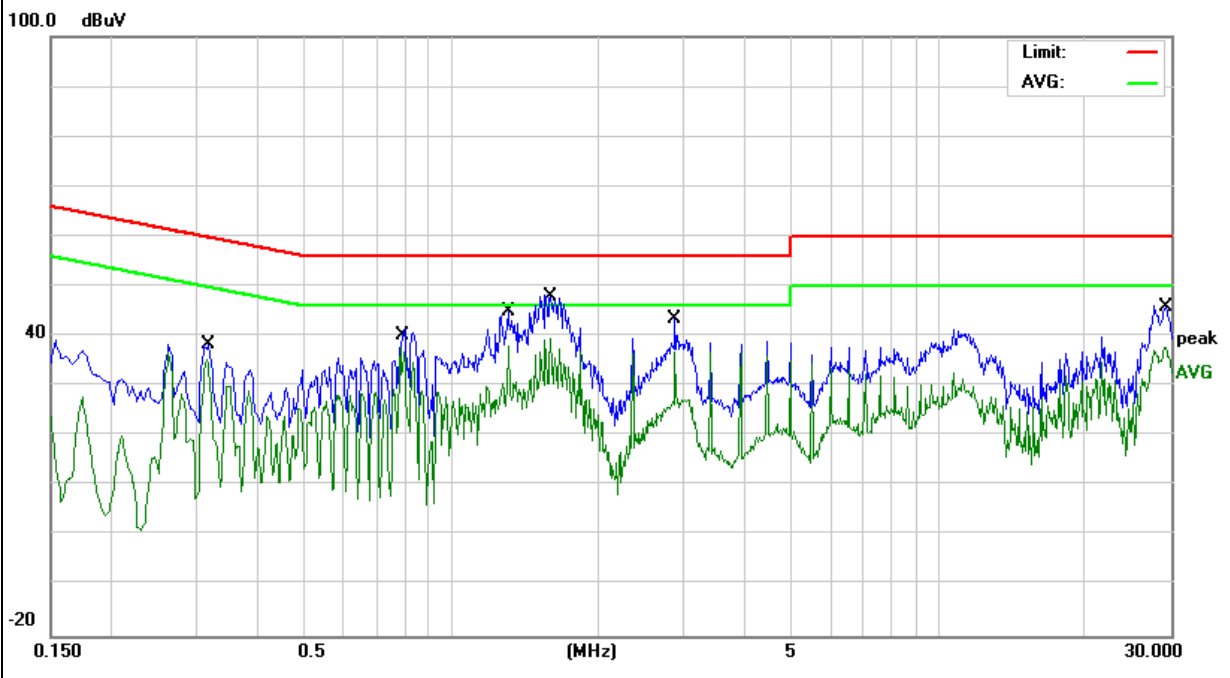


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 8

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measurement (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.3140	28.65	9.74	38.39	59.86	-21.47	QP
0.3140	25.58	9.74	35.32	49.86	-14.54	AVG
0.7860	31.73	9.75	41.48	56.00	-14.52	QP
0.7860	27.89	9.75	37.64	46.00	-8.36	AVG
1.3099	35.18	9.76	44.94	56.00	-11.06	QP
1.3099	28.34	9.76	38.10	46.00	-7.90	AVG
1.5980	38.52	9.78	48.30	56.00	-7.70	QP
1.5980	29.65	9.78	39.43	46.00	-6.57	AVG
2.8780	33.59	9.86	43.45	56.00	-12.55	QP
2.8780	26.93	9.86	36.79	46.00	-9.21	AVG
29.3140	35.59	10.46	46.05	60.00	-13.95	QP
29.3140	27.44	10.46	37.90	50.00	-12.10	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

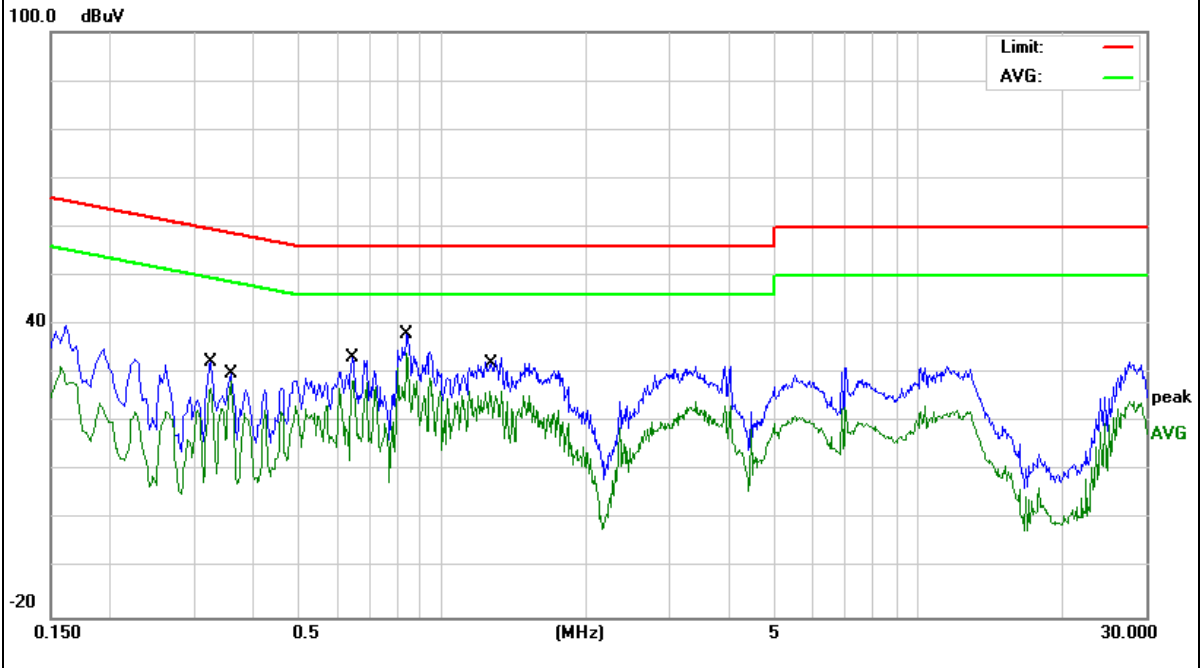


EUT:	BaldurTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 240V/60Hz	Test Mode:	Mode 8

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.3260	22.52	9.73	32.25	59.55	-27.30	QP
0.3260	17.08	9.73	26.81	49.55	-22.74	AVG
0.3579	20.25	9.74	29.99	58.78	-28.79	QP
0.3579	18.63	9.74	28.37	48.78	-20.41	AVG
0.6500	23.52	9.74	33.26	56.00	-22.74	QP
0.6500	18.73	9.74	28.47	46.00	-17.53	AVG
0.8419	28.38	9.74	38.12	56.00	-17.88	QP
0.8419	24.44	9.74	34.18	46.00	-11.82	AVG
1.2540	23.40	9.74	33.14	56.00	-22.86	QP
1.2540	16.59	9.74	26.33	46.00	-19.67	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

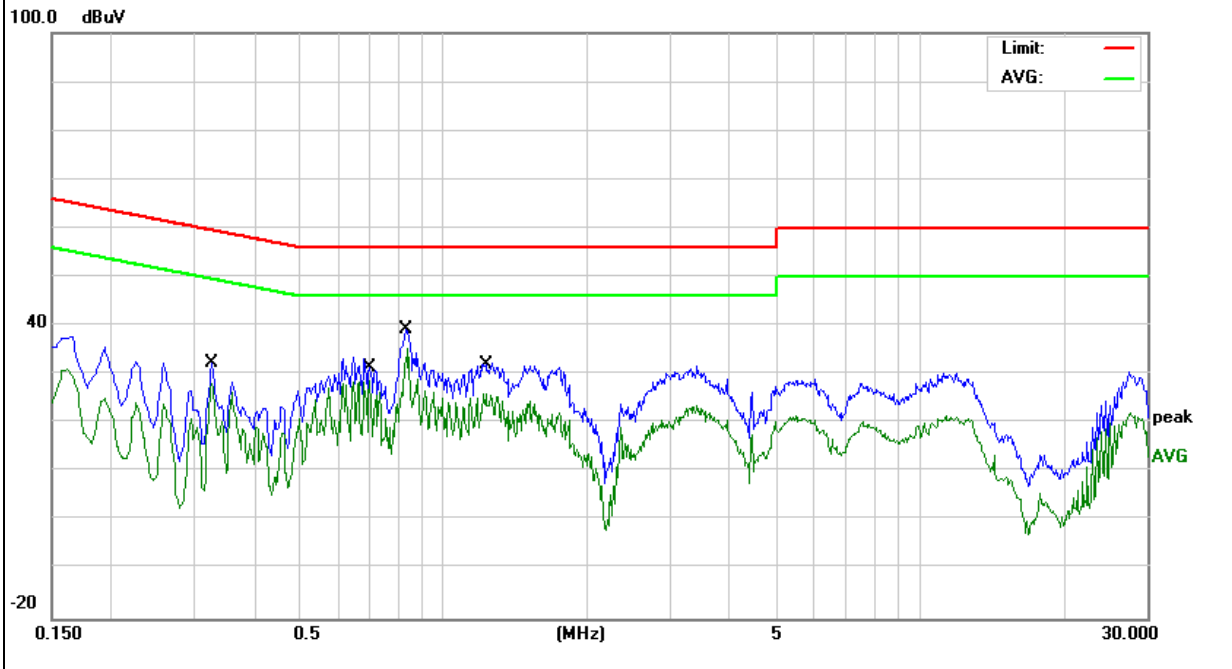


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 240V/60Hz	Test Mode:	Mode 8

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measurement (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.3260	22.63	9.74	32.37	59.55	-27.18	QP
0.3260	18.46	9.74	28.20	49.55	-21.35	AVG
0.6979	23.67	9.75	33.42	56.00	-22.58	QP
0.6979	19.15	9.75	28.90	46.00	-17.10	AVG
0.8419	29.44	9.75	39.19	56.00	-16.81	QP
0.8419	25.73	9.75	35.48	46.00	-10.52	AVG
1.2139	22.68	9.75	32.43	56.00	-23.57	QP
1.2139	16.39	9.75	26.14	46.00	-19.86	AVG

Remark:

- All readings are Quasi-Peak and Average values.
- Factor = Insertion Loss + Cable Loss.



7.2 RADIATED SPURIOUS EMISSION

7.2.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and ANSI C63.10-2013

7.2.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

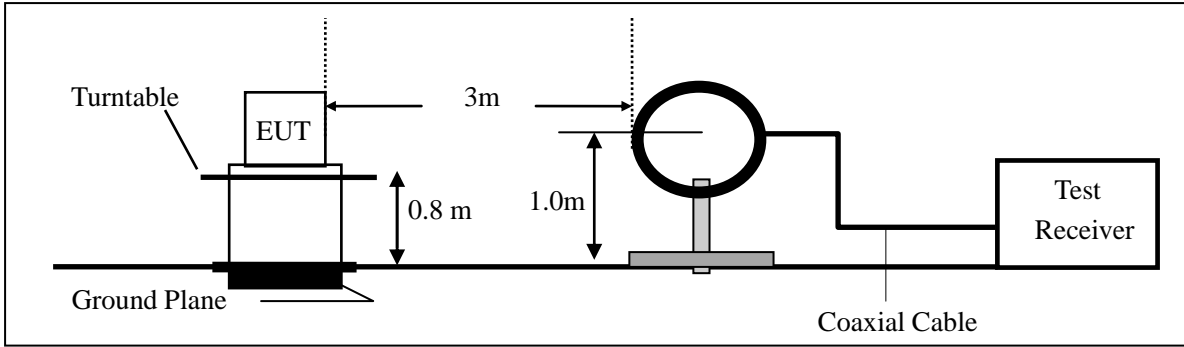
- Remark :
1. Emission level in dBuV/m=20 log (uV/m)
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

7.2.3 Measuring Instruments

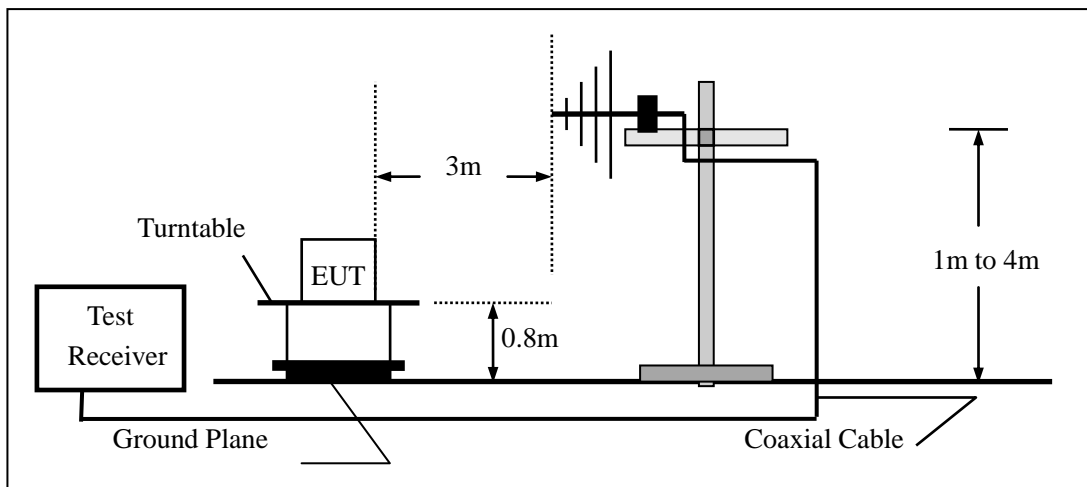
The Measuring equipment is listed in the section 6.3 of this test report.

7.2.4 Test Configuration

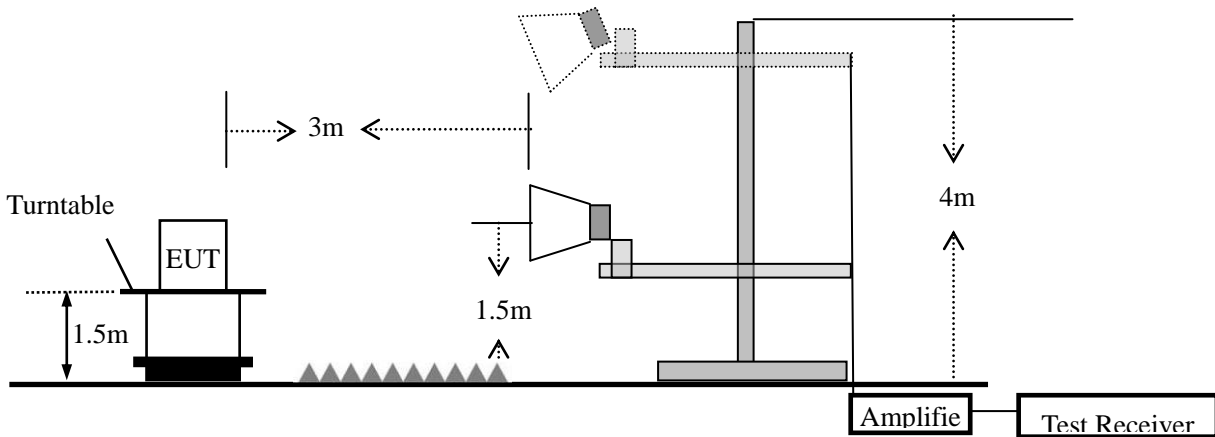
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



7.2.5 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.

Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- e. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- f. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW [kHz]})$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

7.2.6 Test Results

■ Spurious Emission below 30MHz (9KHz to 30MHz)

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Eileen Liu

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $20 \log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits(dBuV) + distance extrapolation factor

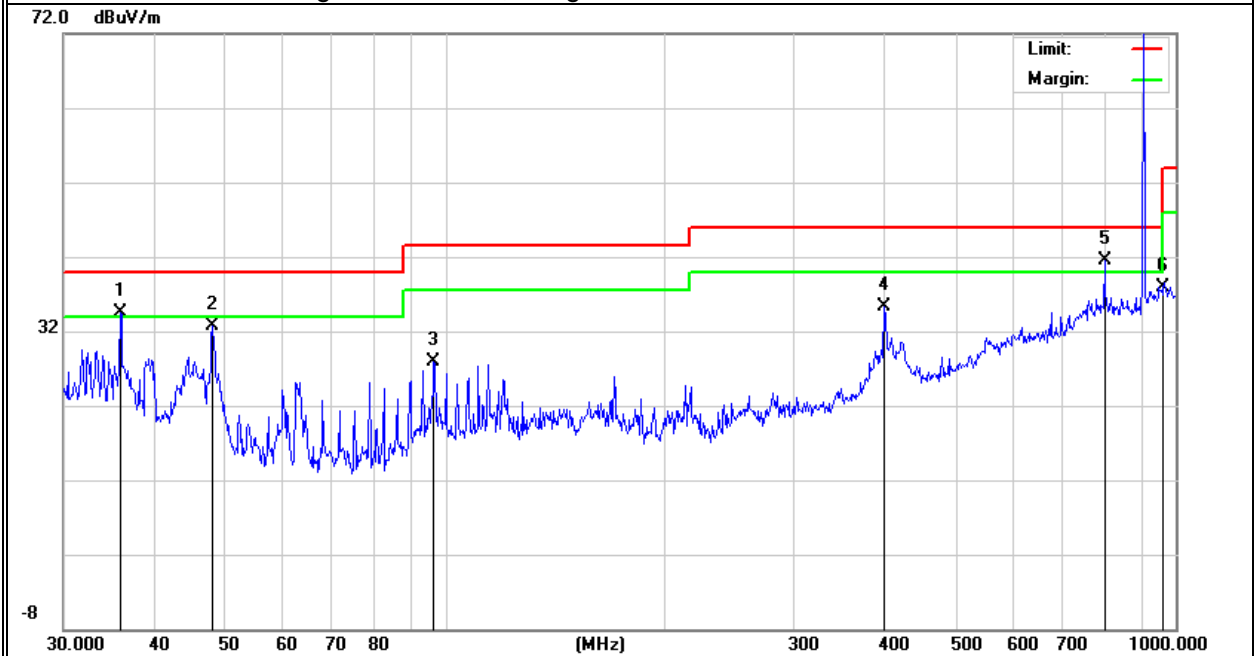
- Spurious Emission below 1GHz (30MHz to 1GHz)& Spurious Emission in Restricted Band
All the modulation modes have been tested, and the worst result was report as below:

EUT:	BaldurTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 1
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	35.8746	18.09	16.38	34.47	40.00	-5.53	QP
V	47.9938	21.43	11.33	32.76	40.00	-7.24	QP
V	96.4360	16.80	11.11	27.91	43.50	-15.59	QP
V	399.0302	15.79	19.57	35.36	46.00	-10.64	QP
V	798.9796	14.27	27.24	41.51	46.00	-4.49	QP
V	960.0000	6.83	31.15	37.98	46.00	-8.02	QP

Remark:

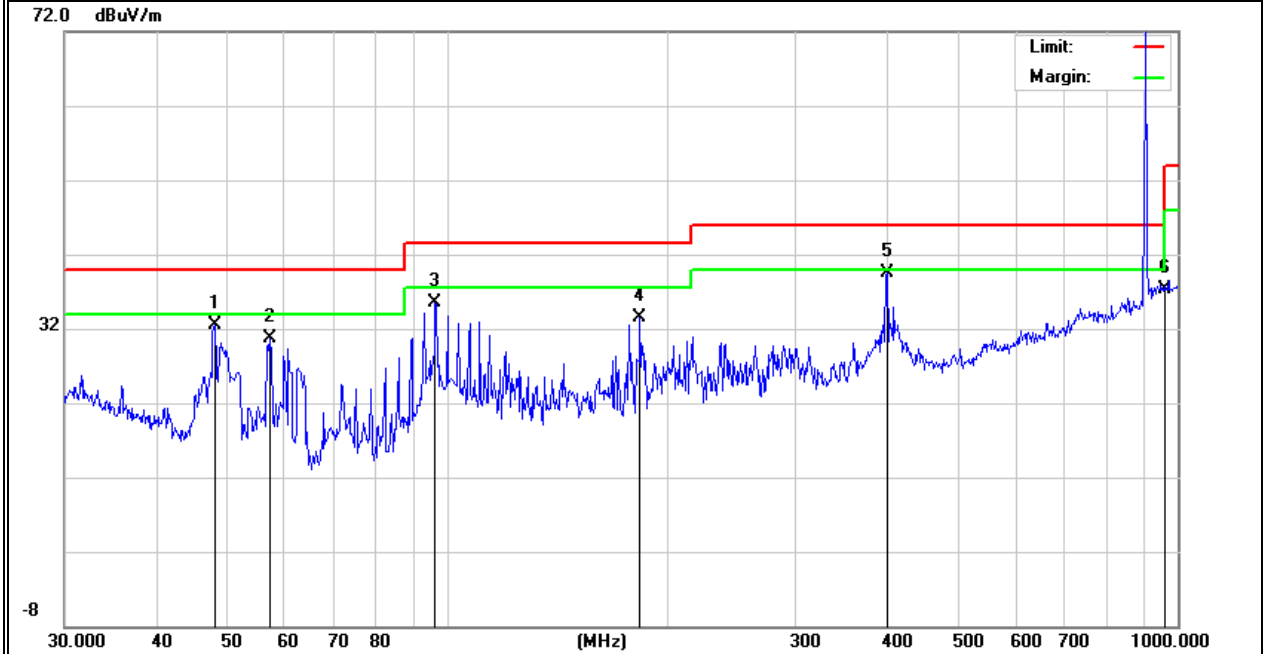
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	48.1625	21.39	11.16	32.55	40.00	-7.45	QP
H	57.1914	23.95	6.81	30.76	40.00	-9.24	QP
H	96.4362	24.38	11.11	35.49	43.50	-8.01	QP
H	183.8438	22.64	10.78	33.42	43.50	-10.08	QP
H	400.4319	19.91	19.64	39.55	46.00	-6.45	QP
H	960.0000	6.21	31.15	37.36	46.00	-8.64	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

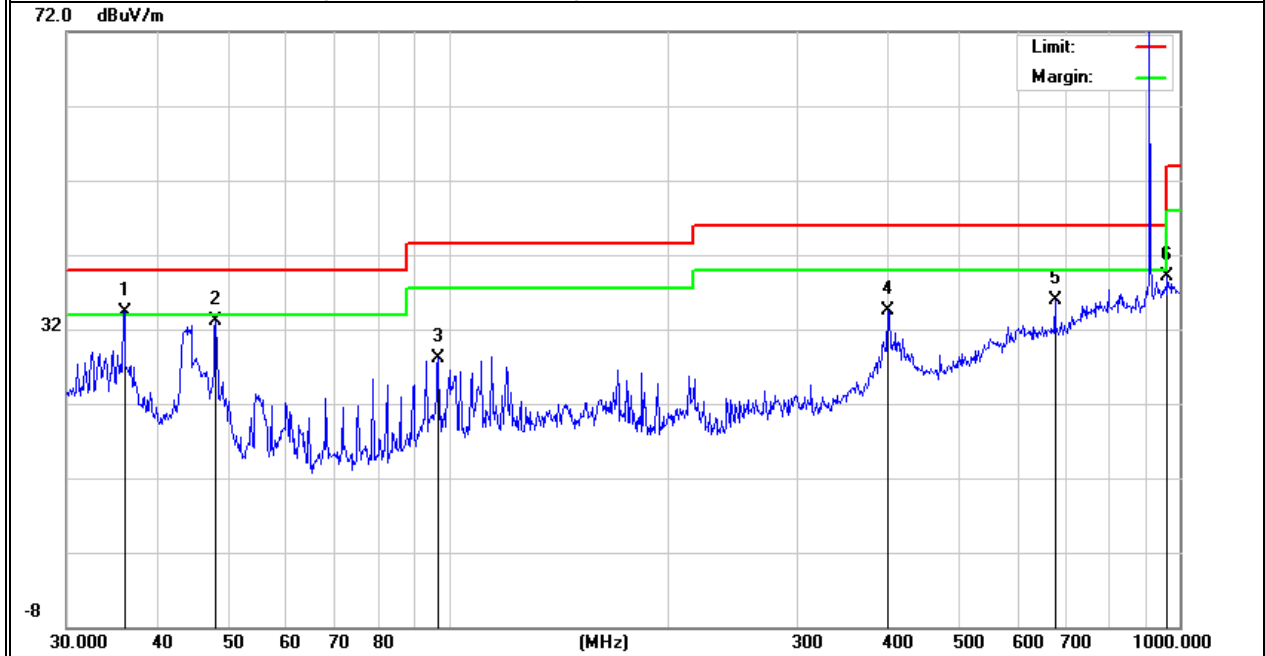


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 2
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	36.0007	17.97	16.33	34.30	40.00	-5.70	QP
V	47.9938	21.73	11.33	33.06	40.00	-6.94	QP
V	96.7749	16.86	11.15	28.01	43.50	-15.49	QP
V	399.0300	14.88	19.57	34.45	46.00	-11.55	QP
V	675.2078	10.90	25.01	35.91	46.00	-10.09	QP
V	960.0000	7.98	31.15	39.13	46.00	-6.87	QP

Remark:

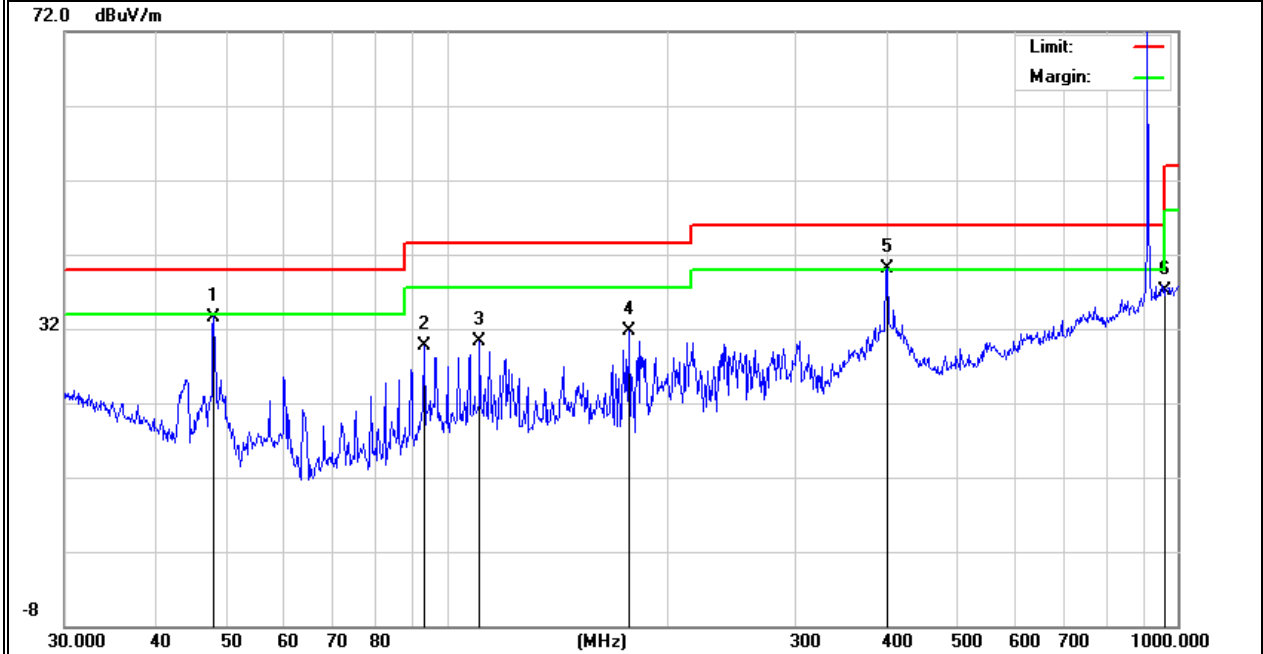
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	47.9940	22.27	11.33	33.60	40.00	-6.40	QP
H	93.1132	18.63	10.99	29.62	43.50	-13.88	QP
H	110.9570	17.74	12.47	30.21	43.50	-13.29	QP
H	177.5091	20.91	10.82	31.73	43.50	-11.77	QP
H	400.4319	20.41	19.64	40.05	46.00	-5.95	QP
H	960.0000	5.98	31.15	37.13	46.00	-8.87	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

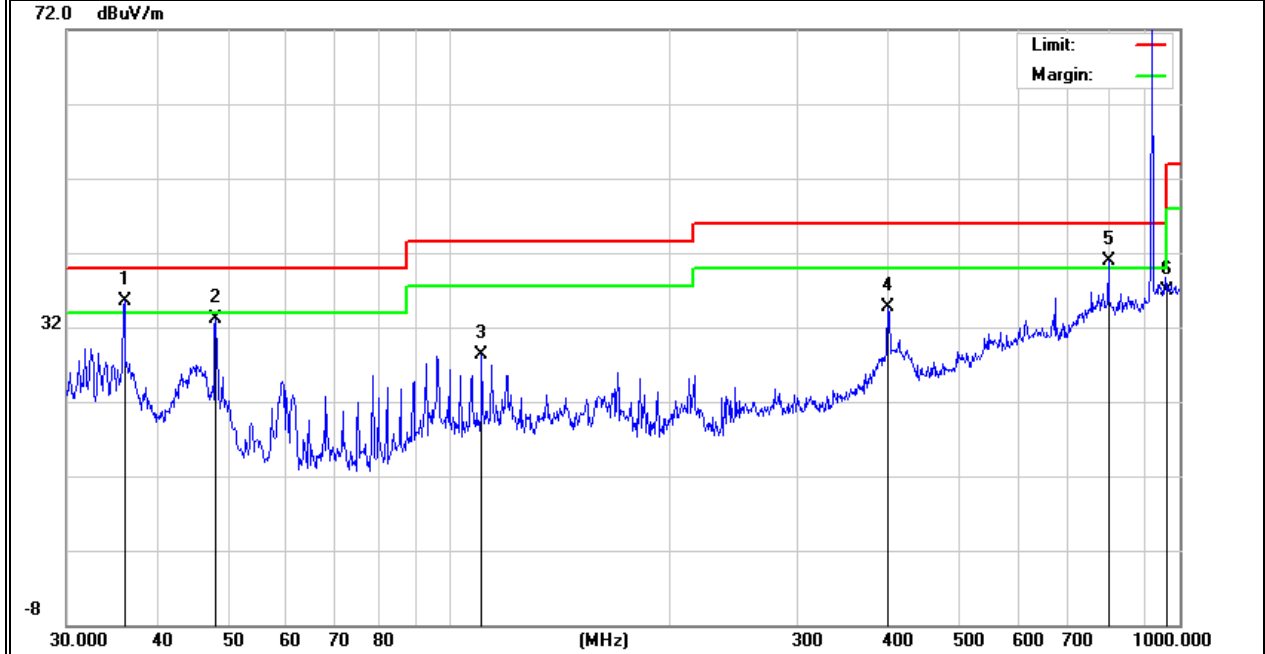


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 3
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	36.0007	19.15	16.33	35.48	40.00	-4.52	QP
V	47.9939	21.80	11.33	33.13	40.00	-6.87	QP
V	110.9570	15.79	12.47	28.26	43.50	-15.24	QP
V	399.0302	15.20	19.57	34.77	46.00	-11.23	QP
V	798.9796	13.69	27.24	40.93	46.00	-5.07	QP
V	960.0000	5.68	31.15	36.83	46.00	-9.17	QP

