FCC Test Report

Product Name	：	UHD651-L
Trade Name	：	Vestel
Model No.	：	UHD651-L
FCC ID.	：	XU6-UHD651-L

Applicant	：	VESTEL TRADE CO.
Address	：	Organize Sanayi Bölgesi (45030) Manisa/Türkiye

Date of Receipt	：	Feb. 18, 2017
Issued Date	：	Apr. 17, 2017
Report No.	：	1720411R-RFUSP01V00-B
Report Version	：	V1.0

Test Report Certification

Issued Date : Apr. 17, 2017
Report No. : 1720411R-RFUSP01V00-B

Product Name	:	UHD651-L
Applicant	:	VESTEL TRADE CO.
Address	:	Organize Sanayi Bölgesi (45030) Manisa/Türkiye
Manufacturer	:	VESTEL TRADE CO.
Model No.	:	UHD651-L
FCC ID.	:	XU6-UHD651-L
EUT Voltage	:	AC 100-240V, 50-60Hz
Testing Voltage	:	AC 120V/60Hz
Trade Name	:	Vestel
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2015
Test Lab	:	Hsin Chu Laboratory
Test Result	:	Complied

The test results relate only to the samples tested.

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Documented By : Lyla Yang

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Tested By : Carter Hsu

(Carter Hsu / Senior Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1720411R-RFUSP01V00-B	V1.0	Initial issue of report	Apr. 17, 2017

Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 3024**
USA	**:**	**FCC, Registration Number: 834100**
Canada	**:**	**IC, Submission No: 181665 / IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx
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1. General Information

1.1. EUT Description

Product Name	UHD651-L
Trade Name	Vestel
Model No.	UHD651-L
Frequency Range/Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	Bluetooth 4.0 (GFSK)

Antenna Information	
Antenna Type	PIFA Antenna
Antenna Gain	2 dBi

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 10	2422 MHz	Channel 20	2442 MHz	Channel 30	2462 MHz
Channel 01	2404 MHz	Channel 11	2424 MHz	Channel 21	2444 MHz	Channel 31	2464 MHz
Channel 02	2406 MHz	Channel 12	2426 MHz	Channel 22	2446 MHz	Channel 32	2466 MHz
Channel 03	2408 MHz	Channel 13	2428 MHz	Channel 23	2448 MHz	Channel 33	2468 MHz
Channel 04	2410 MHz	Channel 14	2430 MHz	Channel 24	2450 MHz	Channel 34	2470 MHz
Channel 05	2412 MHz	Channel 15	2432 MHz	Channel 25	2452 MHz	Channel 35	2472 MHz
Channel 06	2414 MHz	Channel 16	2434 MHz	Channel 26	2454 MHz	Channel 36	2474 MHz
Channel 07	2416MHz	Channel 17	2436 MHz	Channel 27	2456 MHz	Channel 37	2476 MHz
Channel 08	2418 MHz	Channel 18	2438 MHz	Channel 28	2458 MHz	Channel 38	2478 MHz
Channel 09	2420 MHz	Channel 19	2440 MHz	Channel 29	2460 MHz	Channel 39	2480 MHz

Note:

1. This device is a UHD651-L including 2.4GHz b/g/n (2x2), BT2.0, BT4.0 and 5GHz a/n (2x2) transmitting and receiving function.
2. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
3. This device is a composite device in accordance with Part 15 regulations. The receiving function was tested and its number is 1720411R-RFUSP01V00.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Mode	Mode 1: Tx

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	GFSK	19	0	Complies
Peak Power Output	GFSK	00/19/39	0	Complies
Radiated Emission	GFSK	00/19/39	0	Complies
RF antenna conducted test	GFSK	00/19/39	0	Complies
Radiated Emission Band Edge	GFSK	00/19/39	0	Complies
Occupied Bandwidth	GFSK	00/19/39	0	Complies
Power Density	GFSK	00/19/39	0	Complies

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	ASUS	X522EP	E5N0CV04326 4197	DoC	Non-Shielded, 1.8m, one ferrite core bonded

1.4. Configuration of tested System

Connection Diagram

Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 3m

1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the test program “Bluetool”.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous transmitting.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	24
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

2. Conducted Emission

2.1. Test Equipment

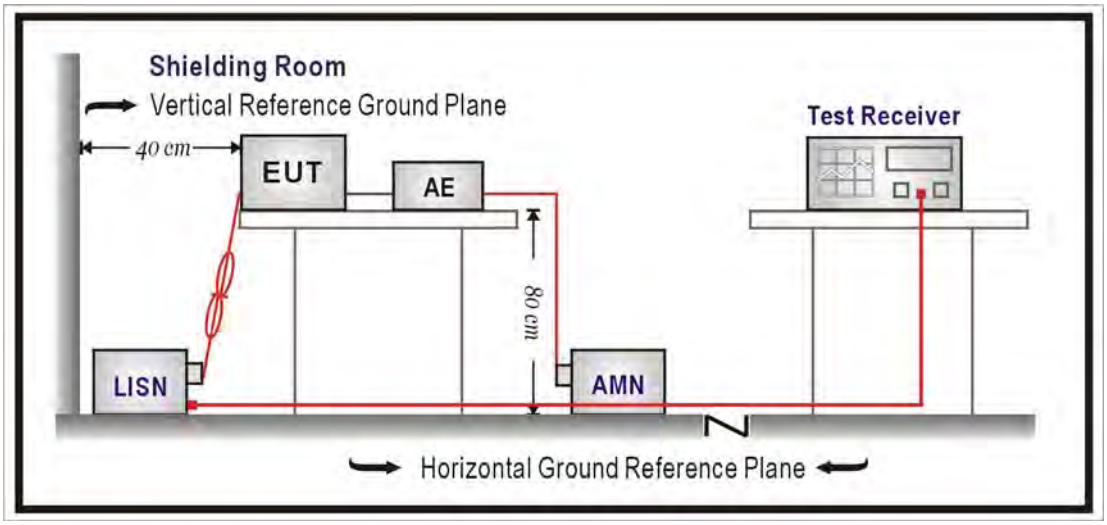
The following test equipments are used during the test:

Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2018/02/05
LISN	R&S	ENV216	100092	2017/08/16
Test Receiver	R&S	ESCS 30	836858/022	2018/01/14

Note: All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

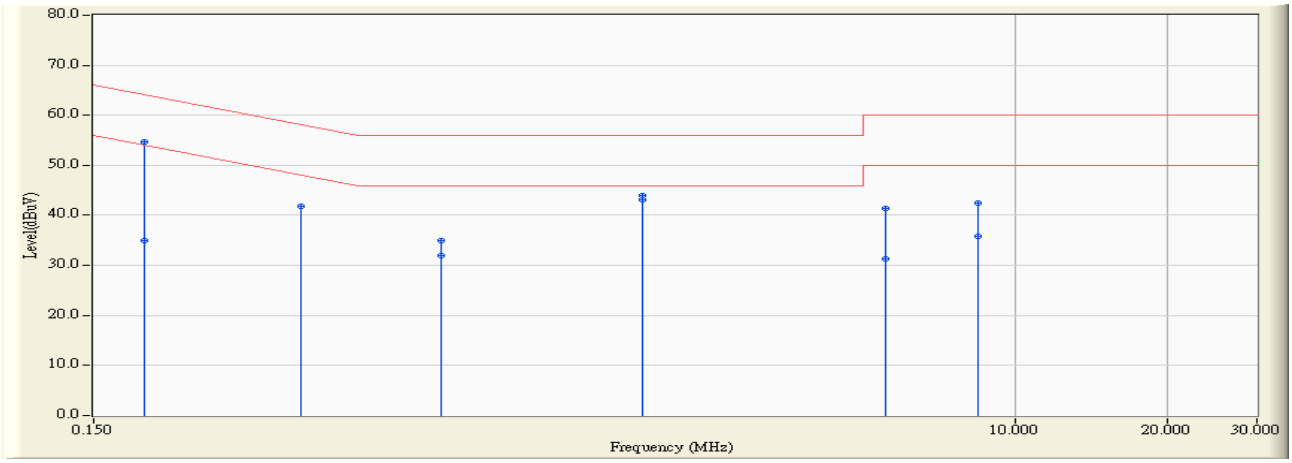
According to FCC Part 15 Subpart C Paragraph 15.207: 2015

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2-H	**Time : 2017/04/11**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2-H_LISN(16A)-6_0712 - Line1	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

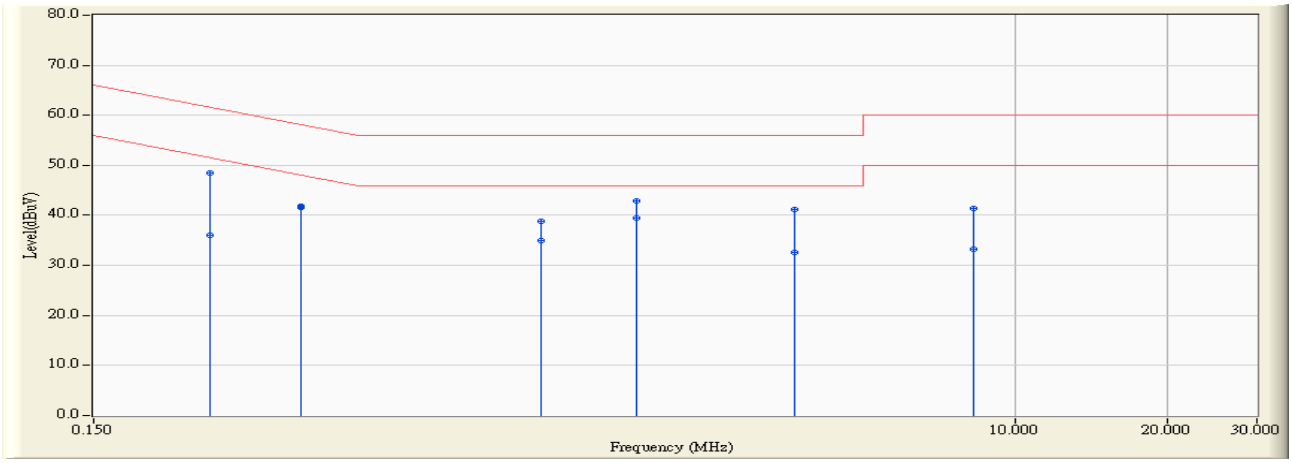


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.189	9.751	44.880	54.631	-9.447	64.078	QUASIPEAK
2		0.189	9.751	25.180	34.931	-19.147	54.078	AVERAGE
3		0.384	9.732	32.180	41.912	-16.273	58.184	QUASIPEAK
4		0.384	9.732	32.000	41.732	-6.453	48.184	AVERAGE
5		0.732	9.770	25.130	34.901	-21.099	56.000	QUASIPEAK
6		0.732	9.770	22.130	31.901	-14.099	46.000	AVERAGE
7		1.830	9.853	34.160	44.013	-11.987	56.000	QUASIPEAK
8	*	1.830	9.853	33.180	43.033	-2.967	46.000	AVERAGE
9		5.545	9.945	31.400	41.344	-18.656	60.000	QUASIPEAK
10		5.545	9.945	21.430	31.374	-18.626	50.000	AVERAGE
11		8.427	10.064	32.350	42.414	-17.586	60.000	QUASIPEAK
12		8.427	10.064	25.850	35.914	-14.086	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	**Time : 2017/04/11**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2-H_LISN(16A)-6_0712 - Line2	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.255	9.750	38.810	48.560	-13.017	61.577	QUASIPEAK
2		0.255	9.750	26.230	35.980	-15.597	51.577	AVERAGE
3		0.384	9.750	32.140	41.890	-16.294	58.184	QUASIPEAK
4		0.384	9.750	31.840	41.590	-6.594	48.184	AVERAGE
5		1.154	9.825	29.050	38.875	-17.125	56.000	QUASIPEAK
6		1.154	9.825	25.170	34.995	-11.005	46.000	AVERAGE
7		1.779	9.843	33.060	42.903	-13.097	56.000	QUASIPEAK
8	*	1.779	9.843	29.570	39.413	-6.587	46.000	AVERAGE
9		3.662	9.842	31.430	41.272	-14.728	56.000	QUASIPEAK
10		3.662	9.842	22.690	32.532	-13.468	46.000	AVERAGE
11		8.228	10.047	31.290	41.337	-18.663	60.000	QUASIPEAK
12		8.228	10.047	23.100	33.147	-16.853	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