Remark:

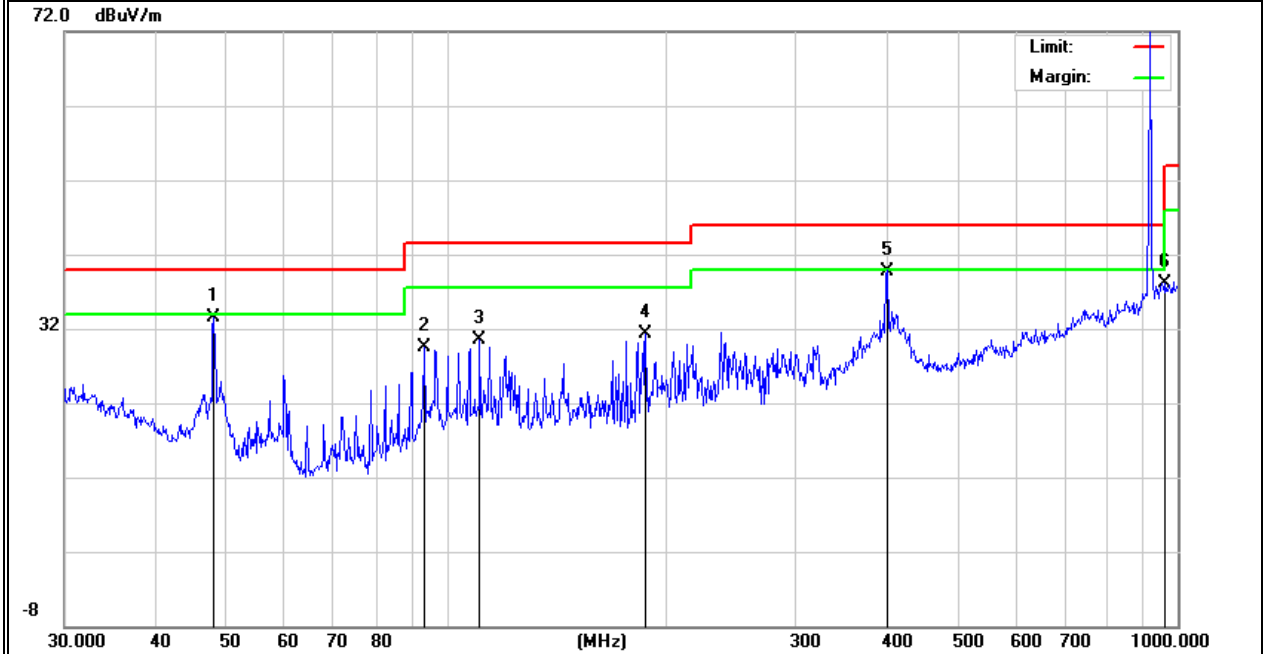
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	47.9940	22.18	11.33	33.51	40.00	-6.49	QP
H	93.1132	18.53	10.99	29.52	43.50	-13.98	QP
H	110.9570	18.13	12.47	30.60	43.50	-12.90	QP
H	187.0956	20.69	10.53	31.22	43.50	-12.28	QP
H	400.4319	20.16	19.64	39.80	46.00	-6.20	QP
H	960.0000	7.04	31.15	38.19	46.00	-7.81	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

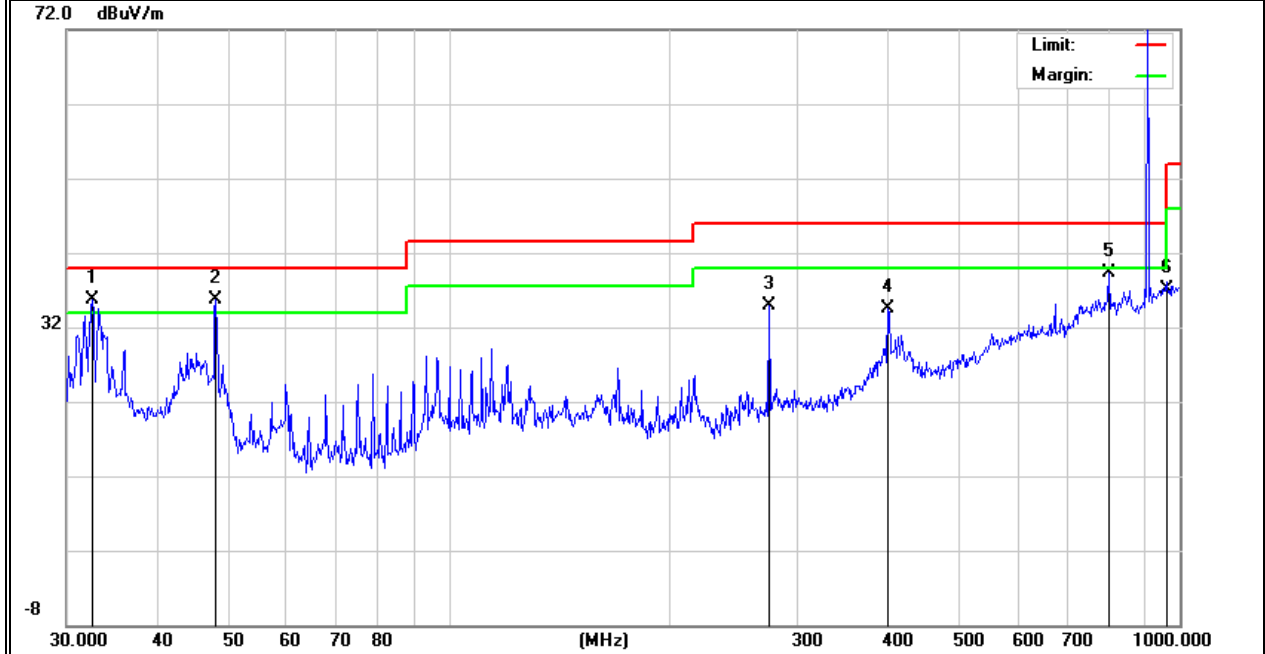


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 4
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	32.5198	17.79	17.91	35.70	40.00	-4.30	QP
V	47.9940	24.43	11.33	35.76	40.00	-4.24	QP
V	274.1939	19.48	15.43	34.91	46.00	-11.09	QP
V	399.0300	14.99	19.57	34.56	46.00	-11.44	QP
V	798.9796	12.12	27.24	39.36	46.00	-6.64	QP
V	960.0000	5.95	31.15	37.10	46.00	-8.90	QP

Remark:

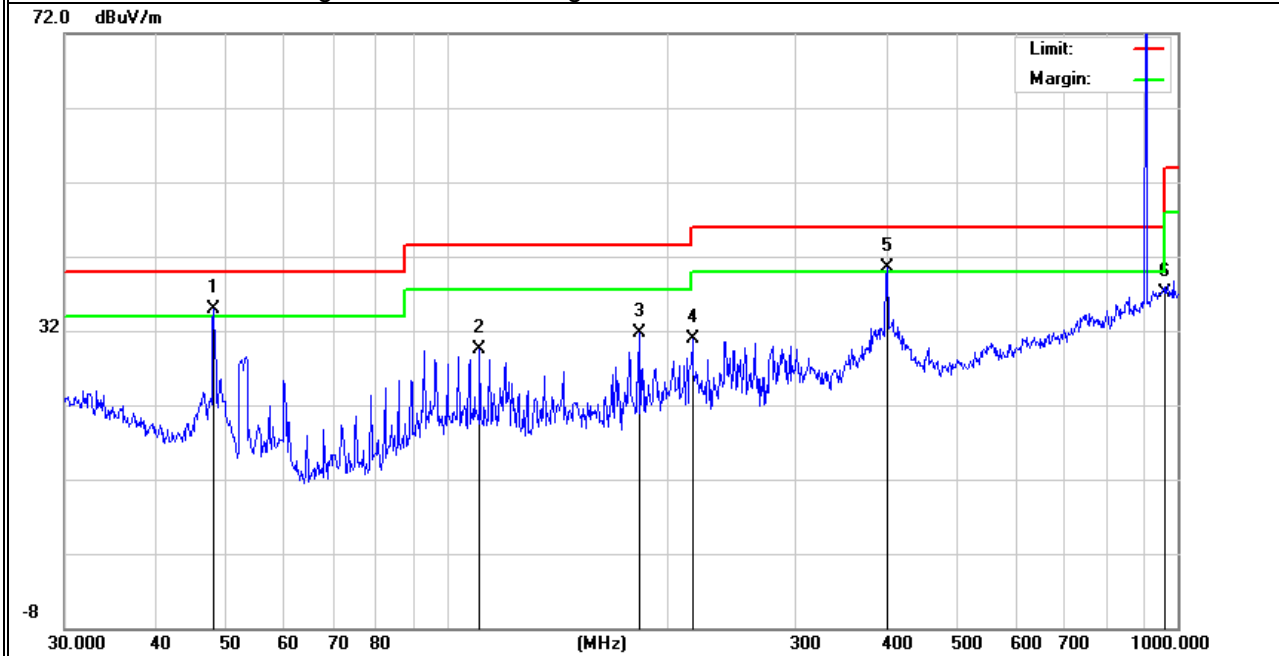
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	47.9940	23.48	11.33	34.81	40.00	-5.19	QP
H	110.9569	16.96	12.47	29.43	43.50	-14.07	QP
H	183.8437	20.98	10.78	31.76	43.50	-11.74	QP
H	216.7828	19.56	11.28	30.84	46.00	-15.16	QP
H	400.4319	20.79	19.64	40.43	46.00	-5.57	QP
H	960.0000	6.01	31.15	37.16	46.00	-8.84	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

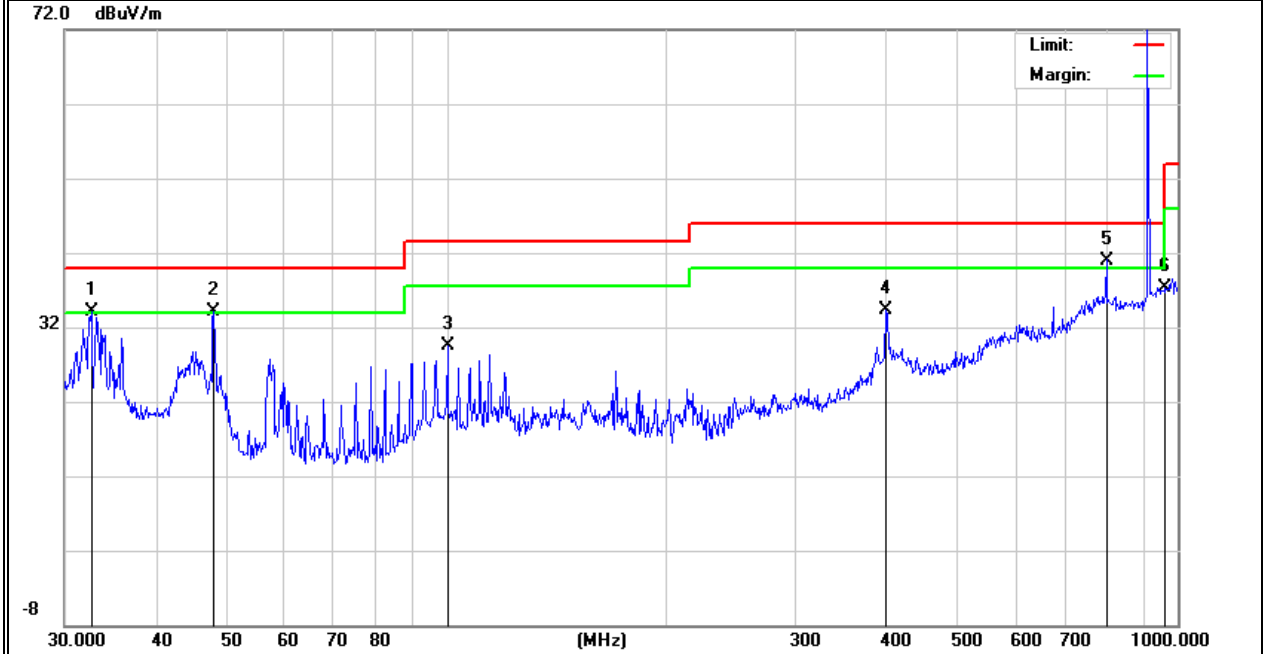


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 5
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	32.6340	16.17	17.85	34.02	40.00	-5.98	QP
V	47.9940	22.79	11.33	34.12	40.00	-5.88	QP
V	100.2286	17.66	11.79	29.45	43.50	-14.05	QP
V	399.0302	14.68	19.57	34.25	46.00	-11.75	QP
V	798.9796	13.76	27.24	41.00	46.00	-5.00	QP
V	960.0000	6.20	31.15	37.35	46.00	-8.65	QP

Remark:

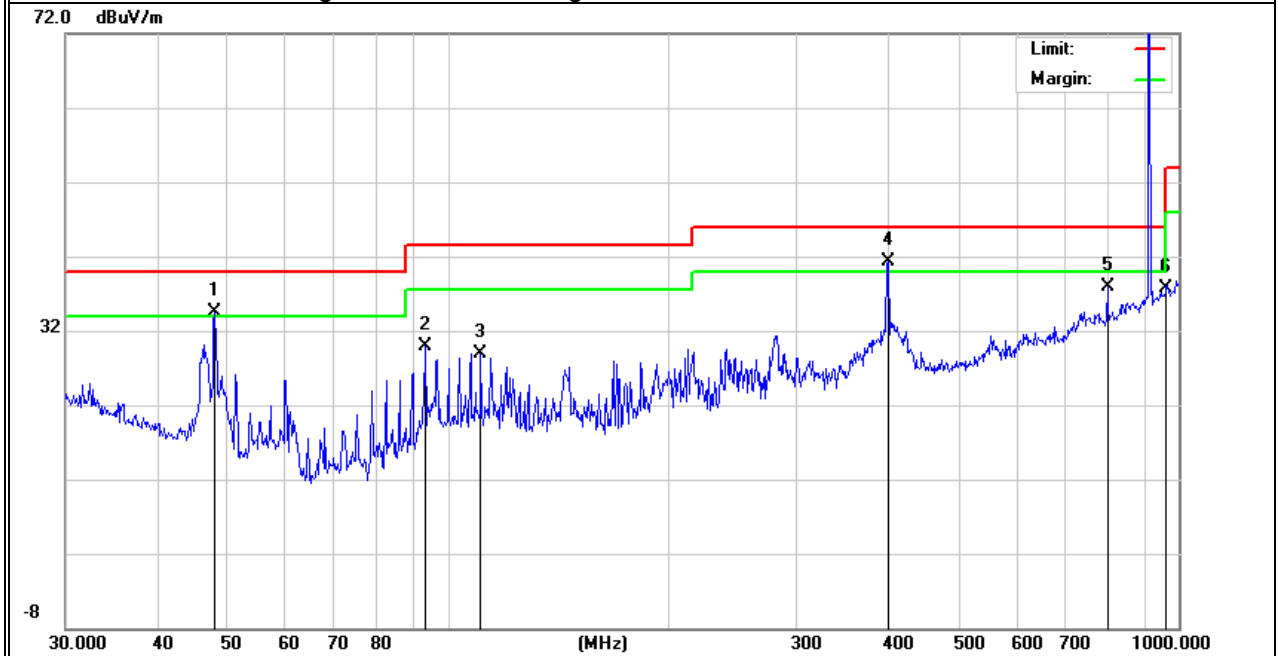
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	47.9940	23.08	11.33	34.41	40.00	-5.59	QP
H	93.1132	18.88	10.99	29.87	43.50	-13.63	QP
H	110.9570	16.44	12.47	28.91	43.50	-14.59	QP
H	400.4319	21.64	19.64	41.28	46.00	-4.72	QP
H	798.9796	10.59	27.24	37.83	46.00	-8.17	QP
H	960.0000	6.47	31.15	37.62	46.00	-8.38	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

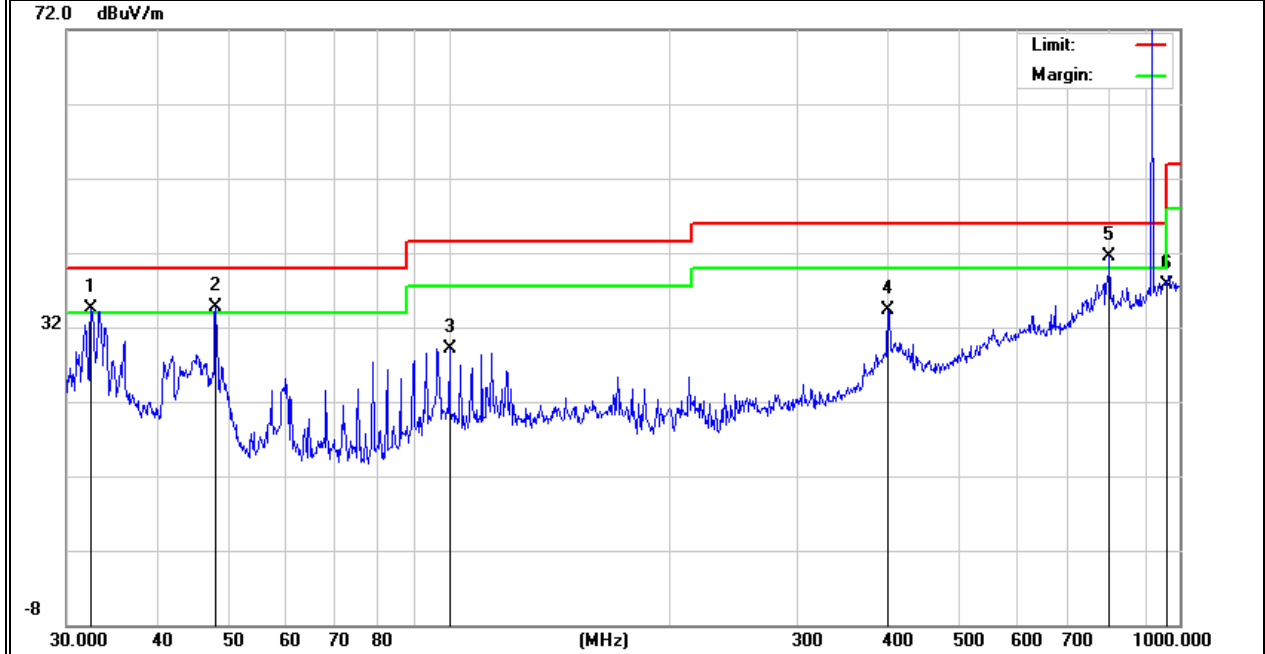


EUT:	BalduTouch II	Model Name :	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010hPa	Test Mode:	Mode 6
Test Voltage :	AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	32.4059	16.55	17.98	34.53	40.00	-5.47	QP
V	47.9940	23.40	11.33	34.73	40.00	-5.27	QP
V	100.2286	17.33	11.79	29.12	43.50	-14.38	QP
V	399.0300	14.78	19.57	34.35	46.00	-11.65	QP
V	801.7862	14.33	27.27	41.60	46.00	-4.40	QP
V	960.0000	6.59	31.15	37.74	46.00	-8.26	QP

Remark:

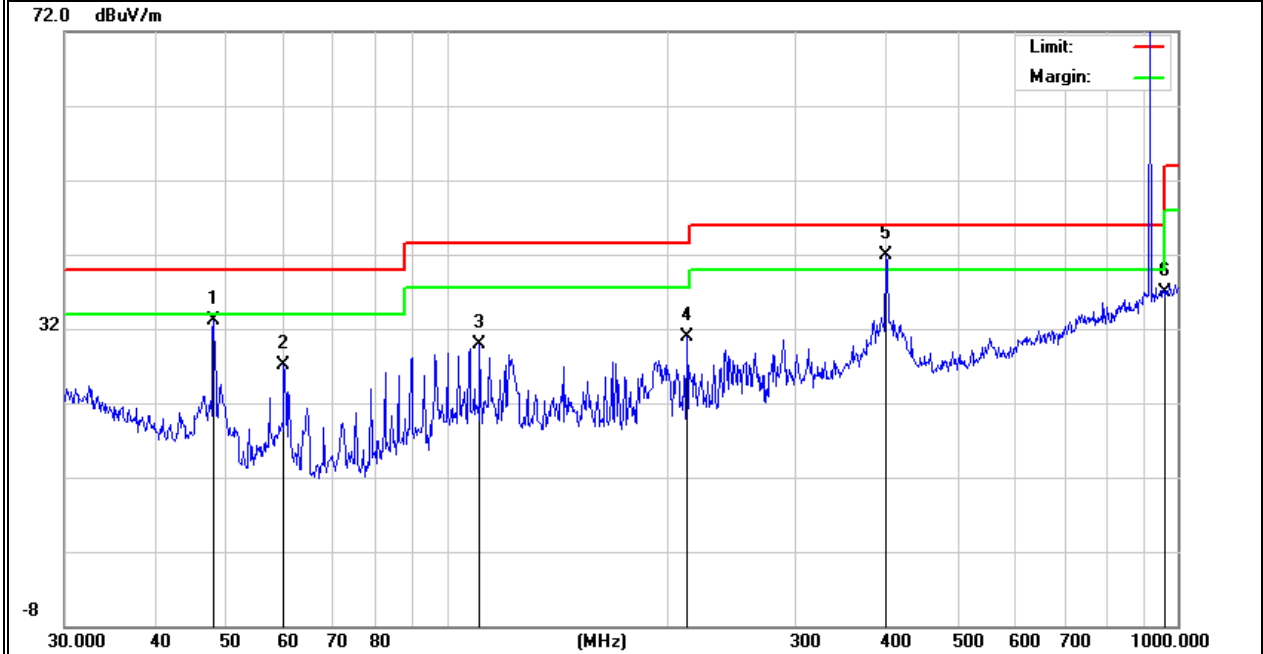
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBUV)	(dB)	(dBUV/m)	(dBUV/m)	(dB)	
H	47.9940	21.76	11.33	33.09	40.00	-6.91	QP
H	59.8588	20.69	6.50	27.19	40.00	-12.81	QP
H	110.9570	17.35	12.47	29.82	43.50	-13.68	QP
H	213.0150	20.08	10.91	30.99	43.50	-12.51	QP
H	399.0302	22.39	19.57	41.96	46.00	-4.04	QP
H	960.0000	5.84	31.15	36.99	46.00	-9.01	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



■ Spurious Emission Above 1GHz (1GHz to 10GHz) & Spurious Emission in Restricted Band

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode1/Mode2/Mode3	Test By:	Eileen Liu

All the modulation modes have been tested, and the worst result was report as below:

Frequency (MHz)	Read Level (dBμV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	Comment
Low Channel (902.3MHz)--Above 1G									
1240	61.25	5.21	26.5	55.35	37.61	74.00	-36.39	Pk	Vertical
1804.6	63.12	5.21	26.5	55.35	39.48	74.00	-34.52	Pk	Vertical
2706.9	62.62	6.48	28.49	55.11	42.48	74.00	-31.52	Pk	Vertical
4511.5	67.55	6.48	28.49	55.11	47.41	74.00	-26.59	Pk	Vertical
1240	61.85	5.21	26.5	55.35	38.21	74.00	-35.79	Pk	Horizontal
1804.6	63.56	5.21	26.5	55.35	39.92	74.00	-34.08	Pk	Horizontal
2706.9	60.81	6.48	28.49	55.11	40.67	74.00	-33.33	Pk	Horizontal
4511.5	65.10	6.48	28.49	55.11	44.96	74.00	-29.04	Pk	Horizontal
Mid Channel (908.5MHz)--Above 1G									
1240	60.19	5.21	26.5	55.35	36.55	74.00	-37.45	Pk	Vertical
1817	65.35	5.21	26.5	55.35	41.71	74.00	-32.29	Pk	Vertical
2725.5	65.79	7.10	28.49	55.11	46.27	74.00	-27.73	Pk	Vertical
3634	62.30	7.10	28.49	55.11	42.78	74.00	-31.22	Pk	Vertical
4542.5	64.63	7.10	28.49	55.11	45.11	74.00	-28.89	Pk	Vertical
1240	60.63	5.21	26.5	55.35	36.99	74.00	-37.01	Pk	Horizontal
1817	64.89	5.21	26.5	55.35	41.25	74.00	-32.75	Pk	Horizontal
2725.5	70.66	7.10	28.49	55.11	51.14	74.00	-22.86	Pk	Horizontal
3634	61.09	7.10	28.49	55.11	41.57	74.00	-32.43	Pk	Horizontal
4542.5	65.49	7.10	28.49	55.11	45.97	74.00	-28.03	Pk	Horizontal
High Channel (914.9MHz)--Above 1G									
1240	61.21	5.21	26.5	55.35	37.57	74.00	-36.43	Pk	Vertical
1829.8	67.38	5.21	26.5	55.35	43.74	74.00	-30.26	Pk	Vertical
2744.7	67.70	7.10	28.49	55.11	48.18	74.00	-25.82	Pk	Vertical
4612.5	66.66	7.10	28.49	55.11	47.14	74.00	-26.86	Pk	Vertical
7715	73.75	7.10	28.49	55.11	54.23	74.00	-19.77	Pk	Vertical
1240	50.85	5.21	35.52	55.35	36.23	74.00	-37.77	Pk	Horizontal
1829.8	53.86	5.21	35.52	55.35	39.24	74.00	-34.76	Pk	Horizontal
2744.7	61.79	7.10	36.53	55.11	50.31	74.00	-23.69	Pk	Horizontal
3659.6	54.91	7.10	36.53	55.11	43.43	74.00	-30.57	Pk	Horizontal
6737.5	60.92	7.10	36.53	55.11	49.44	74.00	-24.56	Pk	Horizontal

- Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
 (2) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
 (3) All the peak value emissions more than 20dB below the limit, so the average value not record.

EUT:	BalduTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode4/Mode5/Mode6	Test By:	Eileen Liu

All the modulation modes have been tested, and the worst result was report as below:

Frequency (MHz)	Read Level (dBμV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	Comment
Low Channel (903MHz)--Above 1G									
1240	60.91	5.21	26.5	55.35	37.27	74.00	-36.73	Pk	Vertical
1806	65.90	5.21	26.5	55.35	42.26	74.00	-31.74	Pk	Vertical
2709	59.36	6.48	28.49	55.11	39.22	74.00	-34.78	Pk	Vertical
3612	64.13	6.48	28.49	55.11	43.99	74.00	-30.01	Pk	Vertical
1240	60.40	5.21	26.5	55.35	36.76	74.00	-37.24	Pk	Horizontal
1806	61.63	5.21	26.5	55.35	37.99	74.00	-36.01	Pk	Horizontal
2709	59.38	6.48	28.49	55.11	39.24	74.00	-34.76	Pk	Horizontal
3612	59.80	6.48	28.49	55.11	39.66	74.00	-34.34	Pk	Horizontal
Mid Channel (909.4MHz)--Above 1G									
1240	60.59	5.21	26.5	55.35	36.95	74.00	-37.05	Pk	Vertical
2402.5	69.11	5.21	26.5	55.35	45.47	74.00	-28.53	Pk	Vertical
3637.6	61.95	7.10	28.49	55.11	42.43	74.00	-31.57	Pk	Vertical
4547	66.91	7.10	28.49	55.11	47.39	74.00	-26.61	Pk	Vertical
1240	60.97	5.21	26.5	55.35	37.33	74.00	-36.67	Pk	Horizontal
1818.8	62.28	5.21	26.5	55.35	38.64	74.00	-35.36	Pk	Horizontal
2728.2	59.75	7.10	28.49	55.11	40.23	74.00	-33.77	Pk	Horizontal
3637.6	58.32	7.10	28.49	55.11	38.80	74.00	-35.20	Pk	Horizontal
4547	64.78	7.10	28.49	55.11	45.26	74.00	-28.74	Pk	Horizontal
High Channel (914.2MHz)--Above 1G									
1240	61.62	5.21	26.5	55.35	37.98	74.00	-36.02	Pk	Vertical
1828.4	62.53	5.21	26.5	55.35	38.89	74.00	-35.11	Pk	Vertical
2742.6	60.06	7.10	28.49	55.11	40.54	74.00	-33.46	Pk	Vertical
3592.5	63.18	7.10	28.49	55.11	43.66	74.00	-30.34	Pk	Vertical
1240	51.32	5.21	35.52	55.35	36.70	74.00	-37.30	Pk	Horizontal
1828.4	54.09	5.21	35.52	55.35	39.47	74.00	-34.53	Pk	Horizontal
2742.6	51.79	7.10	36.53	55.11	40.31	74.00	-33.69	Pk	Horizontal
3656.8	52.12	7.10	36.53	55.11	40.64	74.00	-33.36	Pk	Horizontal

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
 (2) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
 (3) All the peak value emissions more than 20dB below the limit, so the average value not record.

7.3 NUMBER OF HOPPING CHANNEL

7.3.1 Applicable Standard

According to FCC Part 15.247(a)(1) (i) and ANSI C63.10-2013

7.3.2 Conformance Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

7.3.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.3.4 Test Setup

Please refer to Section 6.1 of this test report.