3.1. Test Equipment

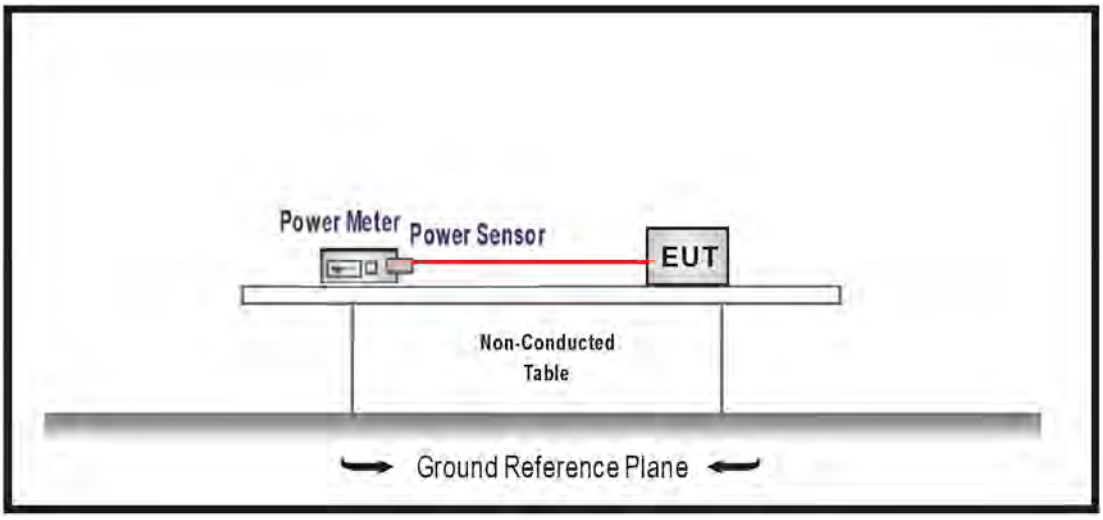
The following test equipment is used during the test:

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/01/19

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

The maximum peak power shall be less 1 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

3.6. Test Result

Product	UHD651-L		
Test Item	Peak Power Output		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	2.890	30	Pass
19	2440	3.090	30	Pass
39	2480	3.090	30	Pass

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

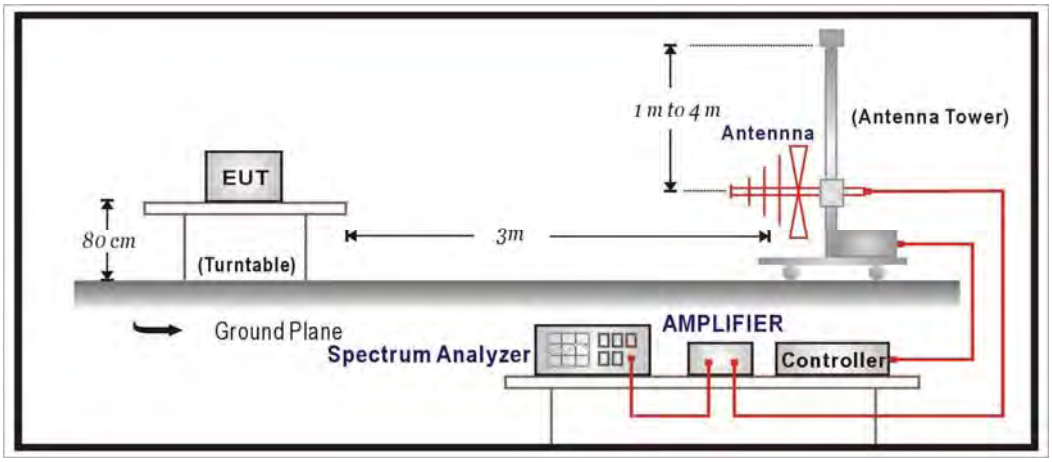
Radiated Emission / CB4-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	Schaffner	CBL6112B	2891	2017/08/14
Horn Antenna	Schwarzbeck	BBHA 9120	D312	2017/10/25
Pre-Amplifier	EMCI	EMC0031835	980233	2018/02/02
Pre-Amplifier	Schwarzbeck	DBL-1840N506	013	2017/09/29
Pre-Amplifier	Miteq	JS41-00104000-58-5P	1573954	2017/10/04
Horn Antenna	Schwarzbeck	BBHA 9170	203	2017/08/28
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

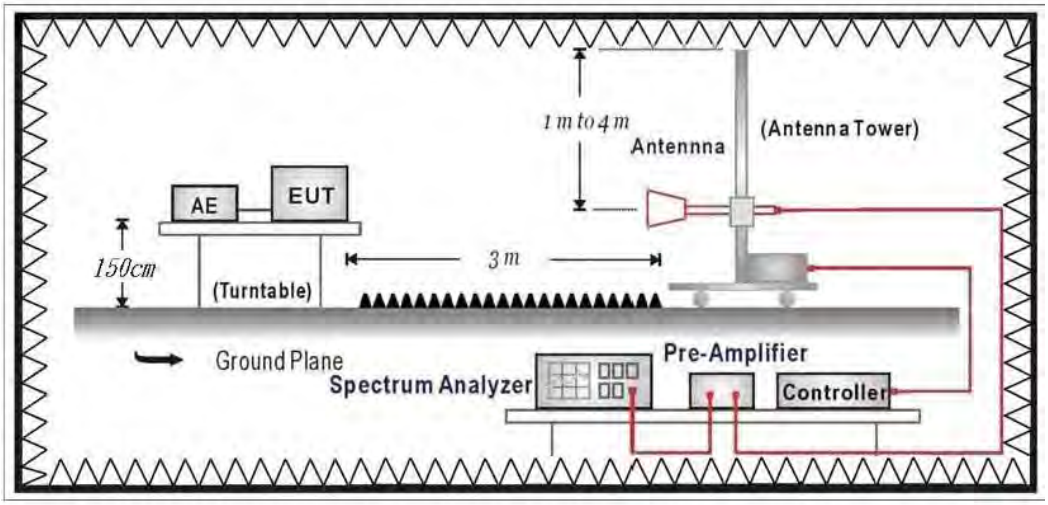
Note: All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.
The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground.
The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.
On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

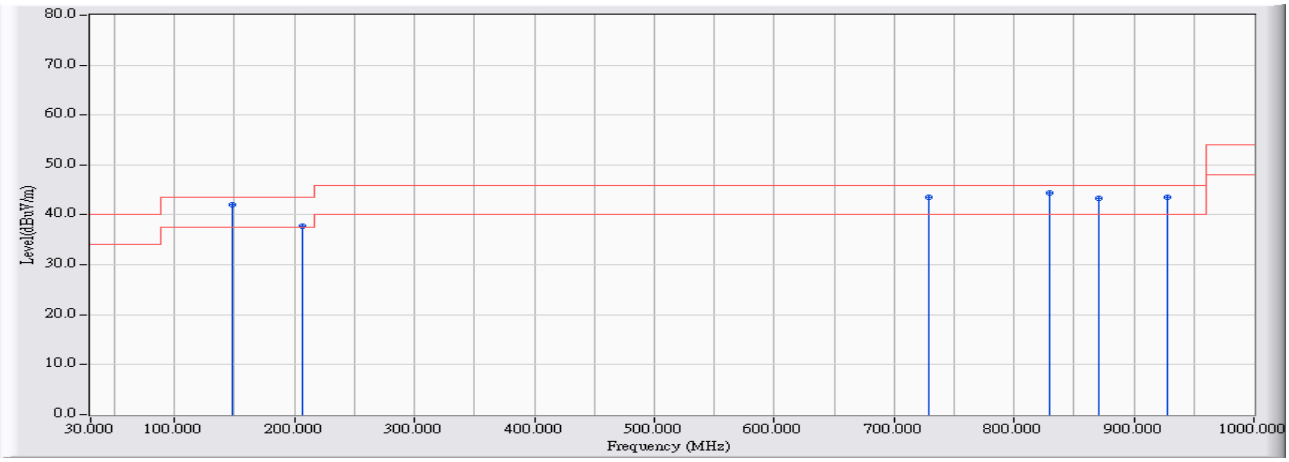
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.6. Test Result

30MHz-1GHz Spurious

Site : CB4-H	**Time : 2017/03/23**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

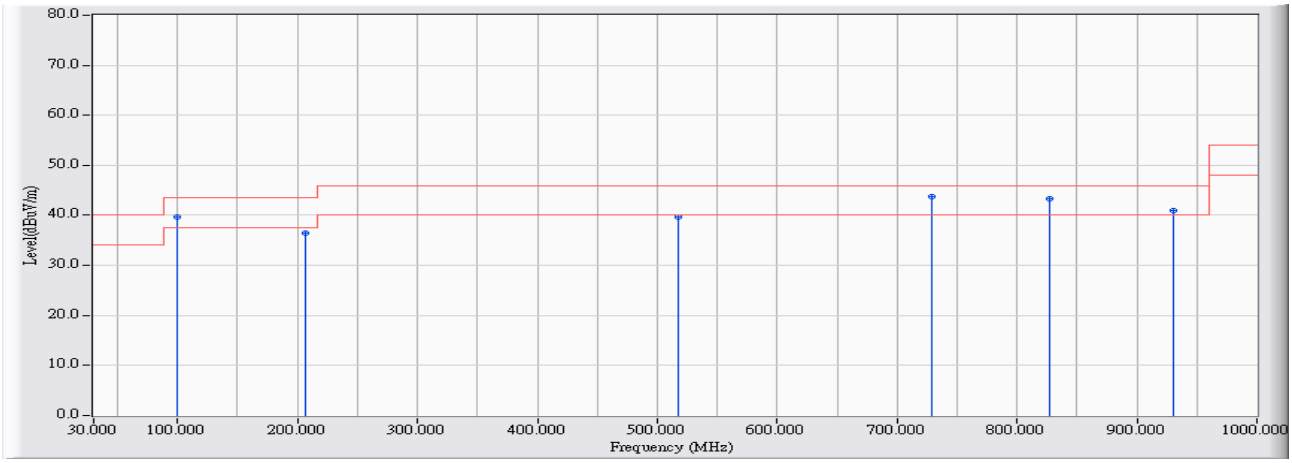


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	148.104	-22.089	64.114	42.025	-1.475	43.500	QUASIPEAK
2		206.188	-22.763	60.517	37.754	-5.746	43.500	QUASIPEAK
3		728.942	-10.605	54.162	43.557	-2.443	46.000	QUASIPEAK
4		829.621	-9.685	53.998	44.312	-1.688	46.000	QUASIPEAK
5		870.279	-9.491	52.741	43.249	-2.751	46.000	QUASIPEAK
6		928.363	-8.437	51.927	43.490	-2.510	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB4-H	**Time : 2017/03/23**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**



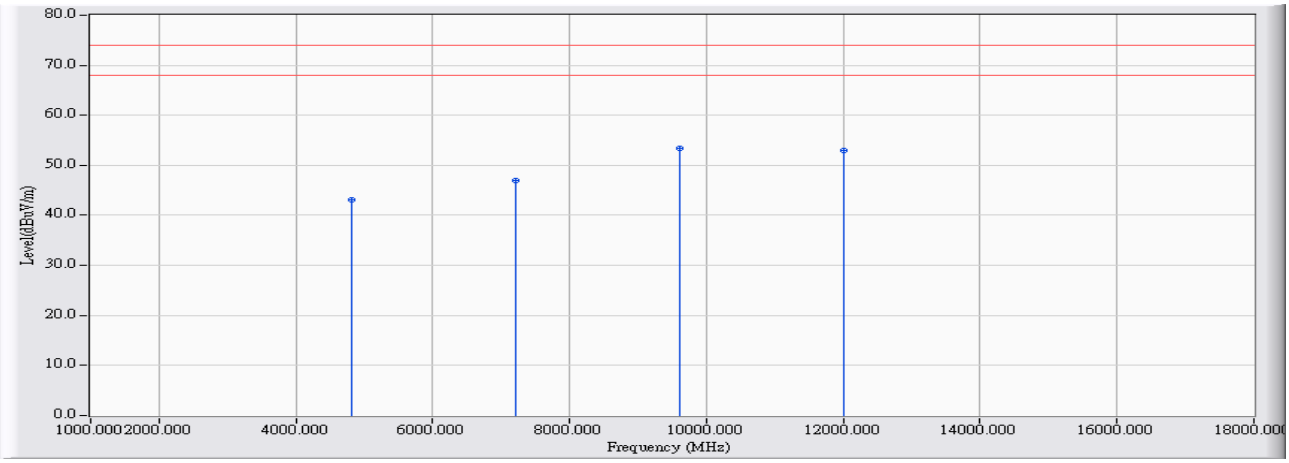
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		99.701	-23.442	63.046	39.604	-3.896	43.500	QUASIPEAK
2		206.188	-22.763	59.276	36.513	-6.987	43.500	QUASIPEAK
3		517.904	-13.563	53.277	39.714	-6.286	46.000	QUASIPEAK
4	*	728.942	-10.605	54.411	43.806	-2.194	46.000	QUASIPEAK
5		827.685	-9.773	53.130	43.358	-2.642	46.000	QUASIPEAK
6		930.299	-8.213	49.256	41.042	-4.958	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Harmonic & Spurious:

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2402MHz**

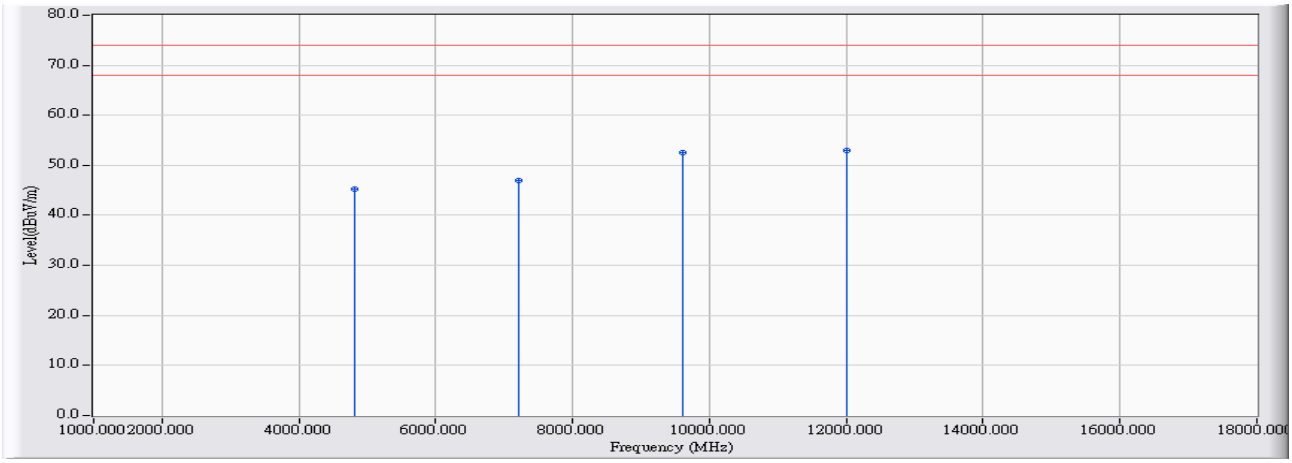


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	6.802	36.390	43.193	-30.807	74.000	PEAK
2		7206.000	14.870	32.200	47.071	-26.929	74.000	PEAK
3	*	9608.000	21.015	32.430	53.446	-20.554	74.000	PEAK
4		12010.000	24.909	28.090	52.999	-21.001	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2402MHz**

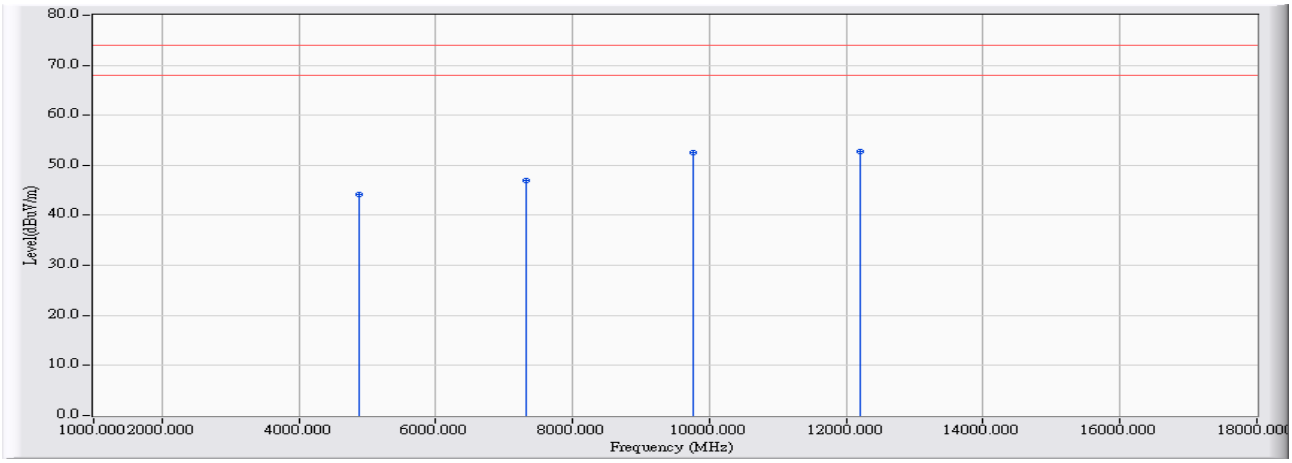


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	6.802	38.470	45.273	-28.727	74.000	PEAK
2		7206.000	14.870	32.050	46.921	-27.079	74.000	PEAK
3		9608.000	21.015	31.630	52.646	-21.354	74.000	PEAK
4	*	12010.000	24.909	28.080	52.989	-21.011	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

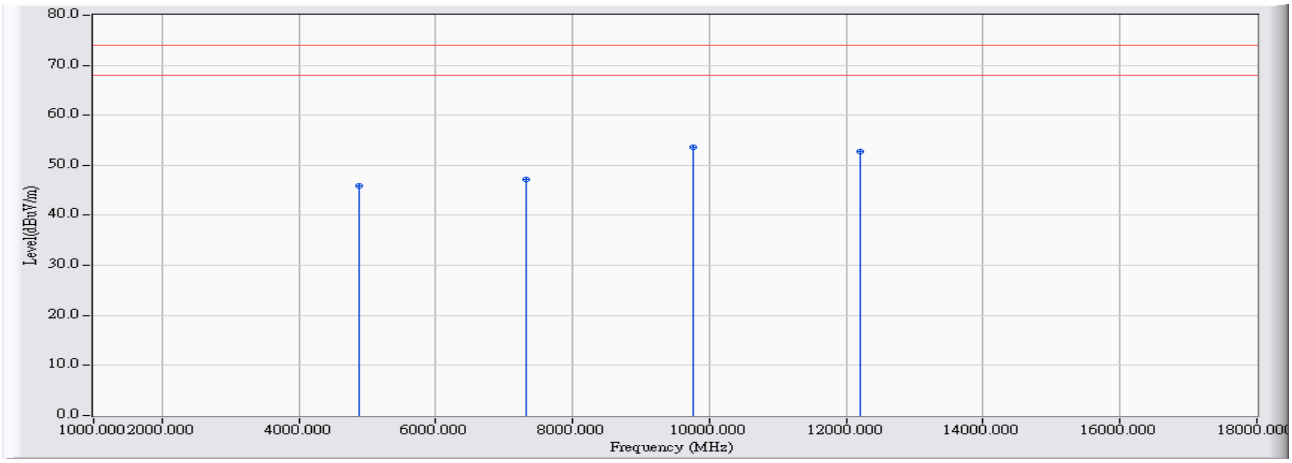


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4882.000	6.972	37.290	44.263	-29.737	74.000	PEAK
2		7323.000	15.439	31.450	46.890	-27.110	74.000	PEAK
3		9764.000	21.328	31.250	52.578	-21.422	74.000	PEAK
4	*	12205.000	24.333	28.500	52.833	-21.167	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

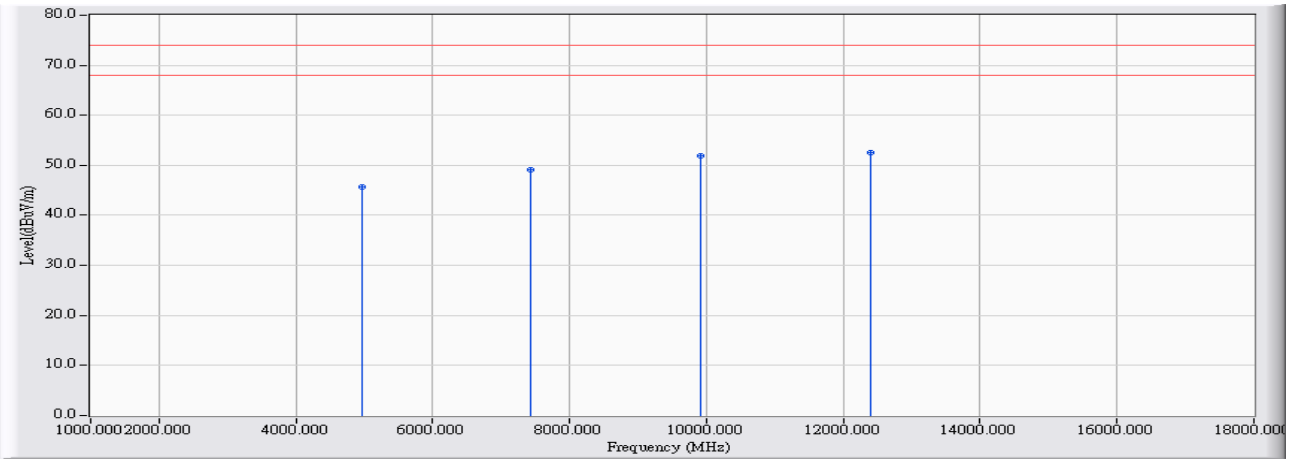


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4882.000	6.972	38.860	45.833	-28.167	74.000	PEAK
2		7323.000	15.439	31.740	47.180	-26.820	74.000	PEAK
3	*	9764.000	21.328	32.270	53.598	-20.402	74.000	PEAK
4		12205.000	24.333	28.500	52.833	-21.167	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**

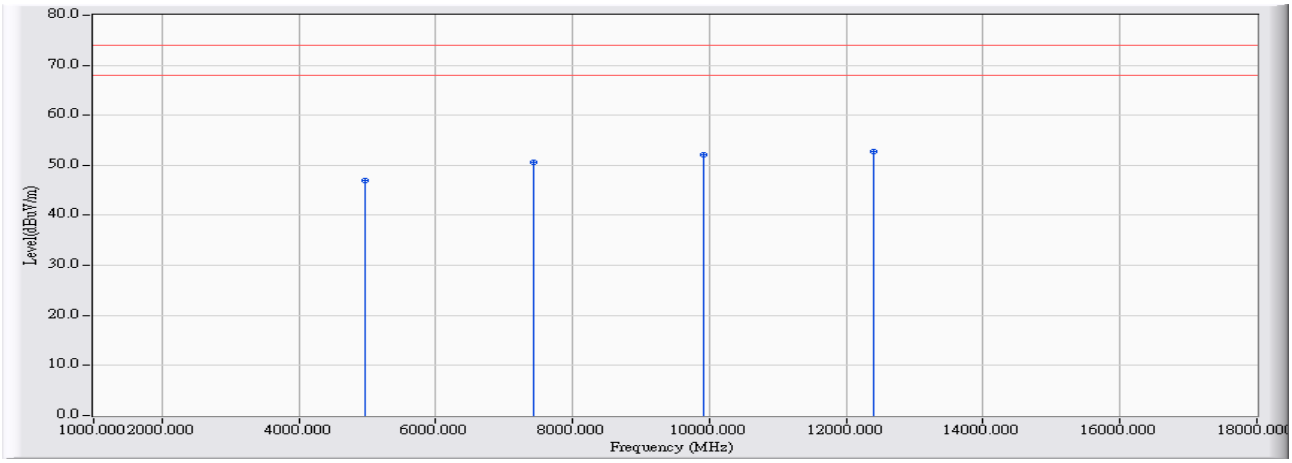


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	7.143	38.530	45.673	-28.327	74.000	PEAK
2		7440.000	16.008	33.070	49.078	-24.922	74.000	PEAK
3		9920.000	21.640	30.350	51.990	-22.010	74.000	PEAK
4	*	12400.000	23.756	28.860	52.616	-21.384	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/03/31**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	7.143	39.820	46.963	-27.037	74.000	PEAK
2		7440.000	16.008	34.580	50.588	-23.412	74.000	PEAK
3		9920.000	21.640	30.390	52.030	-21.970	74.000	PEAK
4	*	12400.000	23.756	29.050	52.806	-21.194	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipment is used during the test:

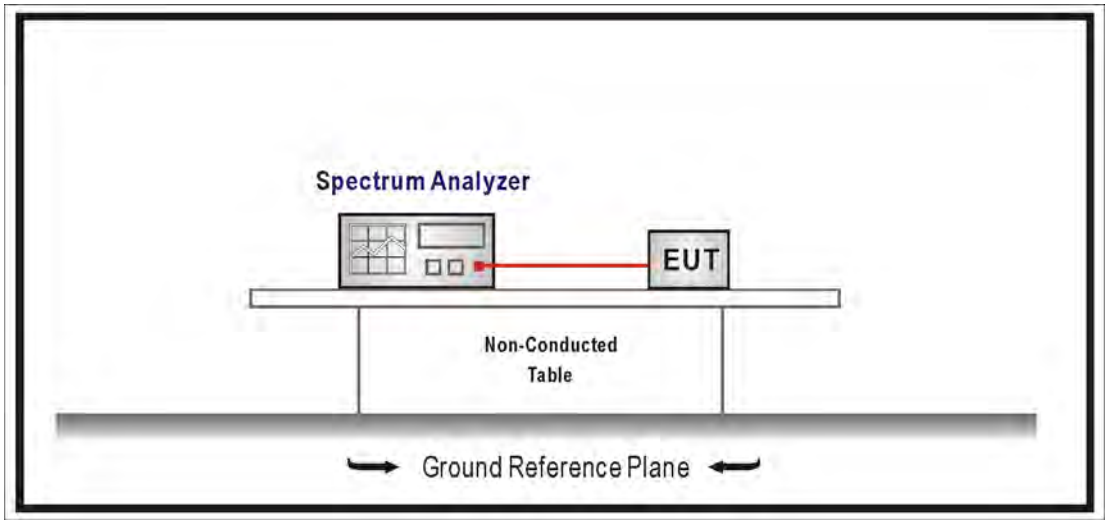
RF antenna conducted test / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/08/08

Note: All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup

RF Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

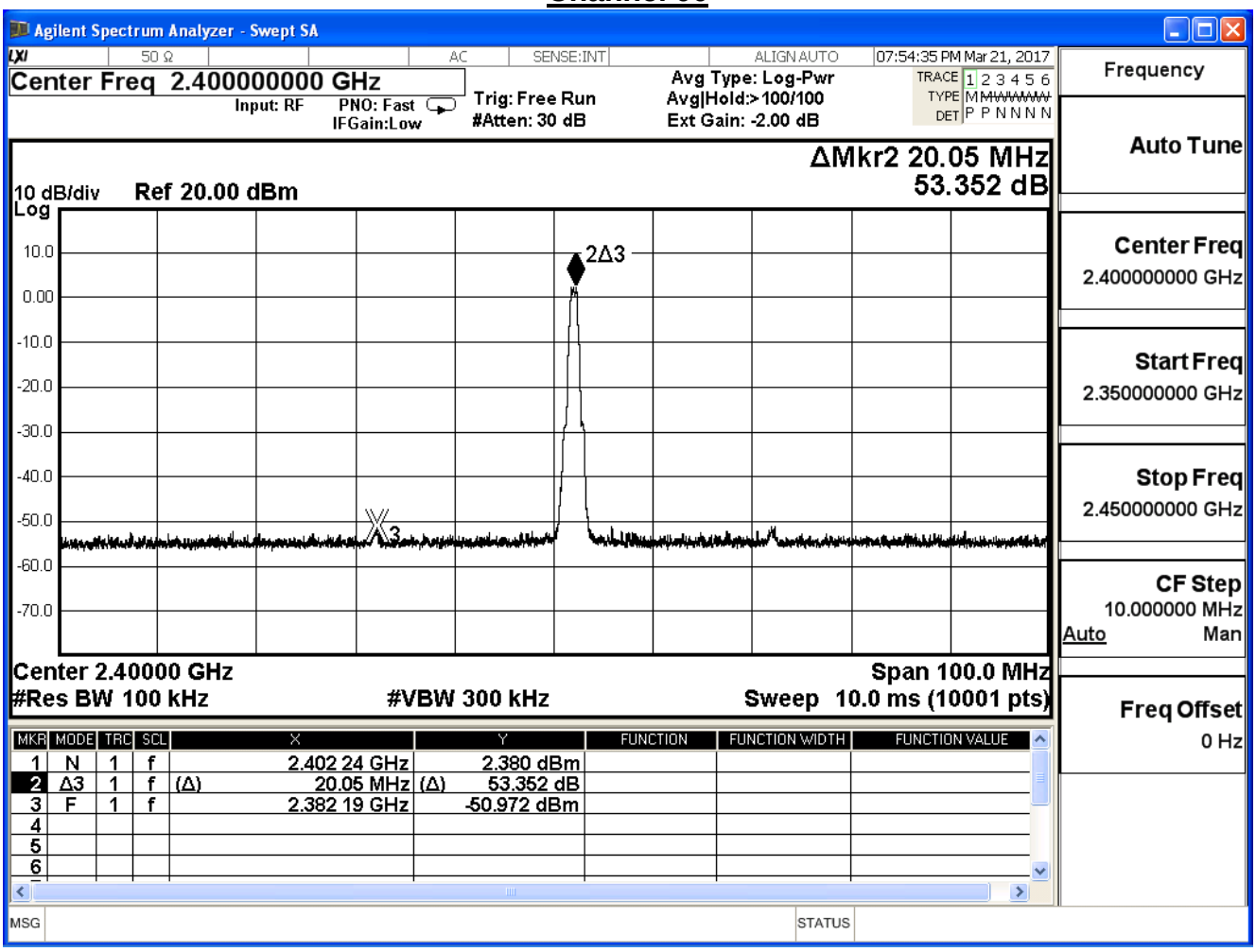
5.6. Test Result

Product	UHD651-L		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

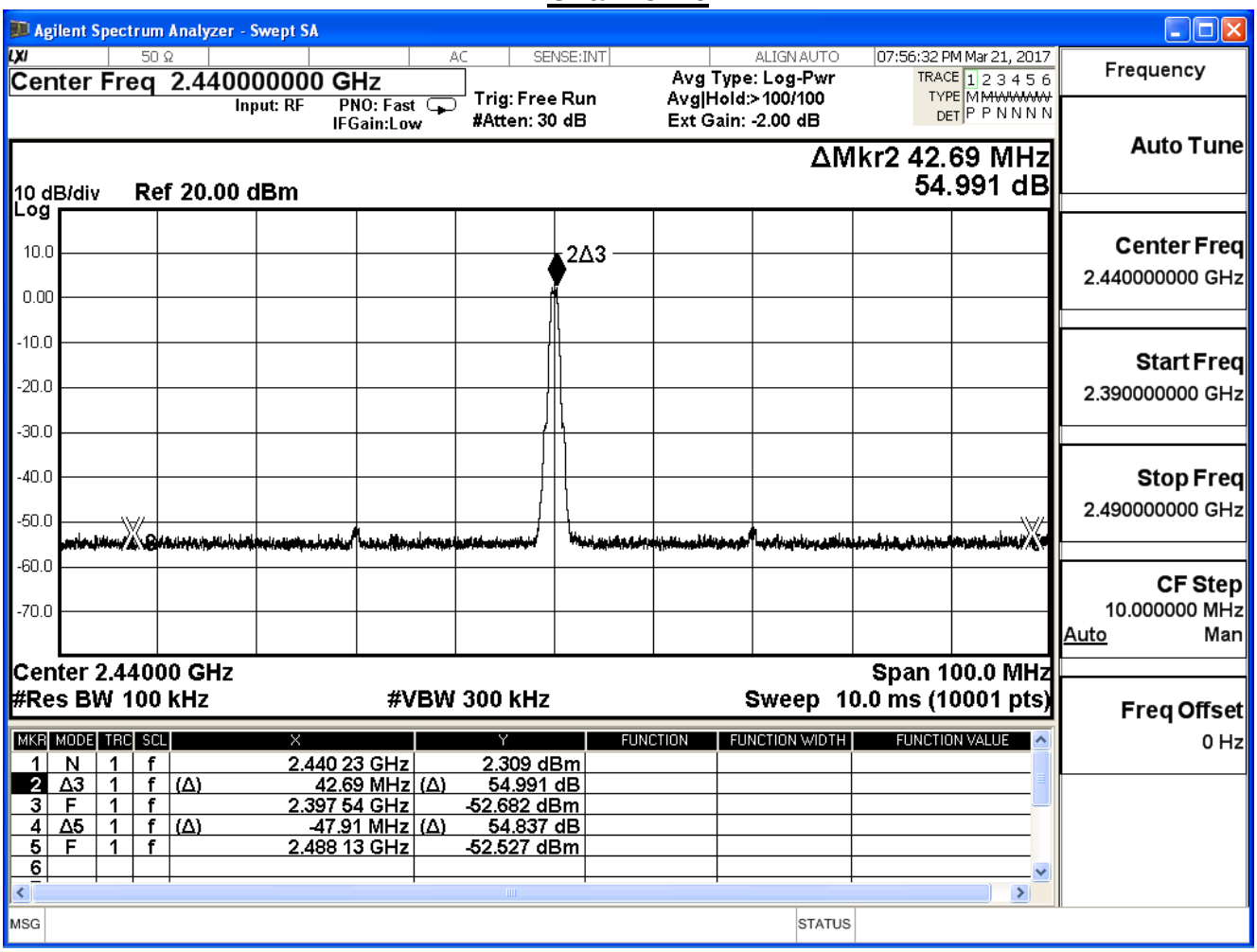
GFSK

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
00	2402	53.352	≧20	Pass
19	2440	54.837	≧20	Pass
39	2480	53.165	≧20	Pass