7.3.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.3

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW : To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

VBW \geq RBW

Sweep = auto

Detector function = peak

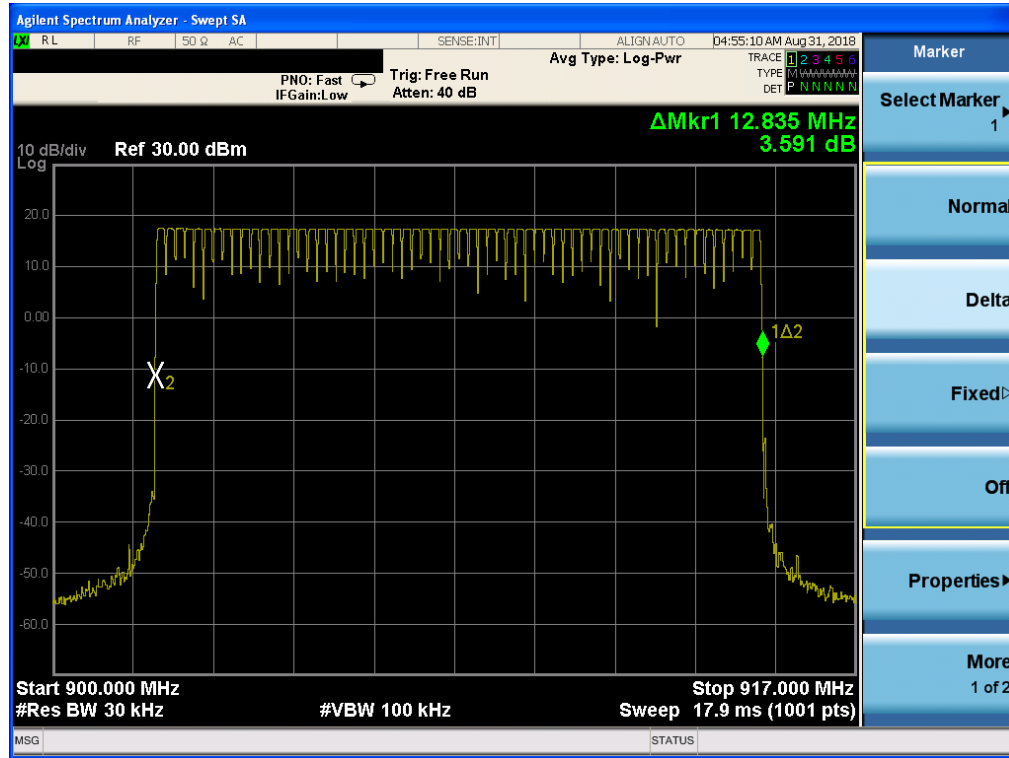
Trace = max hold

7.3.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode 7	Test By:	Eileen Liu

Number of Hopping (Channel)	limit	Verdict
64	≥ 50	Pass

Number of Hopping Channel Plot



7.4 HOPPING CHANNEL SEPARATION MEASUREMENT

7.4.1 Applicable Standard

According to FCC Part 15.247(a)(1) and ANSI C63.10-2013

7.4.2 Conformance Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

7.4.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.4.4 Test Setup

Please refer to Section 6.1 of this test report.

7.4.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.2

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Measurement Bandwidth or Channel Separation

RBW: Start with the RBW set to approximately 3% of the channel spacing; adjust as necessary to best identify the center of each individual channel.

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

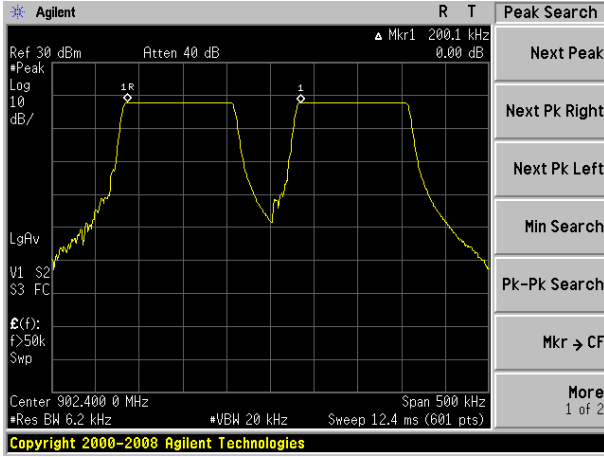
7.4.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode1/Mode2/Mode3	Test By:	Eileen Liu

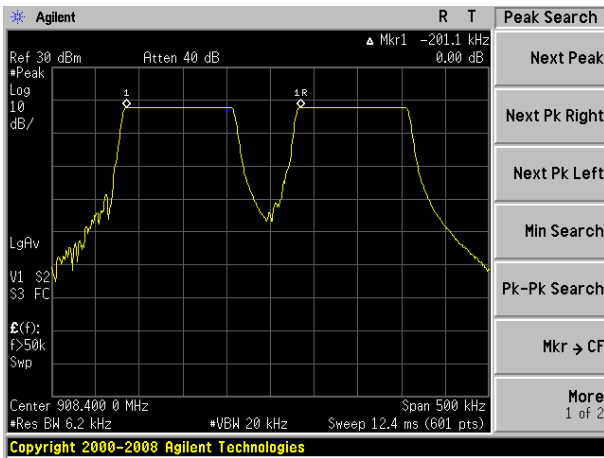
Modulation Mode	Channel Number	Channel Frequency (MHz)	Measured Channel Separation (kHz)	Limit (kHz)		Verdict
CSS	0-1	902.3-902.5	200.1	> 138.626	20dB BW	PASS
	30-31	908.3-908.4	201.1	> 137.719	20dB BW	PASS
	62-63	914.7-914.9	196.3	> 139.097	20dB BW	PASS

Test Plot

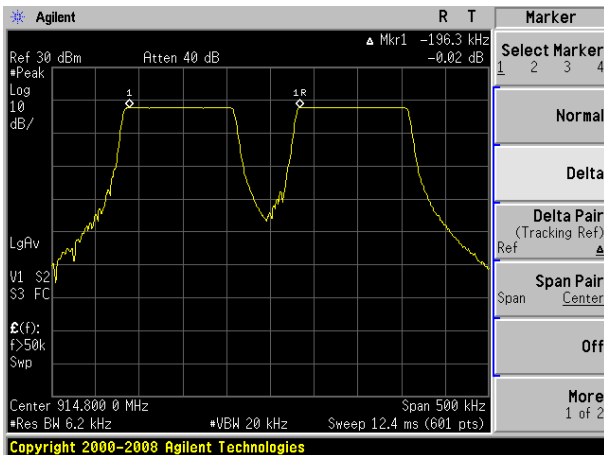
Channel Separation plot on channel 00-01



(1Mbps) Channel Separation plot on channel 31-32



(1Mbps) Channel Separation plot on channel 62-63



7.5 AVERAGE TIME OF OCCUPANCY (DWELL TIME)

7.5.1 Applicable Standard

According to FCC Part 15.247(f) and ANSI C63.10-2013

7.5.2 Conformance Limit

For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4.

7.5.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.5.4 Test Setup

Please refer to Section 6.1 of this test report.

7.5.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.4

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = zero span, centered on a hopping channel

RBW \geq 1MHz

VBW \geq RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak

Trace = max hold

Measure the maximum time duration of one single pulse.

Set the EUT for DH5, DH3 and DH1 packet transmitting.

Measure the maximum time duration of one single pulse.

7.5.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode 7	Test By:	Eileen Liu

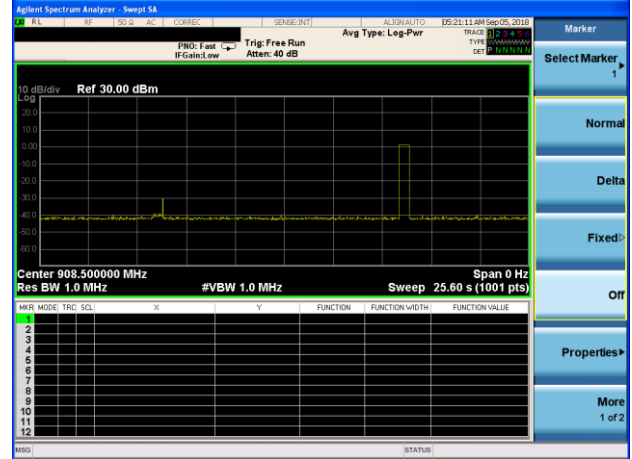
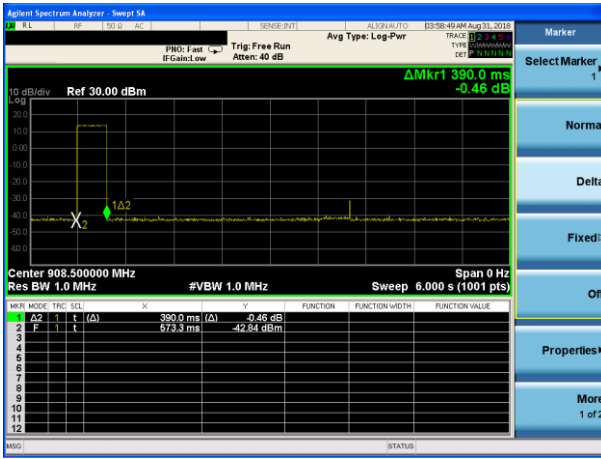
Data Rate (DR)	Center Frequency (MHz)	Transmit Time per Hop (ms)	The Number of Hop Within a limited time (N)	Dwell Time (s)	Limits (s)	Result
0	908.5	390.0	1	0.39	0.4	Pass
1	908.5	213.0	1	0.213	0.4	Pass
2	908.5	116.0	3	0.348	0.4	Pass
3	908.5	64.0	3	0.192	0.4	Pass

Note:

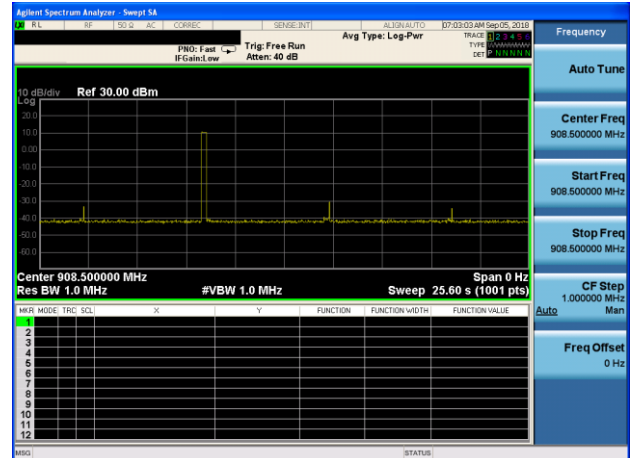
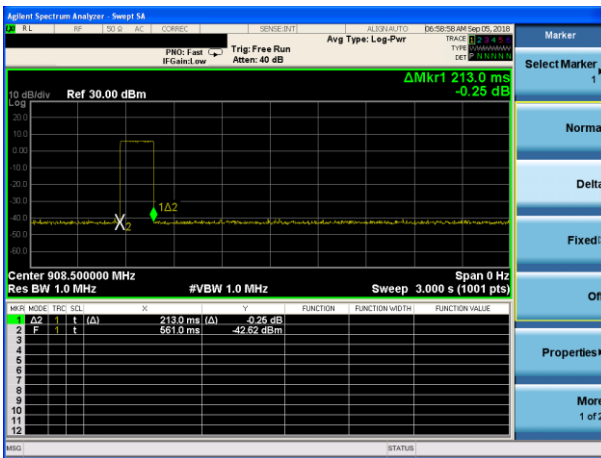
1. Sweep time= $0.4 \times \text{Number of Hopping} = 0.4 \times 64 = 25.6\text{s}$;
2. Dwell Time(s) = Transmit Time per Hop \times N.

Test Plot

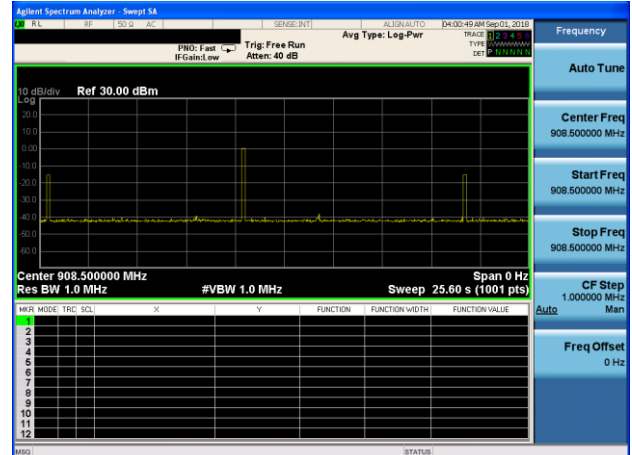
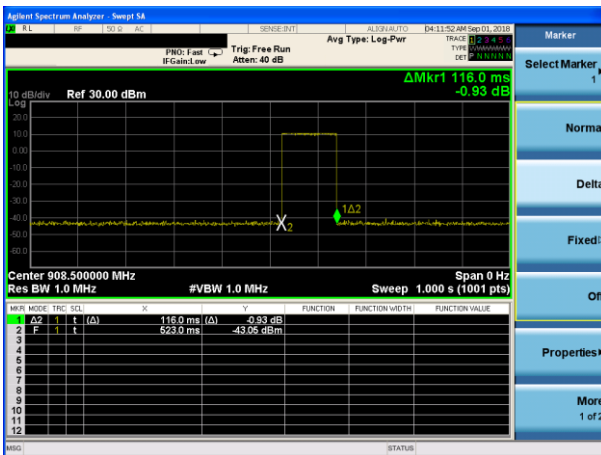
DR=0



DR=1

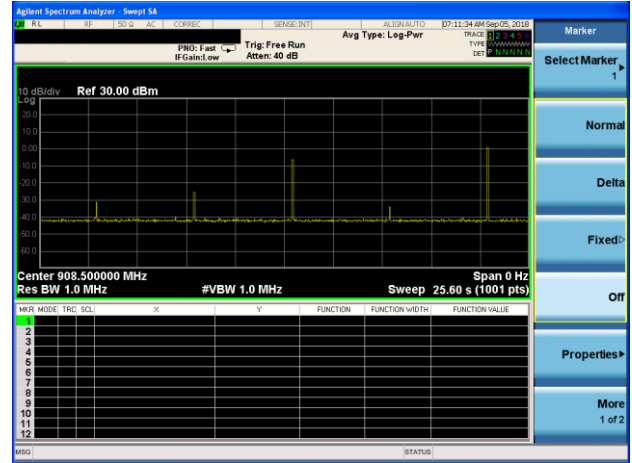
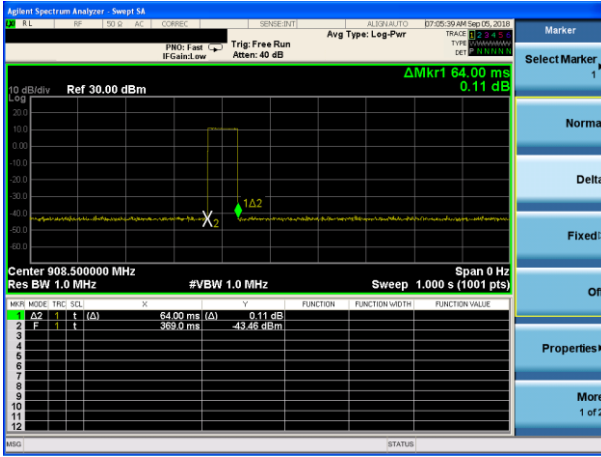


DR=2



Test Plot

DR=3



7.6 20DB BANDWIDTH TEST

7.6.1 Applicable Standard

According to FCC Part 15.247(a)(1)(i) and ANSI C63.10-2013

7.6.2 Conformance Limit

For frequency hopping systems operating in the 902-928 MHz band: The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

7.6.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.6.4 Test Setup

Please refer to Section 6.1 of this test report.