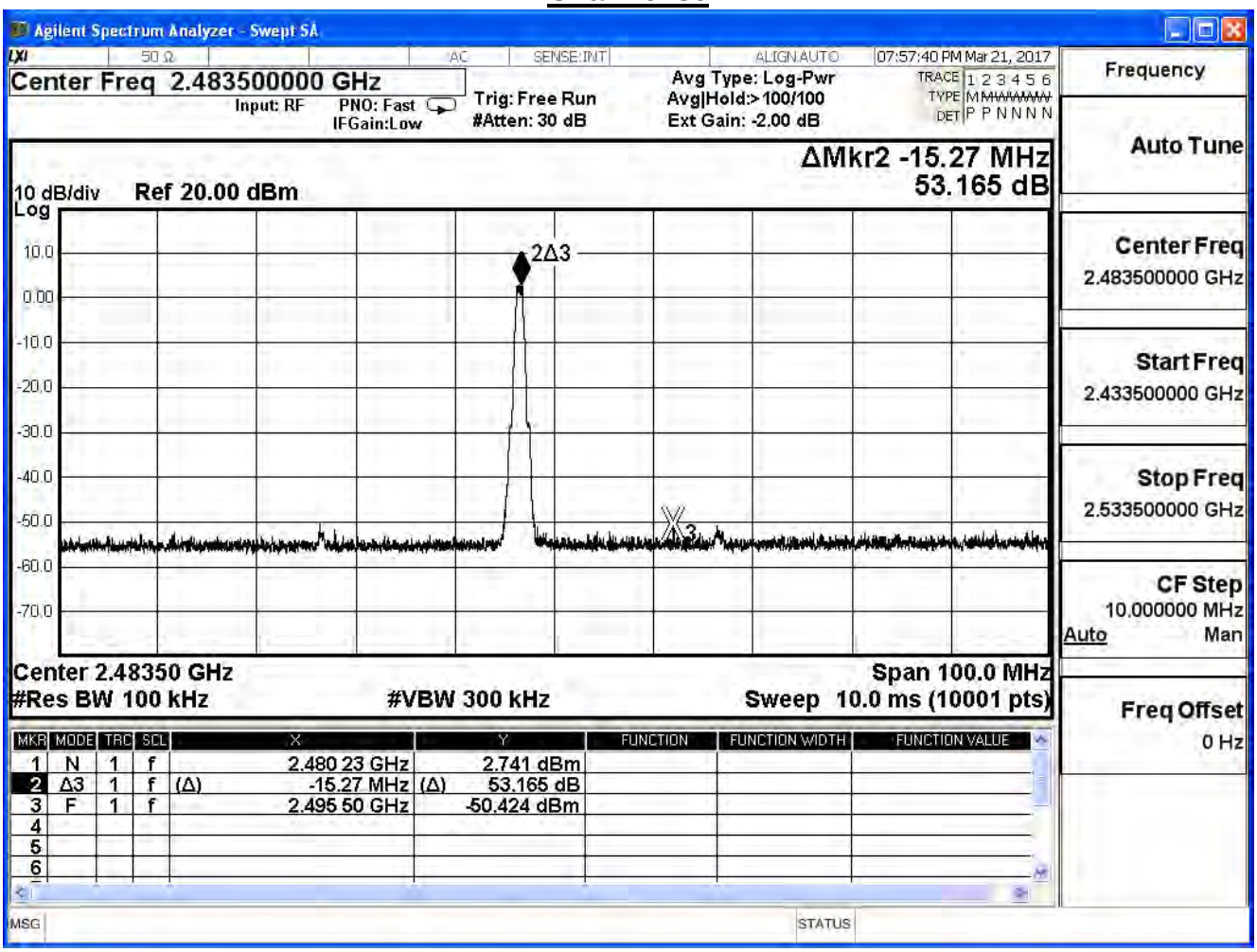
Channel 00



Channel 19

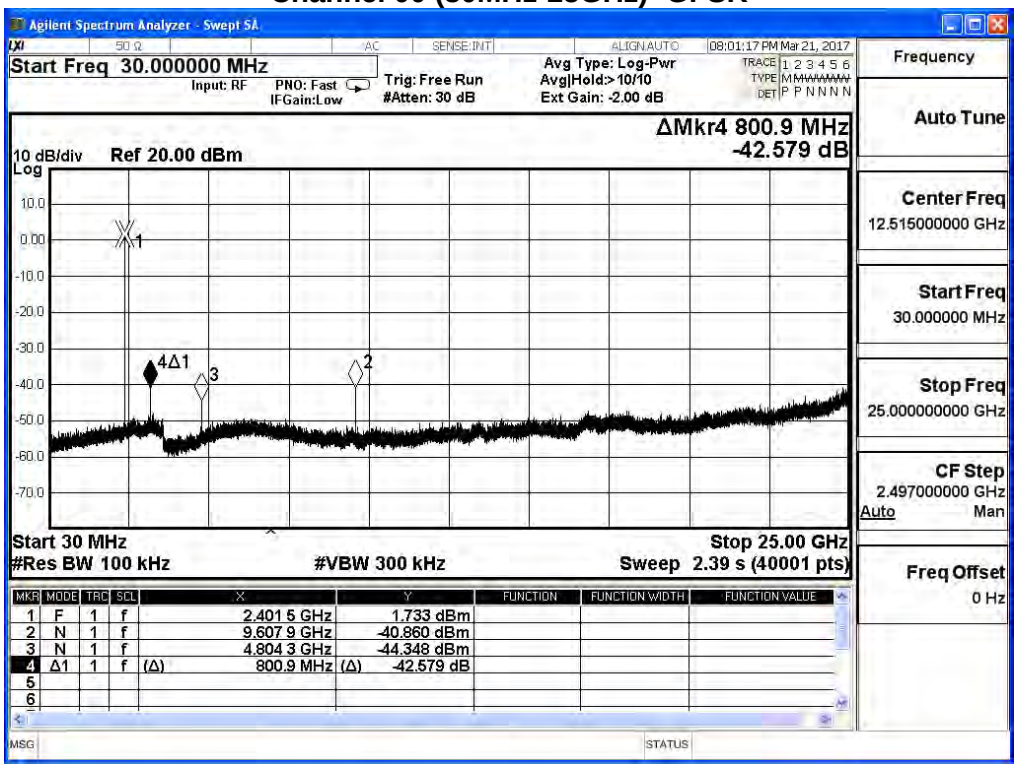

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
07:56:32 PM Mar 21, 2017
Center Freq 2.440000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
TRACE 1 2 3 4 5 6
TYPE M
DET P P N N N N
ΔMkr2 42.69 MHz
54.991 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
2Δ3
Center 2.44000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 100.0 MHz
Sweep 10.0 ms (10001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.440 23 GHz 2.309 dBm
2 Δ3 1 f (Δ) 42.69 MHz (Δ) 54.991 dB
3 F 1 f 2.397 54 GHz -52.682 dBm
4 Δ5 1 f (Δ) -47.91 MHz (Δ) 54.837 dB
5 F 1 f 2.488 13 GHz -52.527 dBm
6
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.390000000 GHz
Stop Freq
2.490000000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz

Channel 39

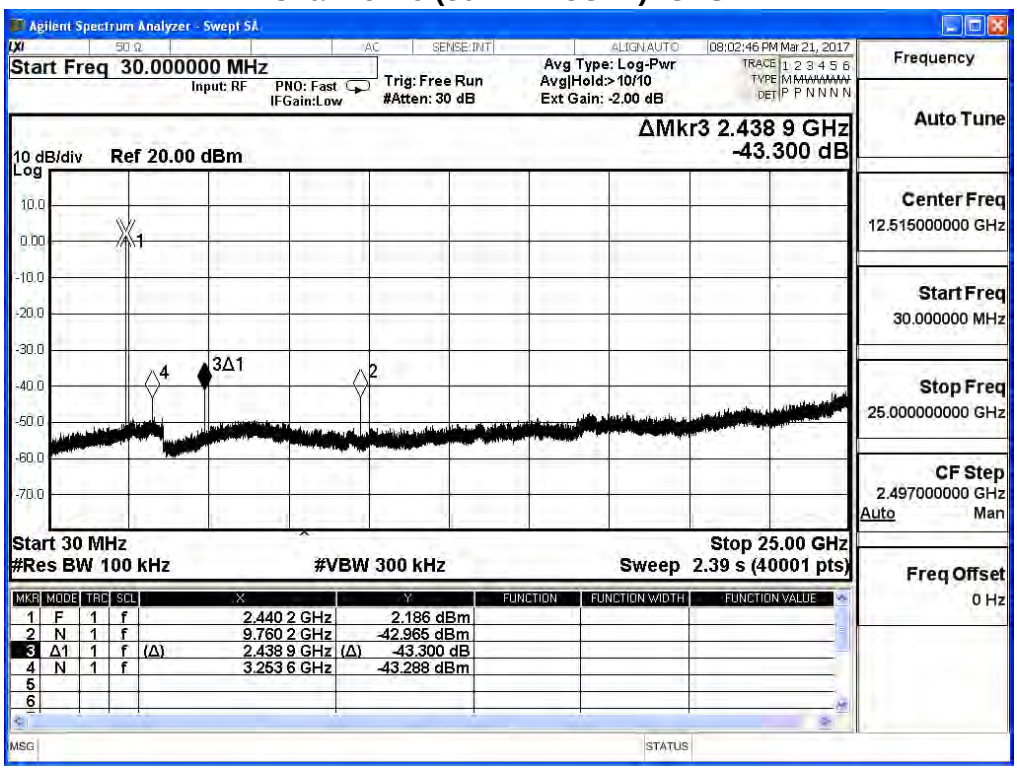

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.483500000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
07:57:40 PM Mar 21, 2017
ΔMkr2 -15.27 MHz
53.165 dB
10 dB/div
Log
Ref 20.00 dBm
Center 2.48350 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 100.0 MHz
Sweep 10.0 ms (10001 pts)
1 N 1 f 2.480 23 GHz 2.741 dBm
2 Δ3 1 f (Δ) -15.27 MHz (Δ) 53.165 dB
3 F 1 f 2.495 50 GHz -50.424 dBm
Frequency
Auto Tune
Center Freq
2.483500000 GHz
Start Freq
2.433500000 GHz
Stop Freq
2.533500000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	UHD651-L		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

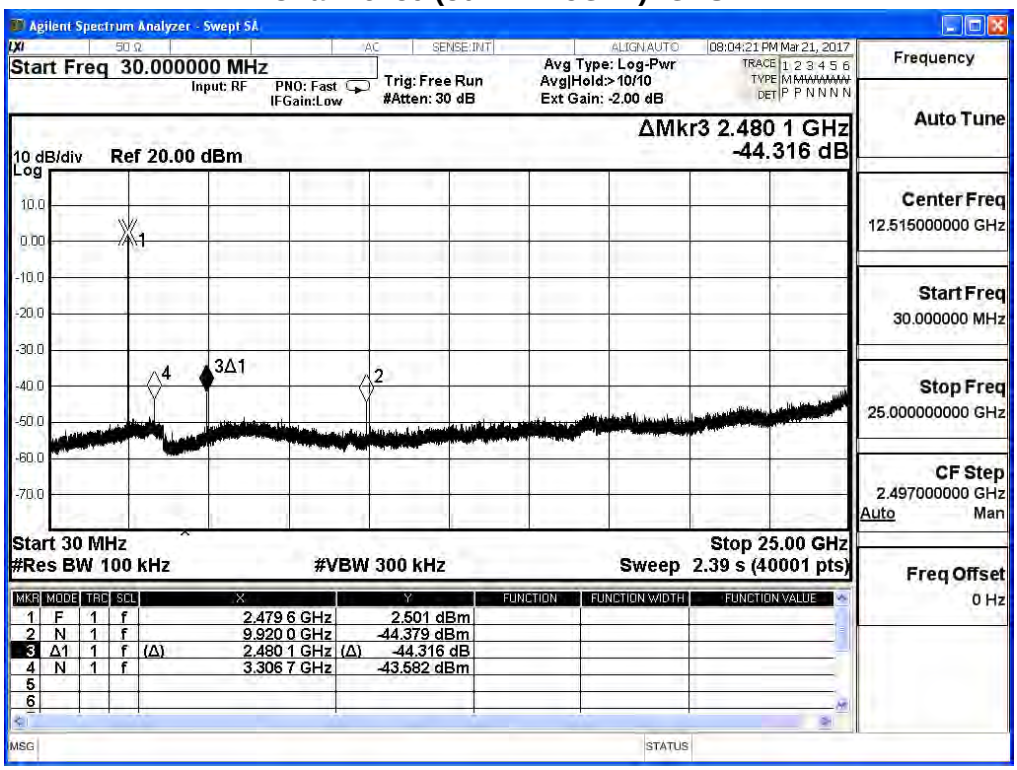
Channel 00 (30MHz-25GHz)- GFSK



Channel 19 (30MHz-25GHz)- GFSK



Channel 39 (30MHz-25GHz)- GFSK



6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

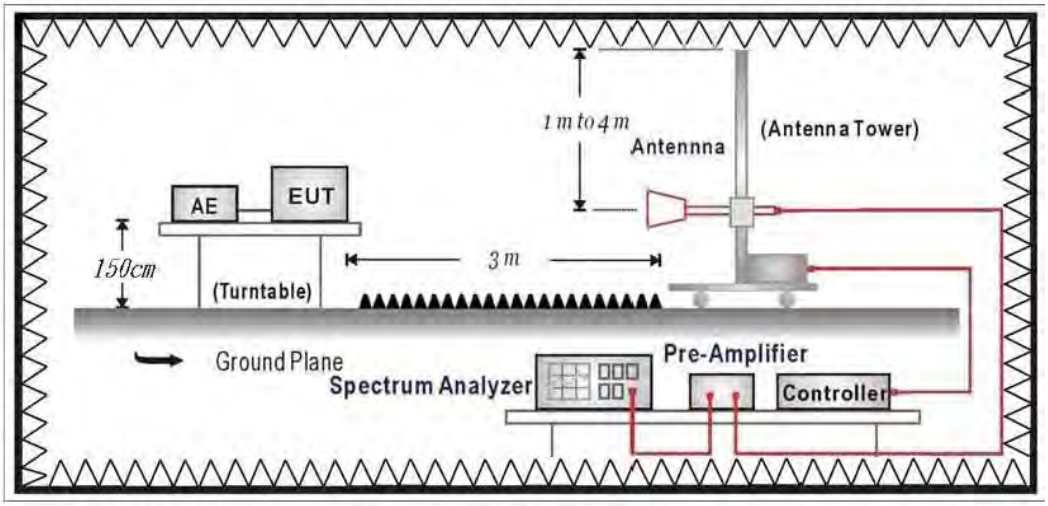
Band Edge / CB4-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzbeck	BBHA 9120	D312	2017/10/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/05