7.6.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 6.9.2

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW \geq 1% of the 20 dB bandwidth

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

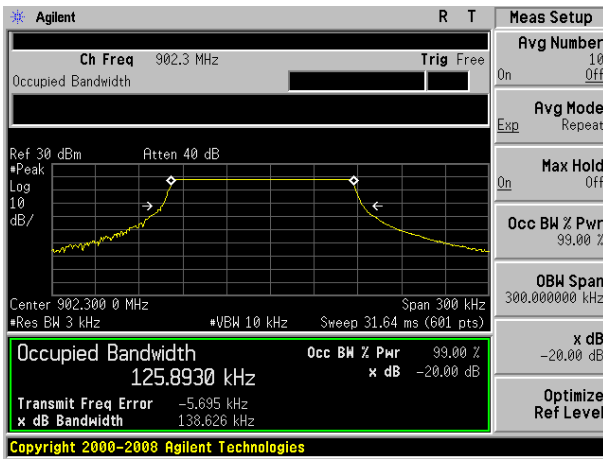
7.6.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode1/Mode2/Mode3	Test By:	Eileen Liu

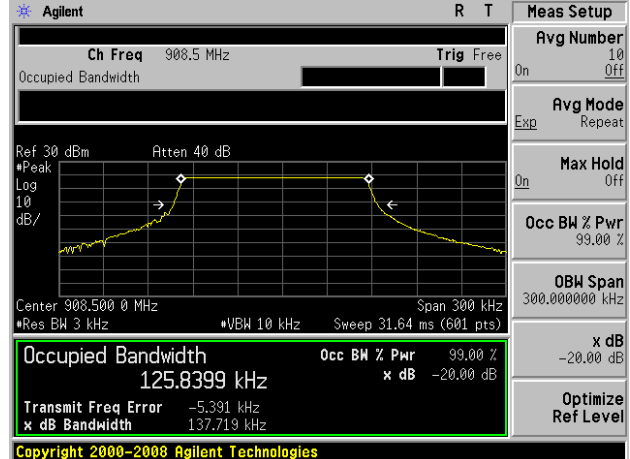
Test Channel	Frequency	Measured Bandwidth (KHz)	Limit	Verdict
	(MHz)		(kHz)	
0	902.3	138.626	500	PASS
31	908.5	137.719	500	PASS
63	914.9	139.097	500	PASS

Test Plot

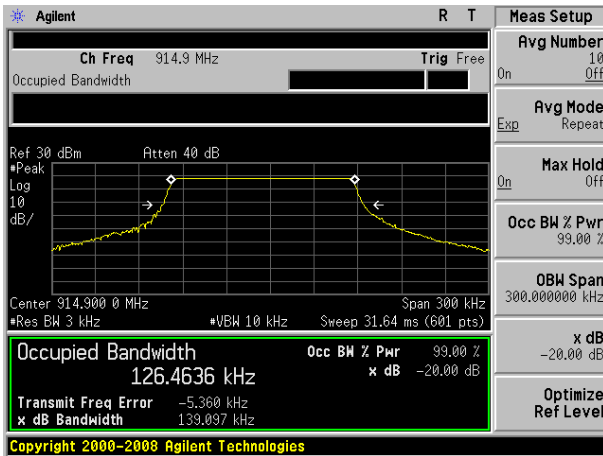
20dB Bandwidth plot on channel 0



20dB Bandwidth plot on channel 31



20dB Bandwidth plot on channel 63



7.7 6DB BANDWIDTH

7.7.1 Applicable Standard

According to FCC Part 15.247(a)(2) and KDB 558074 DTS 01 Meas. Guidance v04

7.7.2 Conformance Limit

The minimum permissible 6dB bandwidth shall be at least 500 kHz.

7.7.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.7.4 Test Setup

Please refer to Section 6.1 of this test report.

7.7.5 Test Procedure

The testing follows KDB 558074 DTS 01 Meas. Guidance v04

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

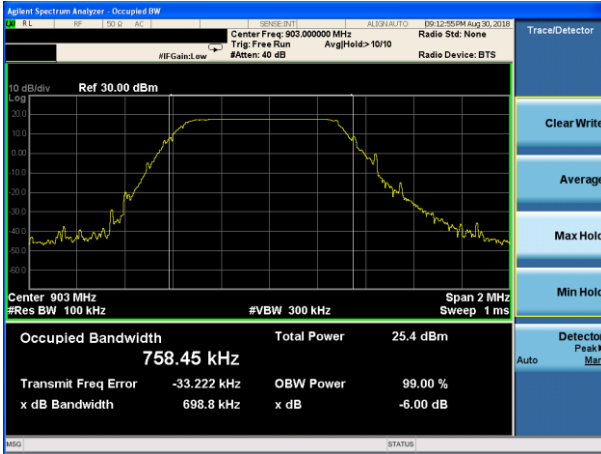
7.7.6 Test Results

EUT:	IQ TV BOX	Model No.:	IQ 786
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode4/Mode5/Mode6	Test By:	Eileen Liu

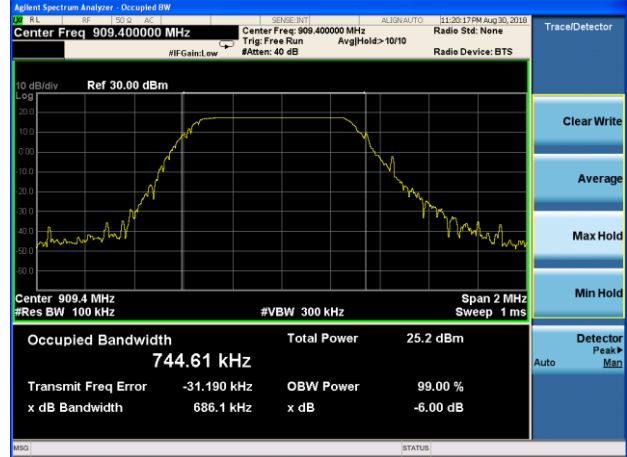
Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
CH64	903	698.8	≥ 500	Pass
CH68	909.4	686.1	≥ 500	Pass
CH71	914.2	684.9	≥ 500	Pass

Test Plot

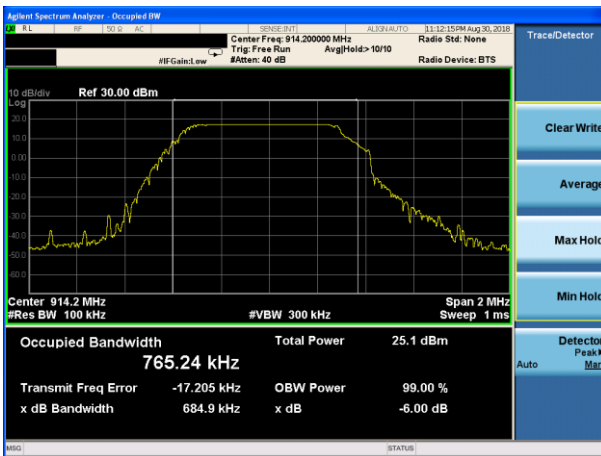
6dB Bandwidth plot on channel 64



6dB Bandwidth plot on channel 68



6dB Bandwidth plot on channel 71



7.8 PEAK OUTPUT POWER

7.8.1 Applicable Standard

According to FCC Part 15.247(b)(2)(3) and ANSI C63.10-2013

7.8.2 Conformance Limit

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

7.8.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.8.4 Test Setup

Please refer to Section 6.1 of this test report.

7.8.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.5.

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW \geq the 20 dB bandwidth of the emission being measured

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

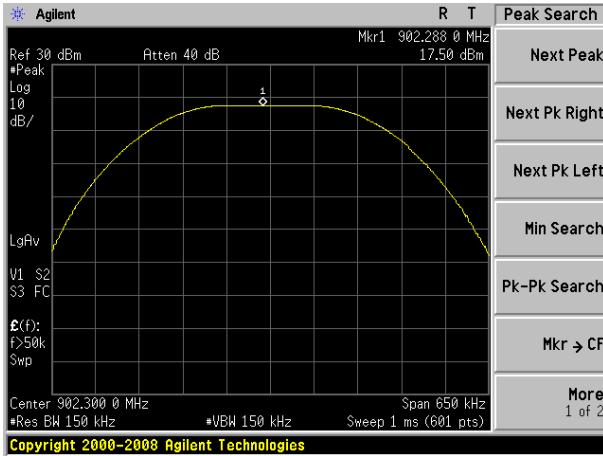
7.8.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode1/Mode2/Mode3/ Mode4/Mode5/Mode6	Test By:	Eileen Liu

Test Channel	Frequency	Power Setting	Peak Output Power	LIMIT	Verdict
	(MHz)		(dBm)	(dBm)	
FHSS					
0	902.3	Default	17.50	30	PASS
31	908.5	Default	17.44	30	PASS
63	914.9	Default	17.35	30	PASS
DTS					
64	903	Default	17.45	30	PASS
68	909.4	Default	17.34	30	PASS
71	914.2	Default	17.24	30	PASS

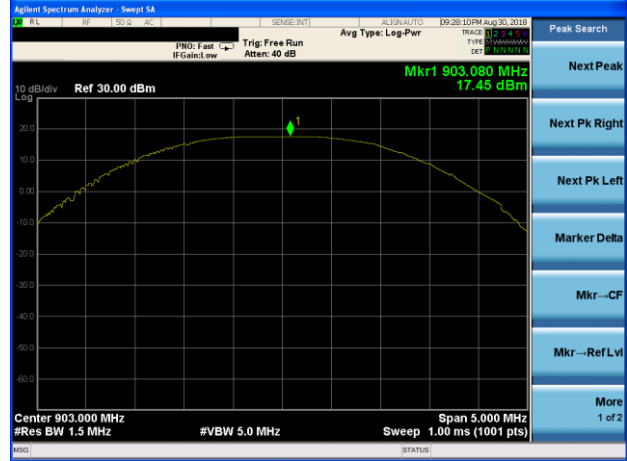
Test Plot For FHSS System

Peak output Power plot on channel 0

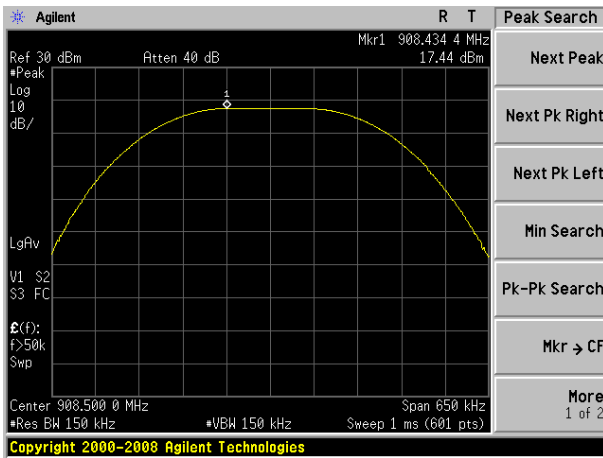


Test Plot For DTS System

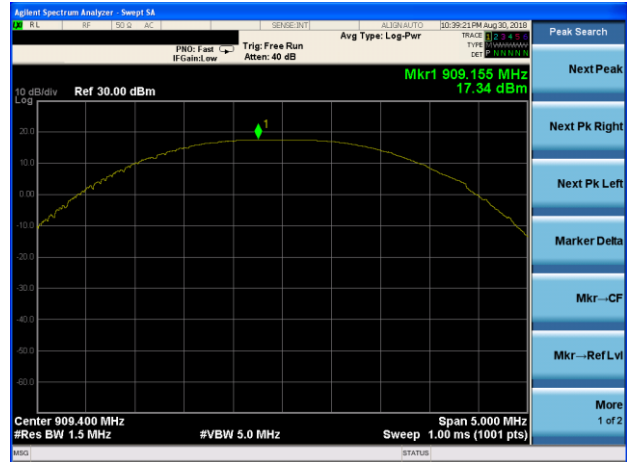
Peak output Power plot on channel 64



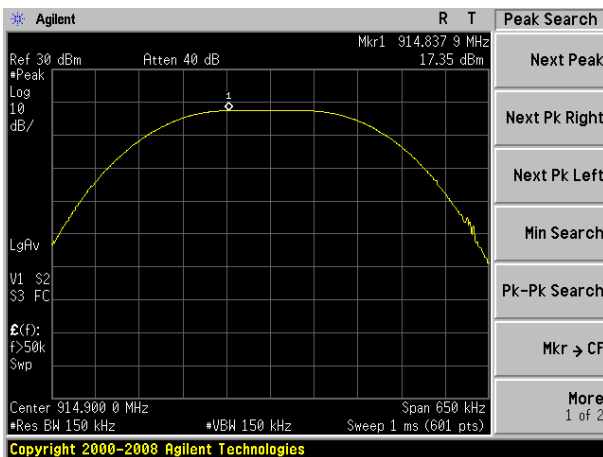
Peak output Power plot on channel 31



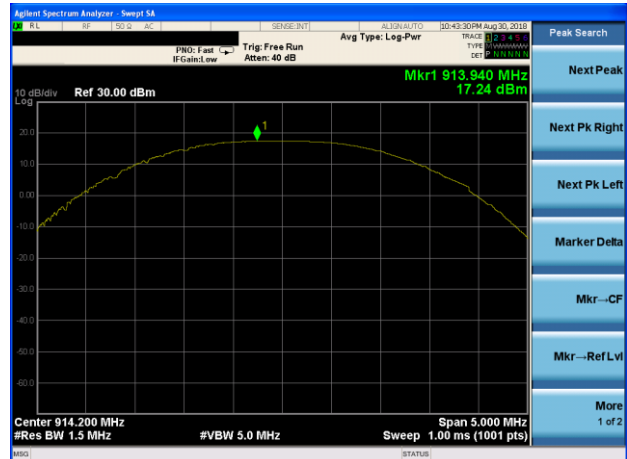
Peak output Power plot on channel 68



Peak output Power plot on channel 63



Peak output Power plot on channel 71



7.9 POWER SPECTRAL DENSITY

7.9.1 Applicable Standard

According to FCC Part 15.247(f) and KDB 558074 DTS 01 Meas. Guidance v04

7.9.2 Conformance Limit

The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.9.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.9.4 Test Setup

Please refer to Section 6.1 of this test report.