Note: All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

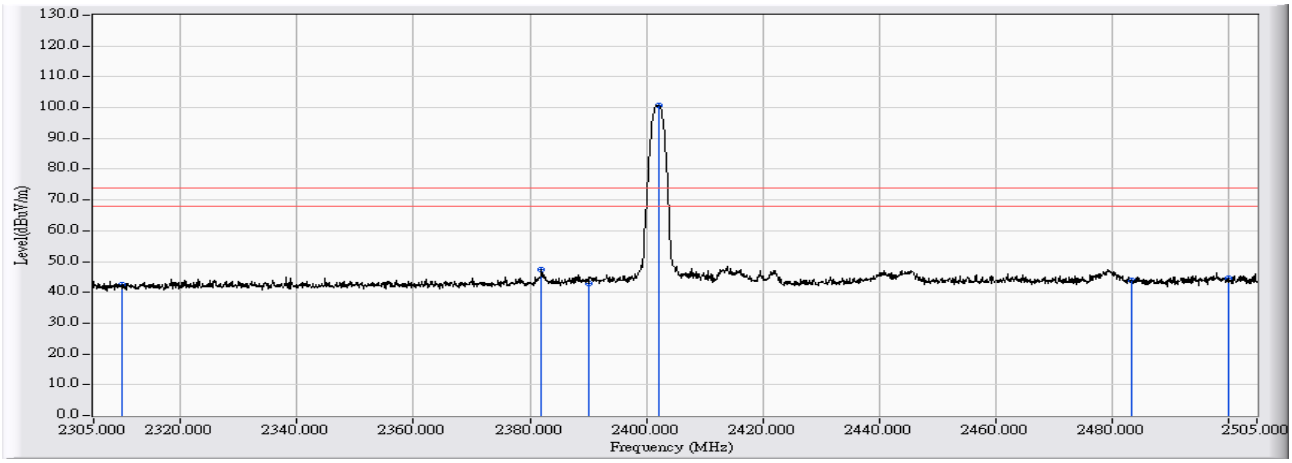
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

6.6. Test Result

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2402MHz**

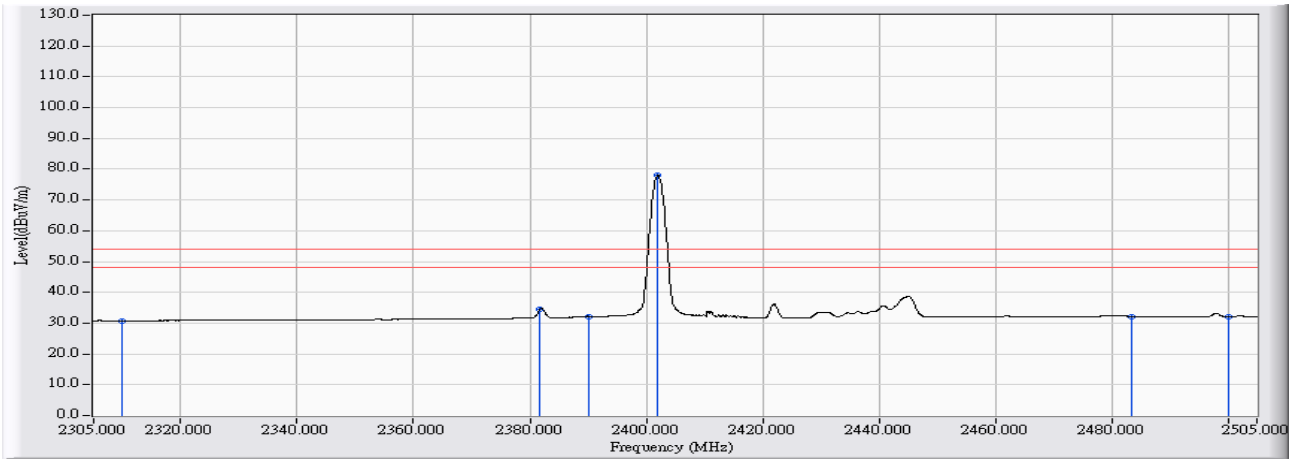


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	28.699	42.368	-31.632	74.000	PEAK
2		2382.000	14.098	33.344	47.442	-26.558	74.000	PEAK
3		2390.000	14.146	28.644	42.790	-31.210	74.000	PEAK
4	*	2402.200	14.219	86.393	100.612	26.612	74.000	PEAK
5		2483.500	14.703	29.303	44.007	-29.993	74.000	PEAK
6		2500.000	14.801	29.868	44.669	-29.331	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2402MHz**

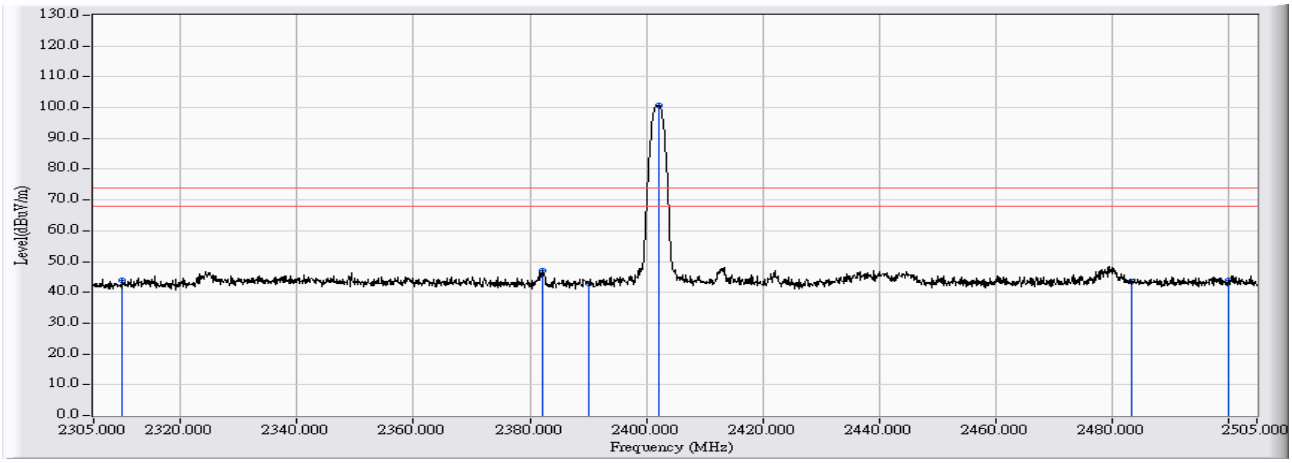


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	17.051	30.720	-23.280	54.000	AVERAGE
2		2381.700	14.097	20.451	34.548	-19.452	54.000	AVERAGE
3		2390.000	14.146	18.073	32.219	-21.781	54.000	AVERAGE
4	*	2402.000	14.218	63.757	77.975	23.975	54.000	AVERAGE
5		2483.500	14.703	17.338	32.042	-21.958	54.000	AVERAGE
6		2500.000	14.801	17.319	32.120	-21.880	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2402MHz**

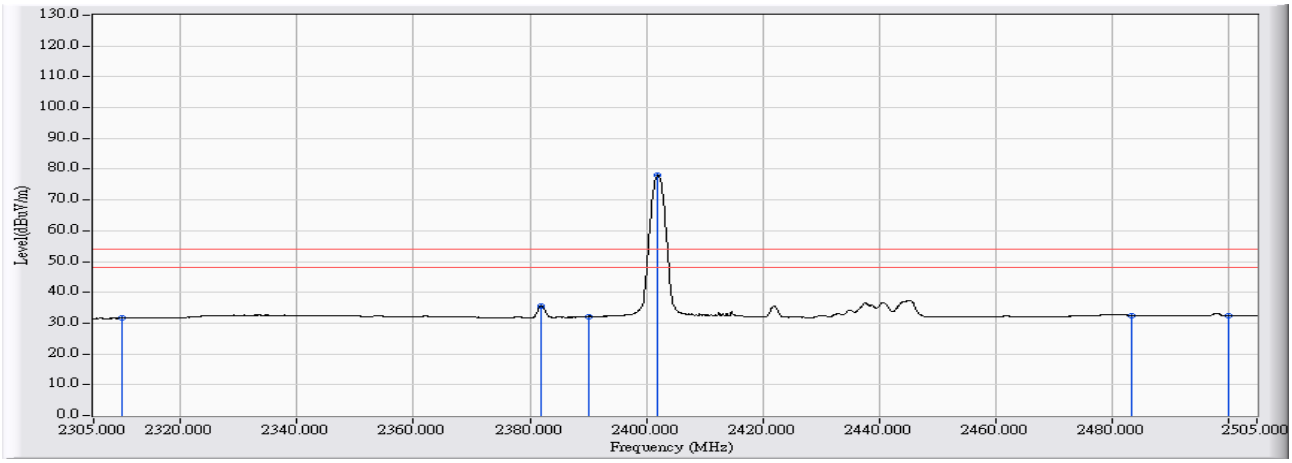


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	30.243	43.912	-30.088	74.000	PEAK
2		2382.100	14.099	32.789	46.888	-27.112	74.000	PEAK
3		2390.000	14.146	28.609	42.755	-31.245	74.000	PEAK
4	*	2402.200	14.219	86.445	100.664	26.664	74.000	PEAK
5		2483.500	14.703	28.716	43.420	-30.580	74.000	PEAK
6		2500.000	14.801	29.230	44.031	-29.969	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

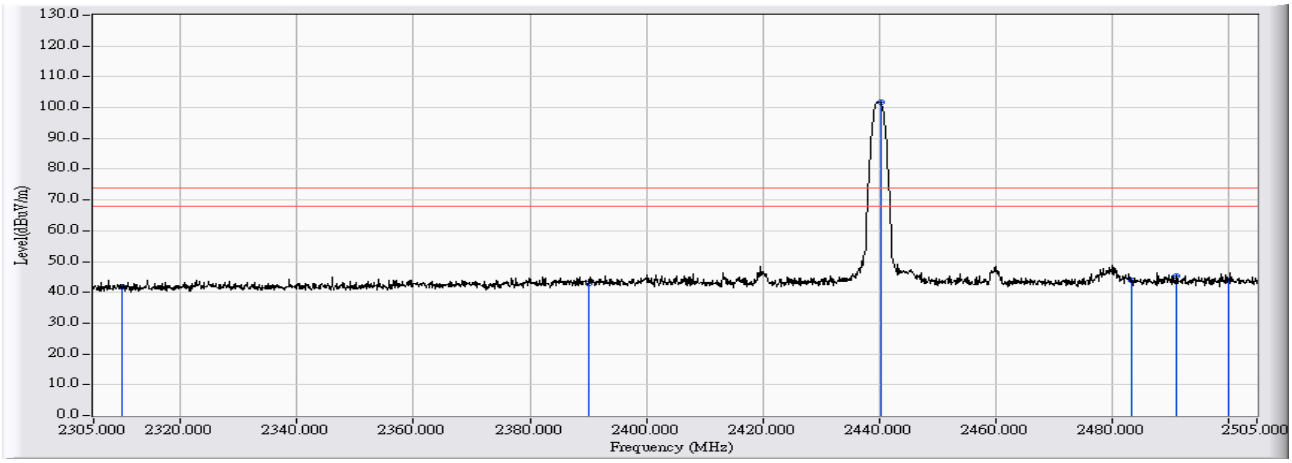


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	17.963	31.632	-22.368	54.000	AVERAGE
2		2381.800	14.097	21.506	35.603	-18.397	54.000	AVERAGE
3		2390.000	14.146	18.049	32.195	-21.805	54.000	AVERAGE
4	*	2402.000	14.218	63.810	78.028	24.028	54.000	AVERAGE
5		2483.500	14.703	17.766	32.470	-21.530	54.000	AVERAGE
6		2500.000	14.801	17.616	32.417	-21.583	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