7.9.5 Test Procedure

The testing follows Measurement Procedure 10.2 Method AVGPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to $1.5 \times \text{DTS bandwidth}$.
- c) Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq 3 \text{ RBW}$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

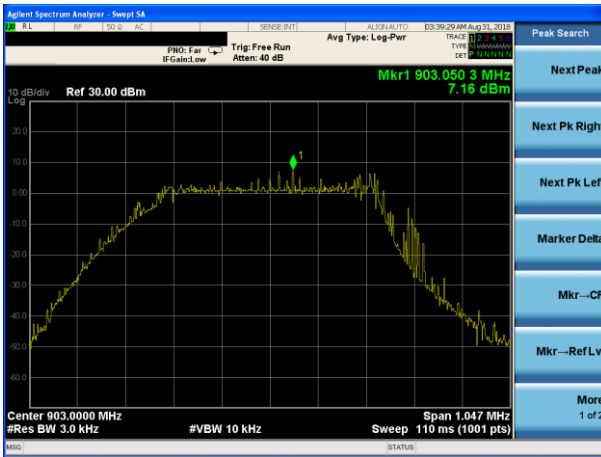
7.9.6 Test Results

EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode4/Mode5/Mode6	Test By:	Eileen Liu

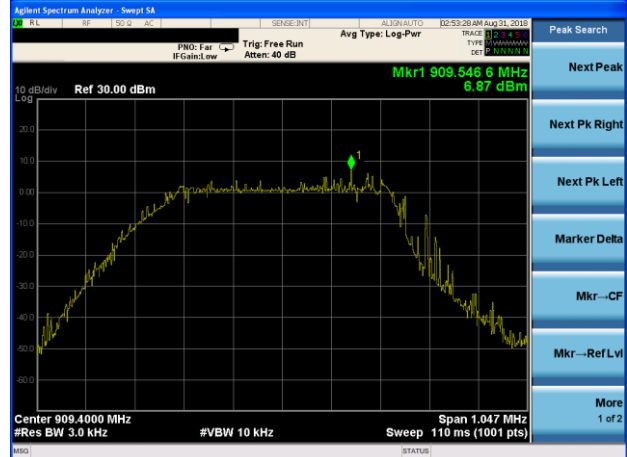
Test Channel	Frequency (MHz)	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Verdict
1Mbps				
64	903	7.16	8	PASS
68	909.4	6.87	8	PASS
71	914.2	7.11	8	PASS

Test Plot

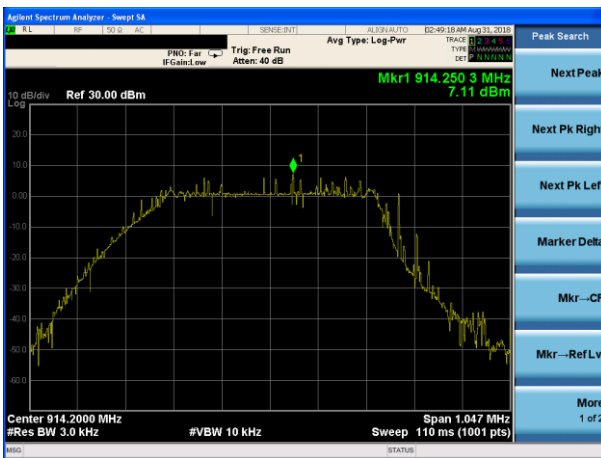
Power spectral density plot on channel 64



Power spectral density plot on channel 68



Power spectral density plot on channel 71



7.10 CONDUCTED BAND EDGE MEASUREMENT

7.10.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013

7.10.2 Conformance Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.10.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.10.4 Test Setup

Please refer to Section 6.1 of this test report.

7.10.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.6.

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.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW = 100KHz

VBW = 300KHz

Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.

Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

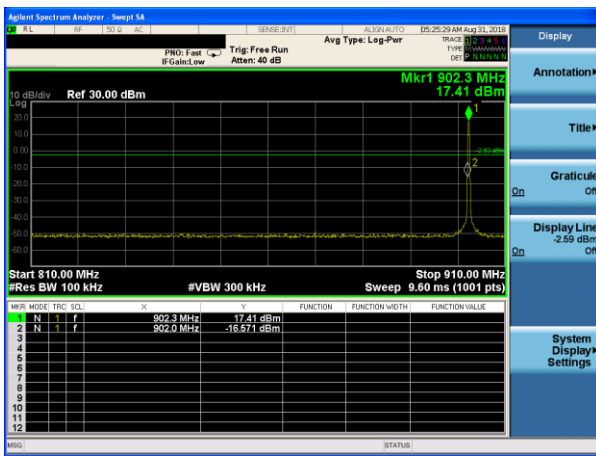
Repeat above procedures until all measured frequencies were complete.

7.10.6 Test Results

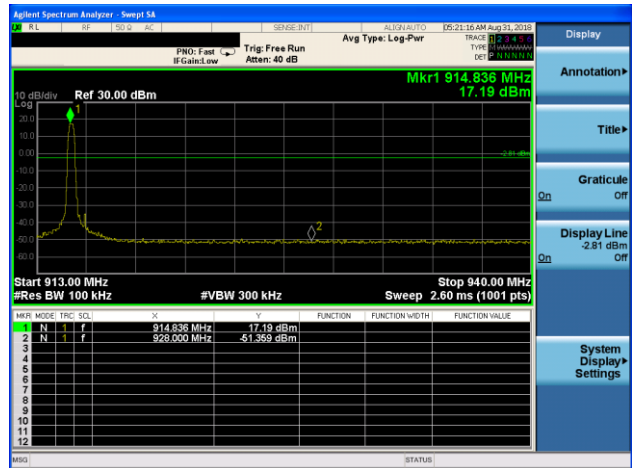
EUT:	BaldurTouch II	Model No.:	EMLLC-B10-915A11-G0
Temperature:	20 °C	Relative Humidity:	48%
Test Mode:	Mode1/Mode2/Mode3/ Mode4/Mode5/Mode6/Mode 7	Test By:	Eileen Liu

Test Plot For FHSS System

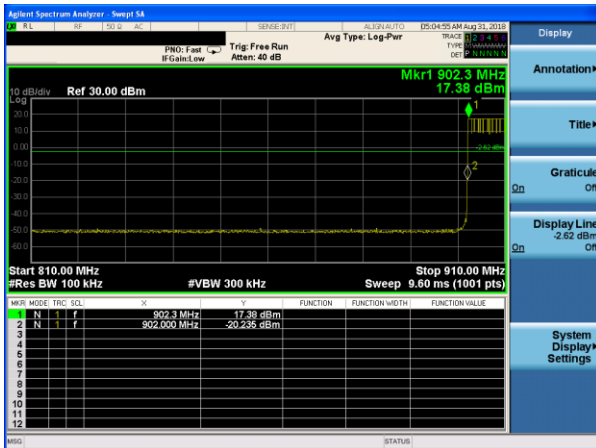
Band Edge-Low Channel



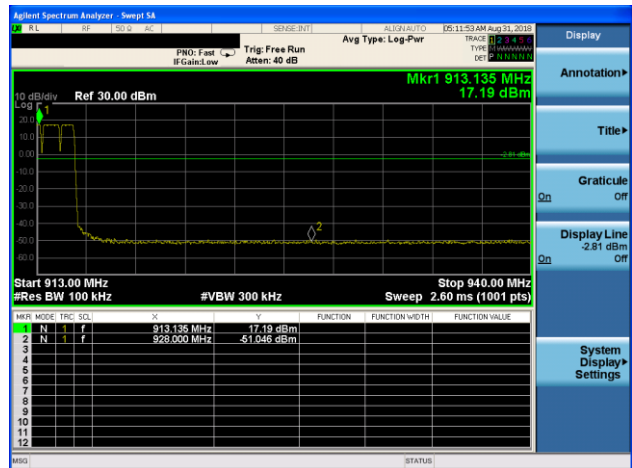
Band Edge-High Channel



Band Edge-Low Channel (Hopping Mode)

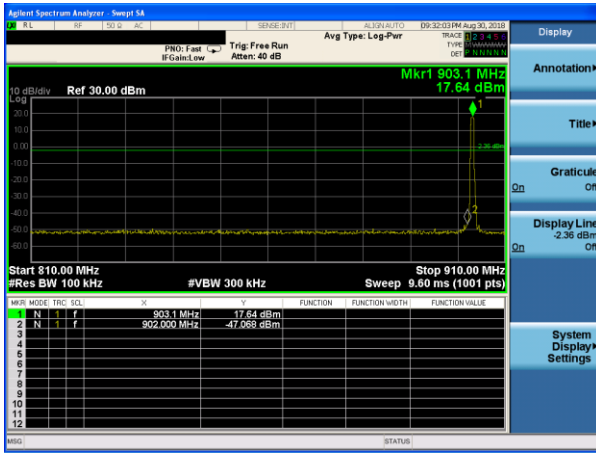


Band Edge-High Channel (Hopping Mode)

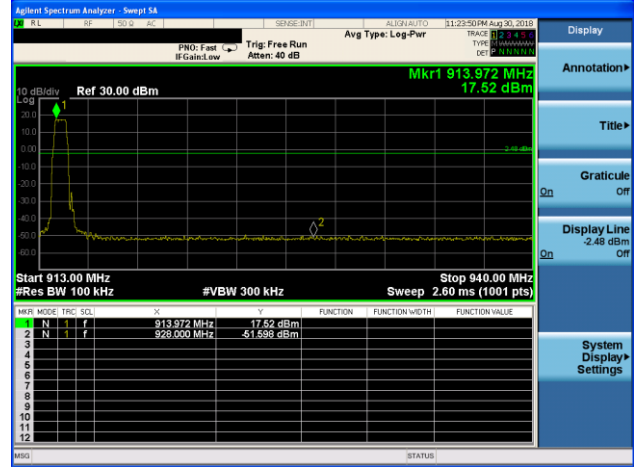


Test Plot For DTS System

Band Edge-Low Channel



Band Edge-High Channel



7.11 SPURIOUS RF CONDUCTED EMISSION

7.11.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013.

7.11.2 Conformance Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.11.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.11.4 Test Setup

Please refer to Section 6.1 of this test report.

7.11.5 Test Procedure

Establish an emission level by using the following procedure:

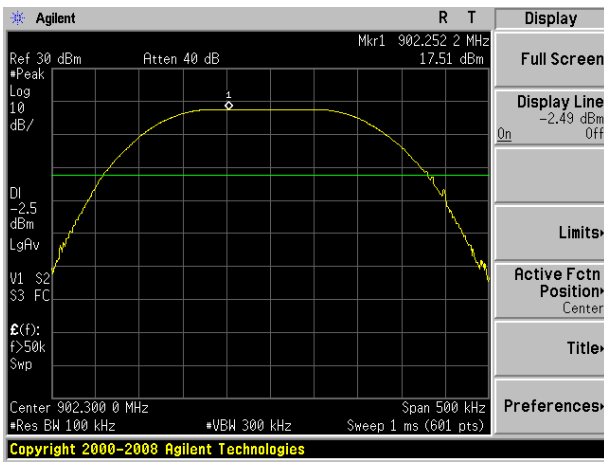
- a) Set the center frequency and span to encompass frequency range to be measured.
 - b) Set the RBW = 100 kHz.
 - c) Set the VBW $\geq [3 \times \text{RBW}]$.
 - d) Detector = peak.
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the peak marker function to determine the maximum amplitude level.
- Then the limit shall be attenuated by at least 20 dB relative to the maximum amplitude level in 100 kHz.

7.11.6 Test Results

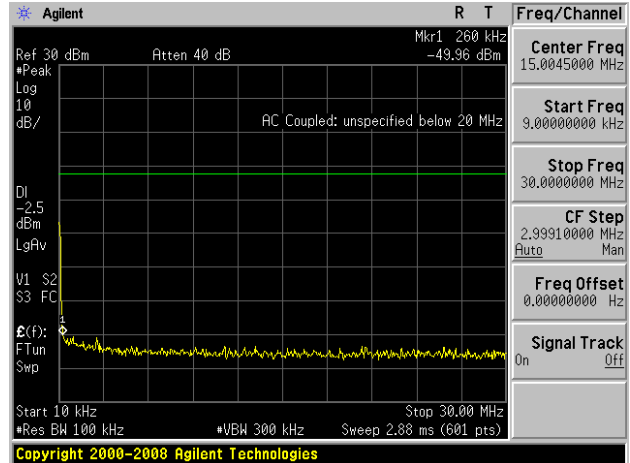
Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