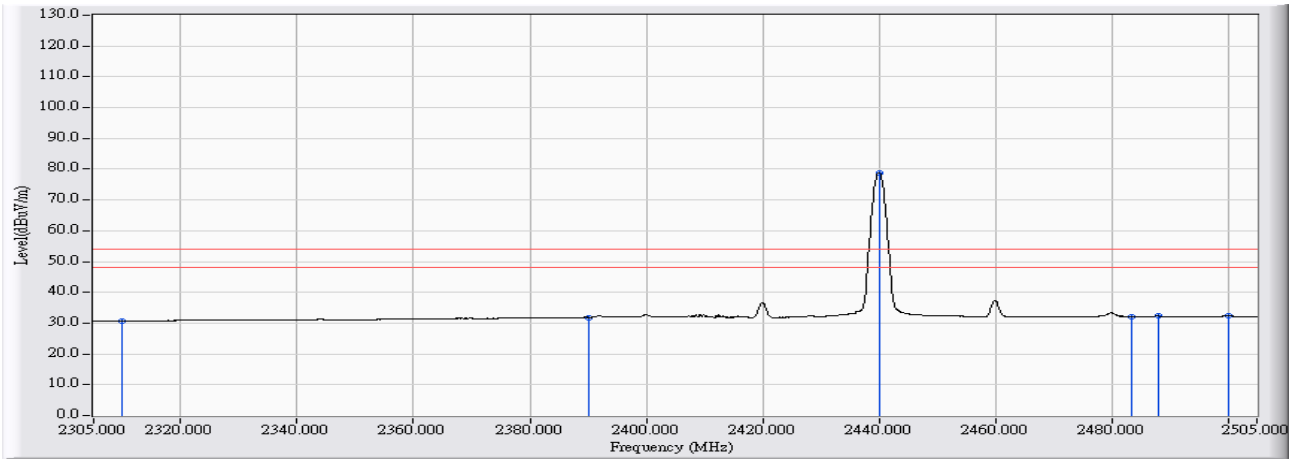


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	28.080	41.749	-32.251	74.000	PEAK
2		2390.000	14.146	28.873	43.019	-30.981	74.000	PEAK
3	*	2440.300	14.447	87.338	101.784	27.784	74.000	PEAK
4		2483.500	14.703	29.324	44.028	-29.972	74.000	PEAK
5		2491.100	14.749	30.555	45.304	-28.696	74.000	PEAK
6		2500.000	14.801	29.118	43.919	-30.081	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

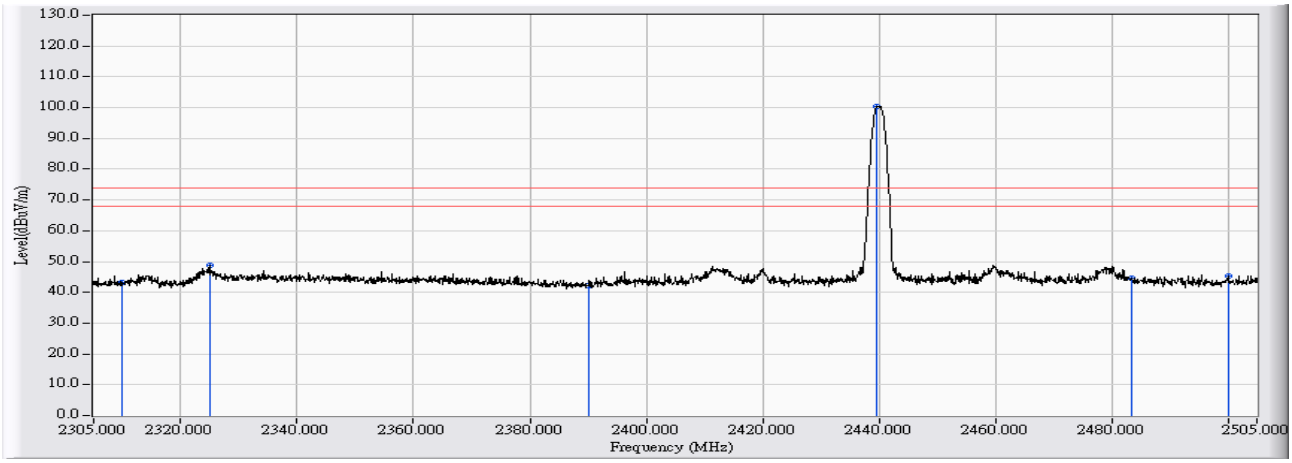


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	17.045	30.714	-23.286	54.000	AVERAGE
2		2390.000	14.146	17.714	31.860	-22.140	54.000	AVERAGE
3	*	2440.000	14.444	64.435	78.879	24.879	54.000	AVERAGE
4		2483.500	14.703	17.444	32.148	-21.852	54.000	AVERAGE
5		2488.000	14.731	17.578	32.309	-21.691	54.000	AVERAGE
6		2500.000	14.801	17.734	32.535	-21.465	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

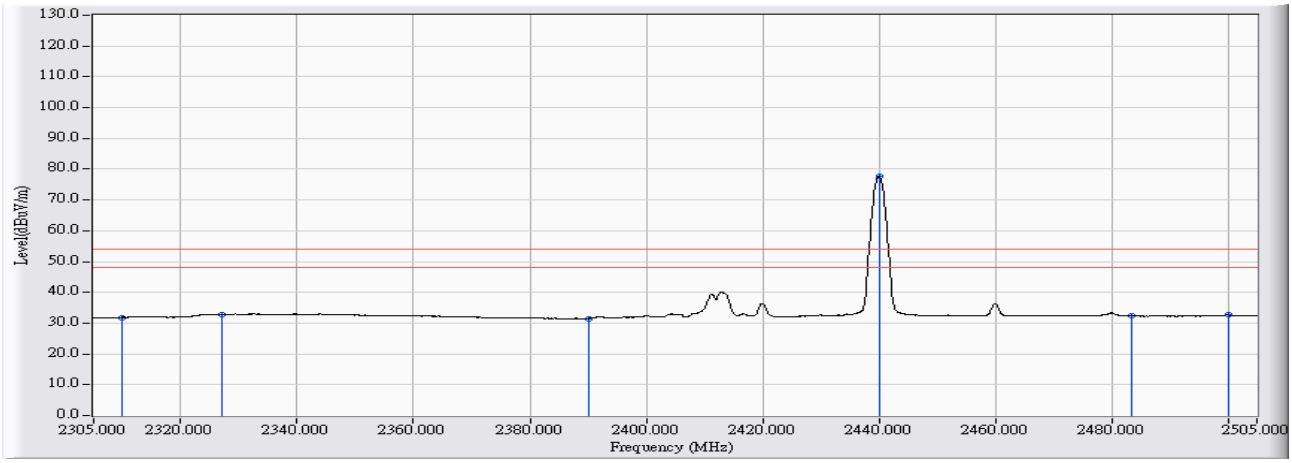


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	29.445	43.114	-30.886	74.000	PEAK
2		2324.900	13.758	34.897	48.655	-25.345	74.000	PEAK
3		2390.000	14.146	27.890	42.036	-31.964	74.000	PEAK
4	*	2439.700	14.442	85.841	100.284	26.284	74.000	PEAK
5		2483.500	14.703	29.737	44.441	-29.559	74.000	PEAK
6		2500.000	14.801	30.590	45.391	-28.609	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2440MHz**

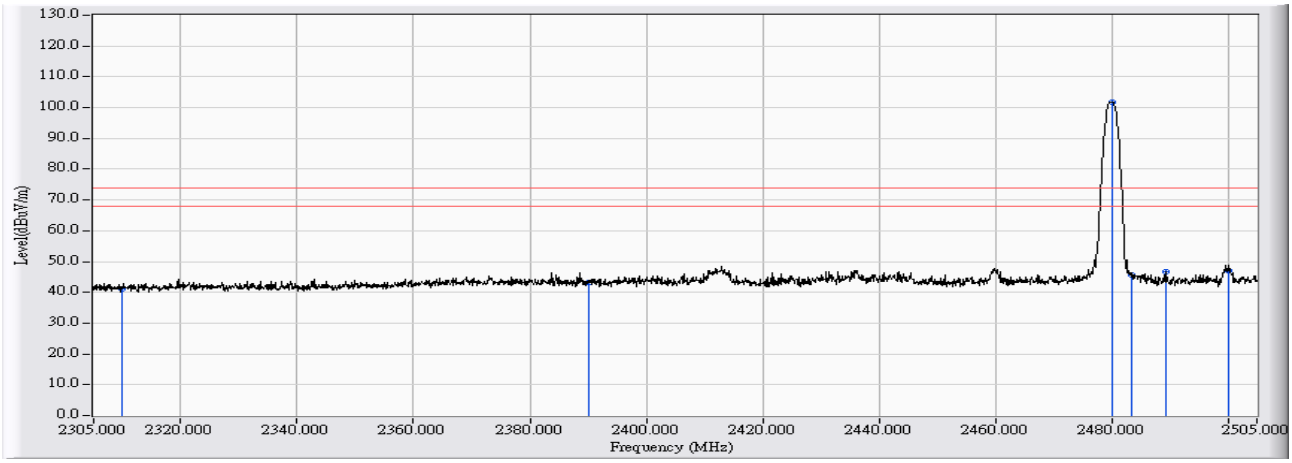


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	18.216	31.885	-22.115	54.000	AVERAGE
2		2327.000	13.771	19.135	32.905	-21.095	54.000	AVERAGE
3		2390.000	14.146	17.363	31.509	-22.491	54.000	AVERAGE
4	*	2440.000	14.444	63.322	77.766	23.766	54.000	AVERAGE
5		2483.500	14.703	17.672	32.376	-21.624	54.000	AVERAGE
6		2500.000	14.801	17.857	32.658	-21.342	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**

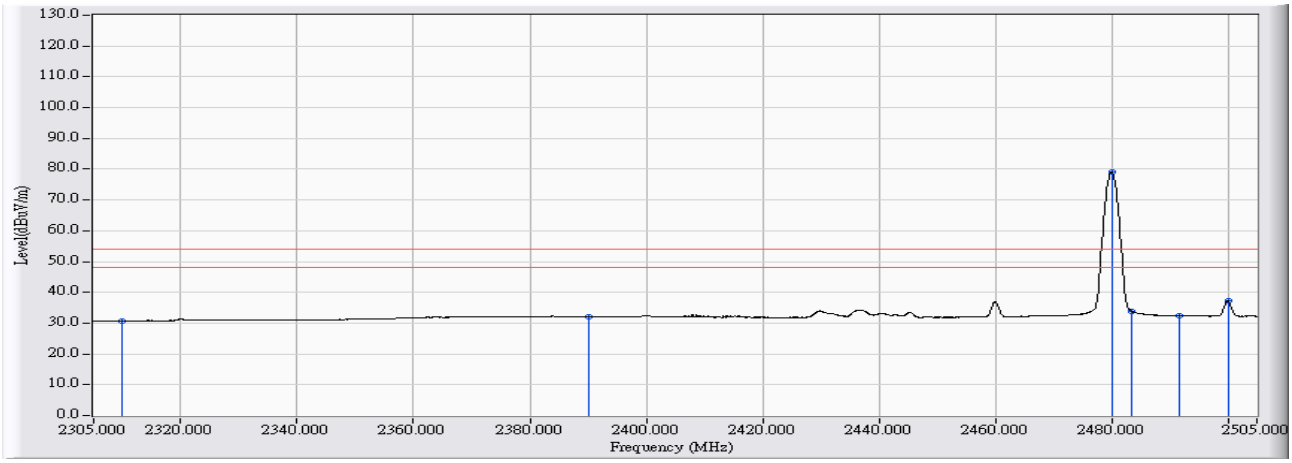


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	27.421	41.090	-32.910	74.000	PEAK
2		2390.000	14.146	29.071	43.217	-30.783	74.000	PEAK
3	*	2480.200	14.683	87.219	101.903	27.903	74.000	PEAK
4		2483.500	14.703	30.905	45.609	-28.391	74.000	PEAK
5		2489.400	14.740	31.959	46.698	-27.302	74.000	PEAK
6		2500.000	14.801	32.258	47.059	-26.941	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**