Test Plot For FHSS System

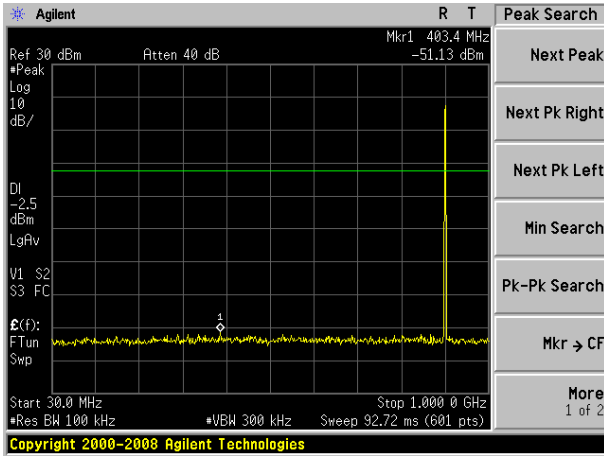
Channel 0



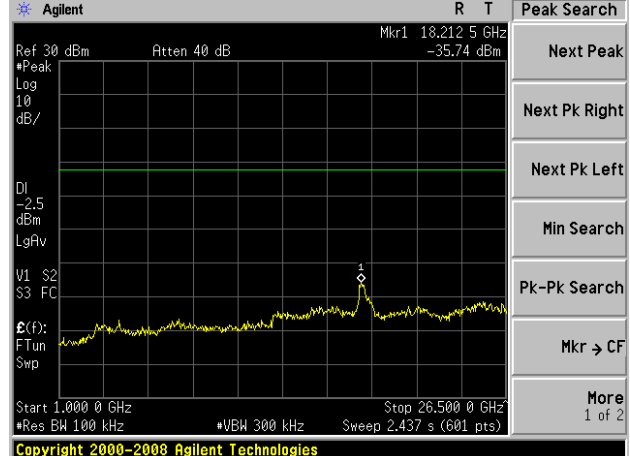
Channel 0



Channel 0

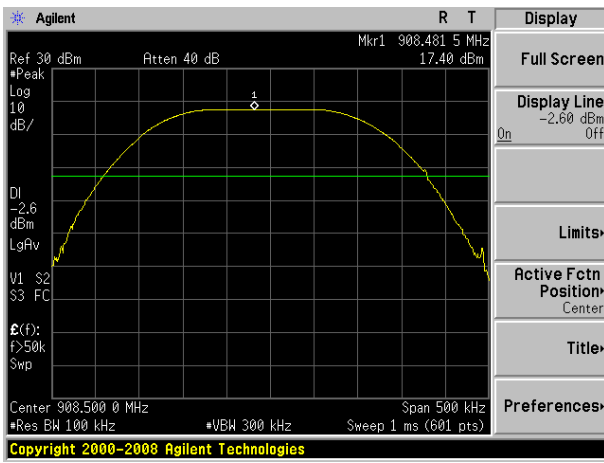


Channel 0

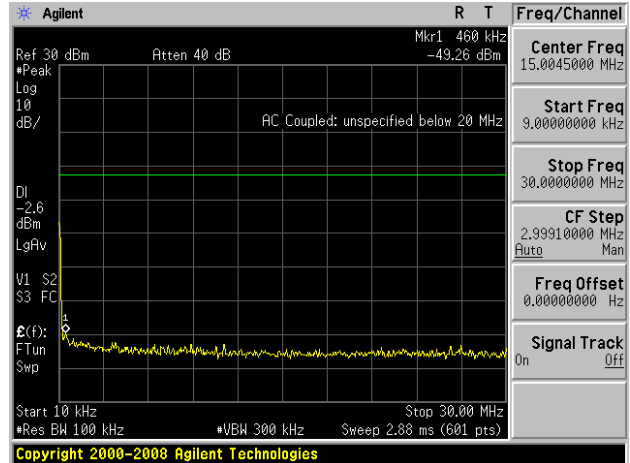


Test Plot For FHSS System

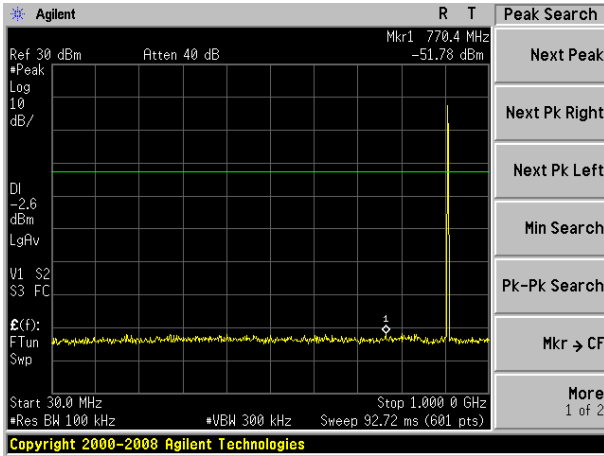
Channel 31



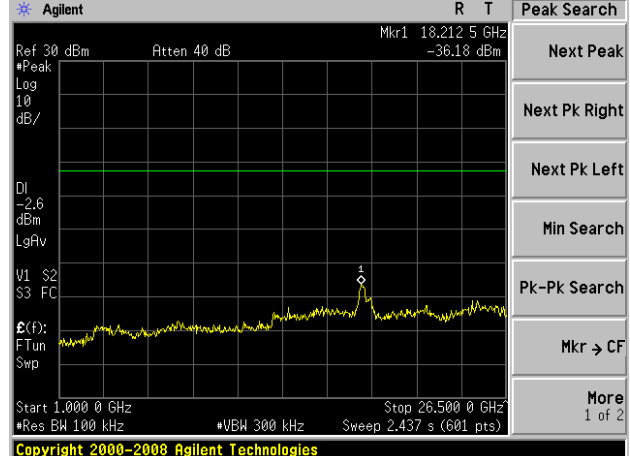
Channel 31



Channel 31

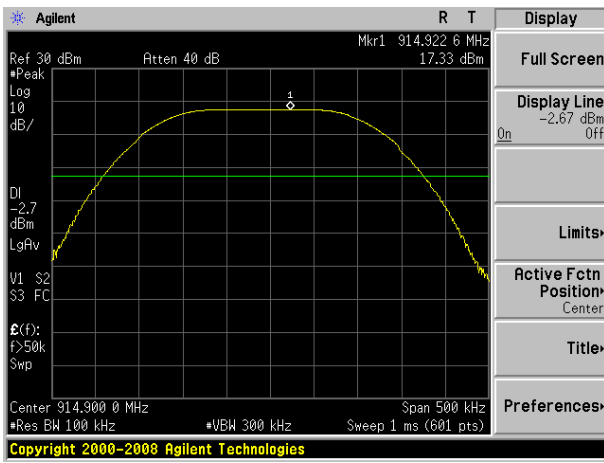


Channel 31

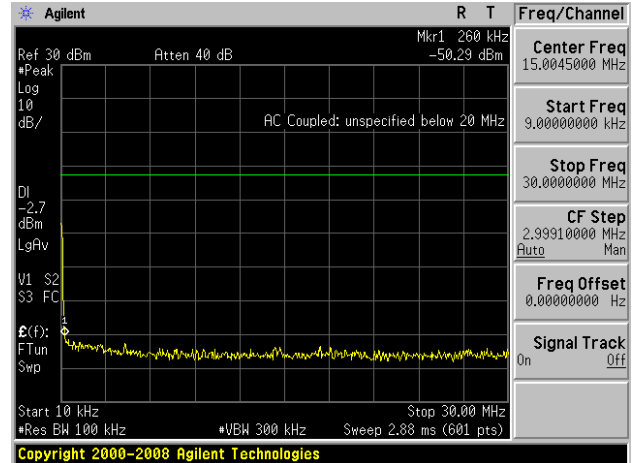


Test Plot For FHSS System

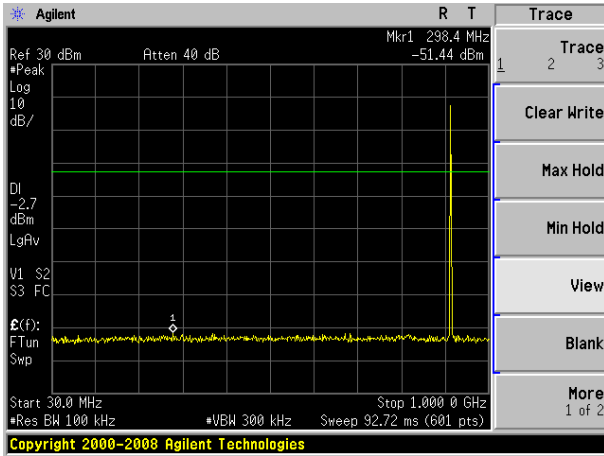
Channel 63



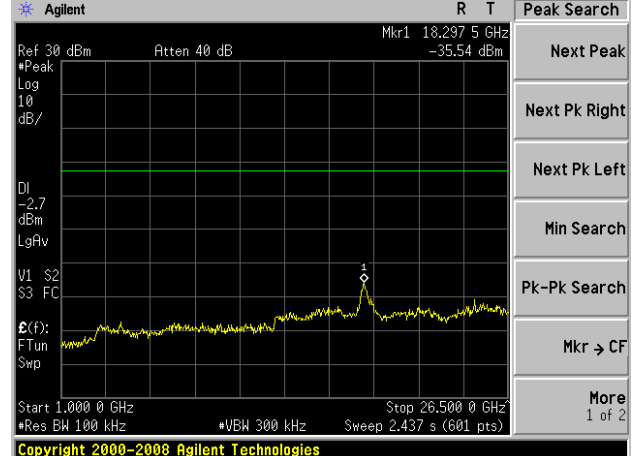
Channel 63



Channel 63

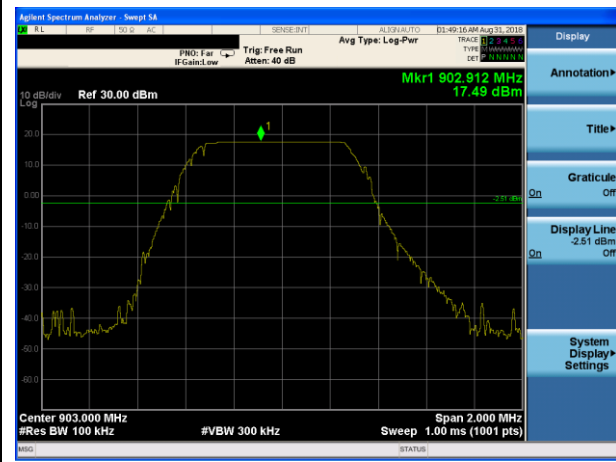


Channel 63

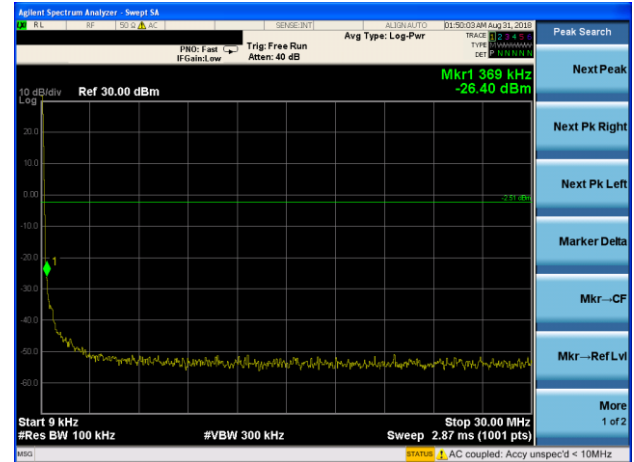


Test Plot For DTS System

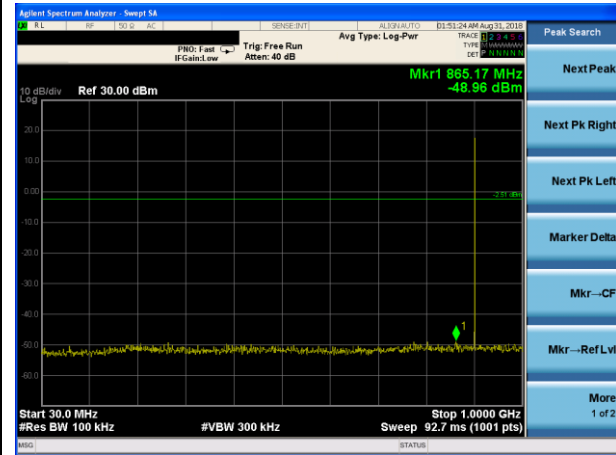
Channel 64



Channel 64



Channel 64

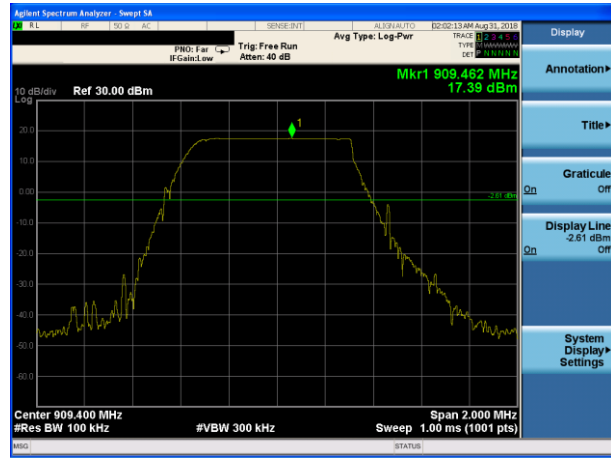


Channel 64

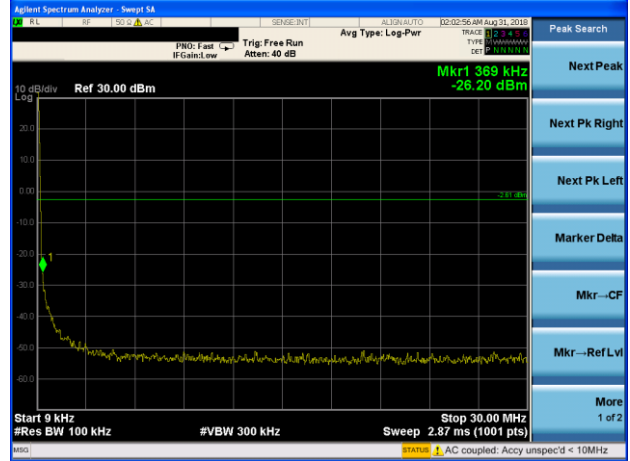


Test Plot For DTS System

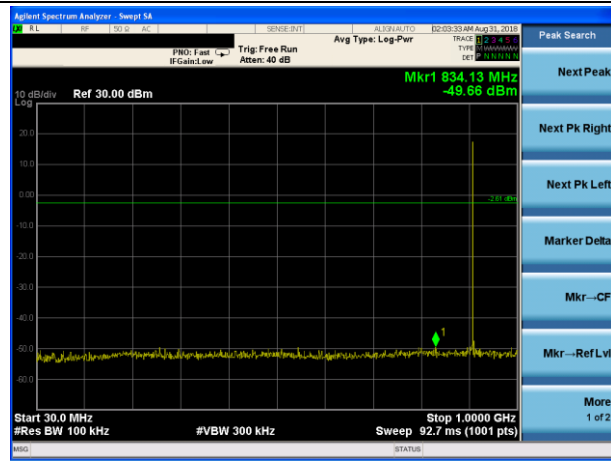
Channel 68



Channel 68



Channel 68

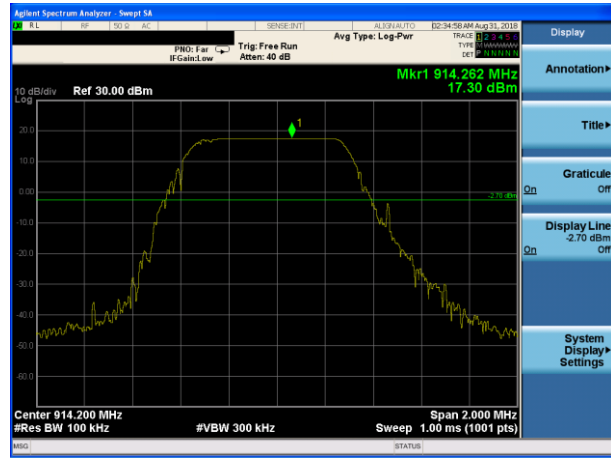


Channel 68

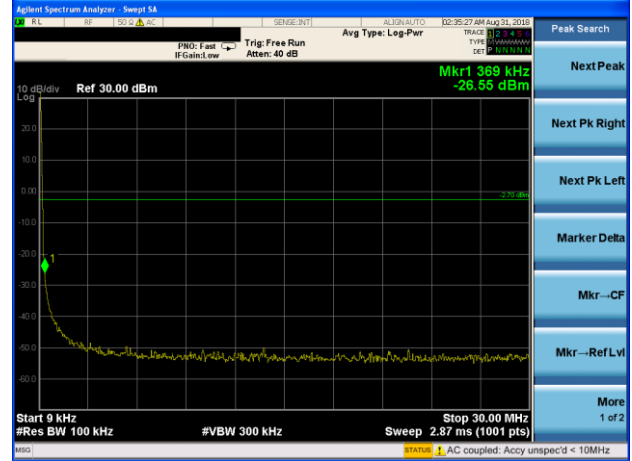


Test Plot For DTS System

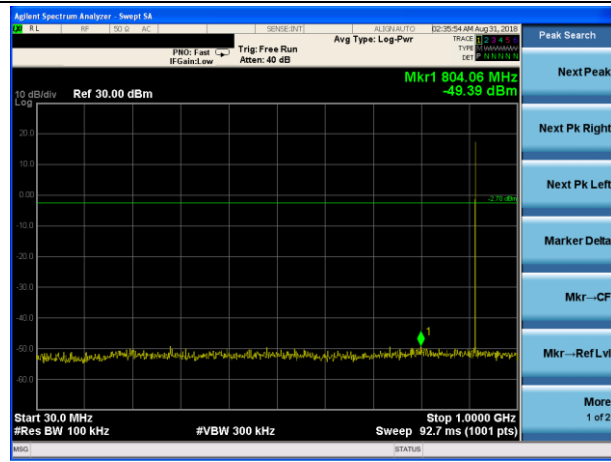
Channel 71



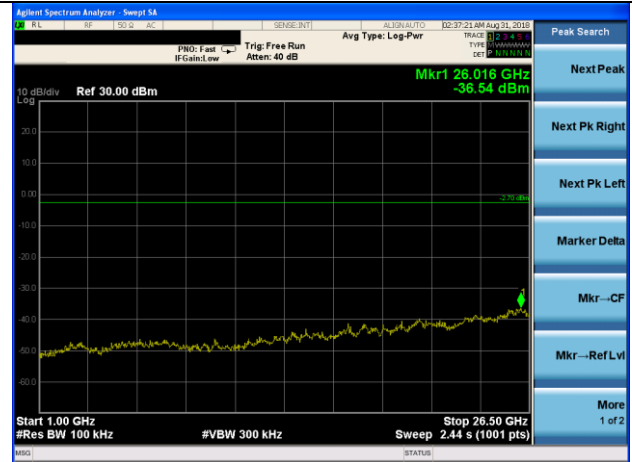
Channel 71



Channel 71



Channel 71



7.12 ANTENNA APPLICATION

7.12.1 Antenna Requirement

15.203 requirement: For intentional device, according to 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.

7.12.2 Result

The EUT antenna is permanent attached PIFA antenna (Gain: -1dBi). It comply with the standard requirement.

END OF REPORT