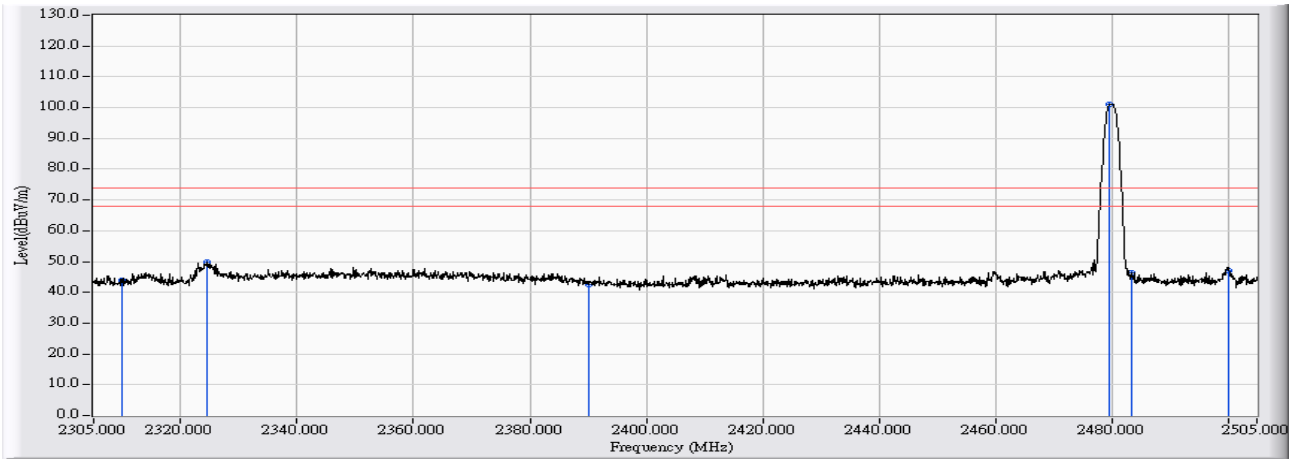


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	17.117	30.786	-23.214	54.000	AVERAGE
2		2390.000	14.146	17.888	32.034	-21.966	54.000	AVERAGE
3	*	2480.000	14.683	64.354	79.037	25.037	54.000	AVERAGE
4		2483.500	14.703	19.161	33.865	-20.135	54.000	AVERAGE
5		2491.600	14.752	17.690	32.442	-21.558	54.000	AVERAGE
6		2500.000	14.801	22.389	37.190	-16.810	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**

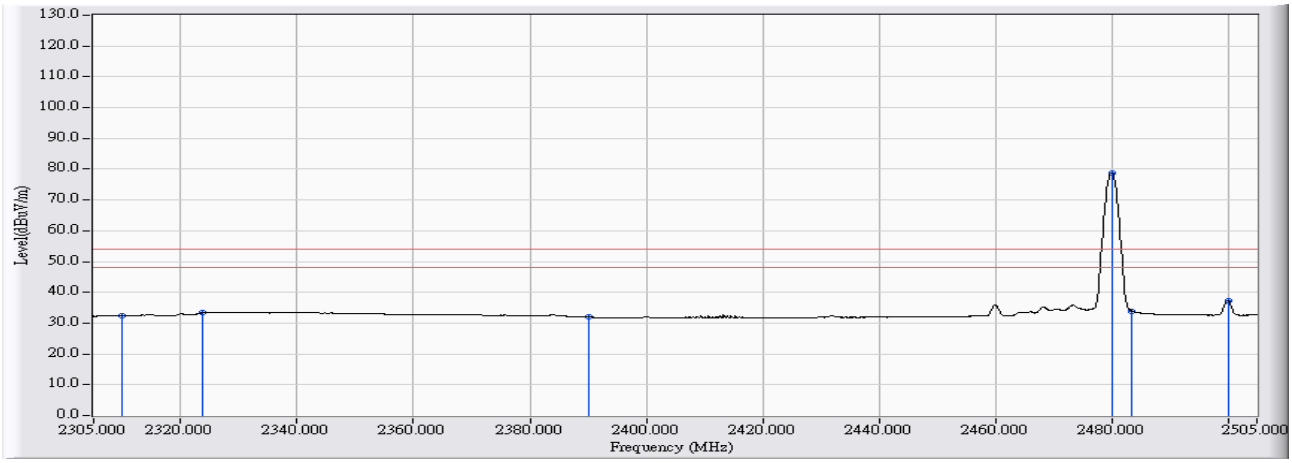


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	30.109	43.778	-30.222	74.000	PEAK
2		2324.400	13.755	35.913	49.668	-24.332	74.000	PEAK
3		2390.000	14.146	28.287	42.433	-31.567	74.000	PEAK
4	*	2479.700	14.680	86.507	101.188	27.188	74.000	PEAK
5		2483.500	14.703	31.486	46.190	-27.810	74.000	PEAK
6		2500.000	14.801	32.146	46.947	-27.053	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/04/06**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD651-L	**Note : Mode 1: Tx_2480MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.669	18.751	32.420	-21.580	54.000	AVERAGE
2		2323.600	13.751	19.566	33.316	-20.684	54.000	AVERAGE
3		2390.000	14.146	17.816	31.962	-22.038	54.000	AVERAGE
4	*	2480.000	14.683	64.233	78.916	24.916	54.000	AVERAGE
5		2483.500	14.703	19.258	33.962	-20.038	54.000	AVERAGE
6		2500.000	14.801	22.445	37.246	-16.754	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Occupied Bandwidth

7.1. Test Equipment

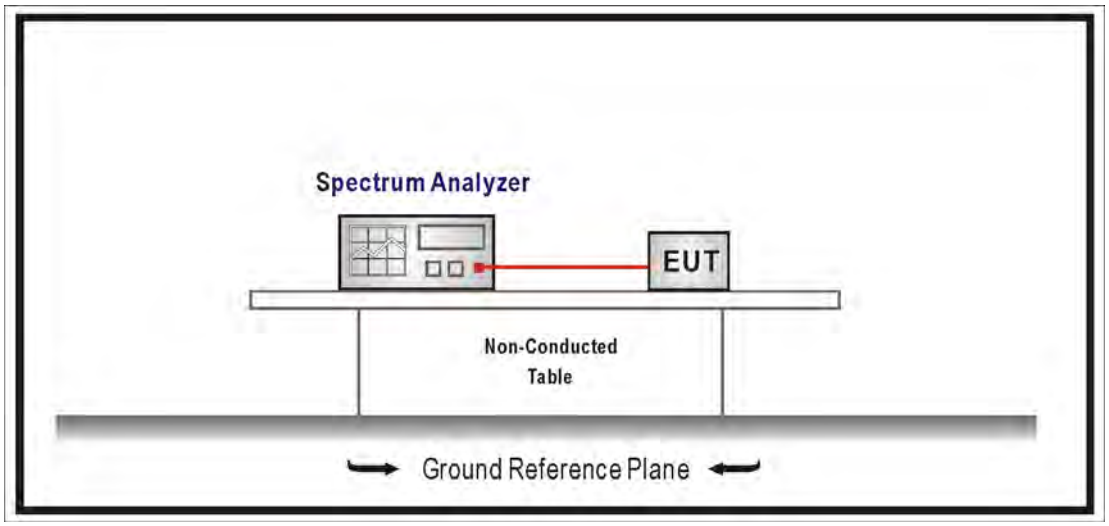
The following test equipment is used during the test:

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/08/08

Note: All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1% of EBW, Span greater than RBW.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

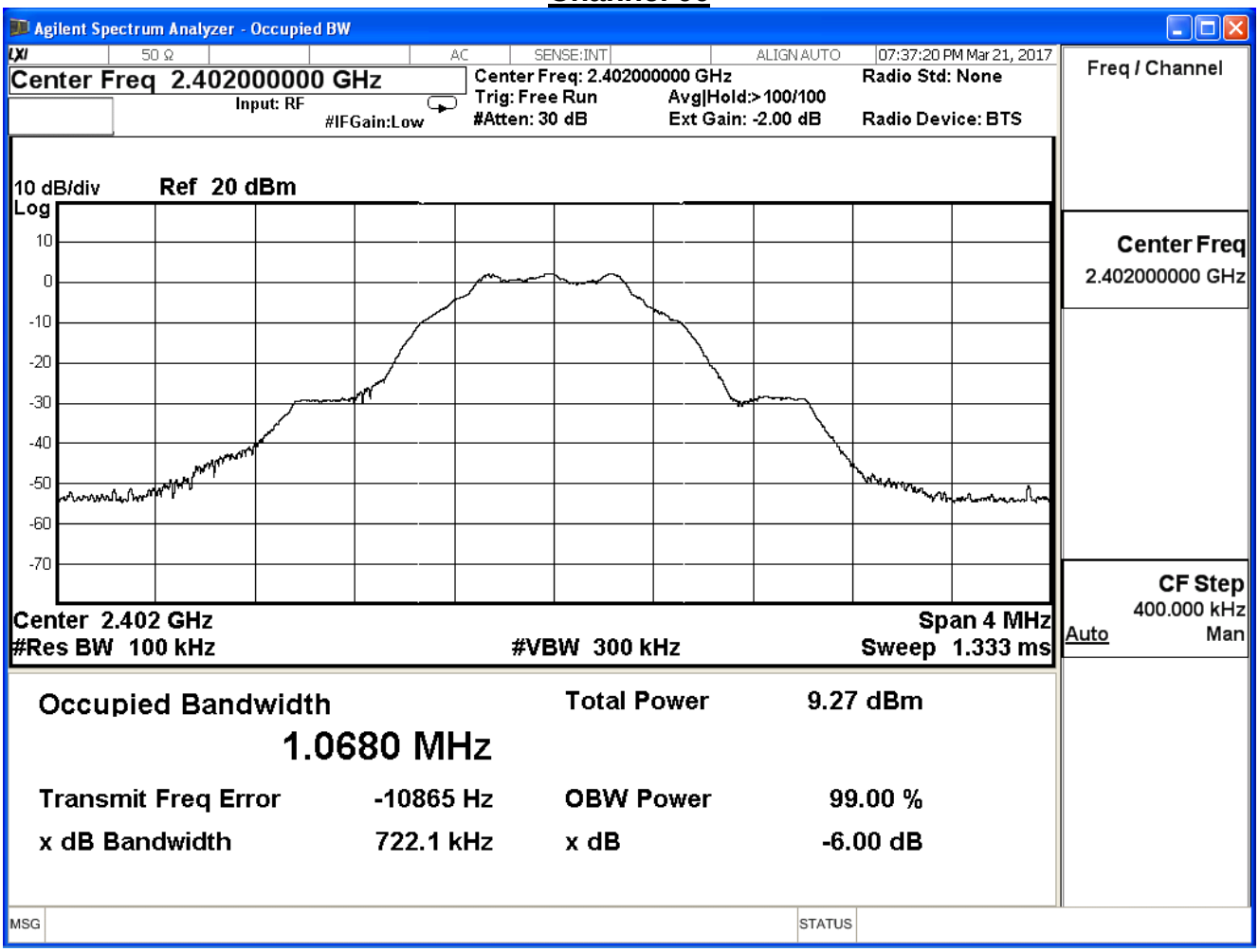
7.6. Test Result

Product	UHD651-L		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

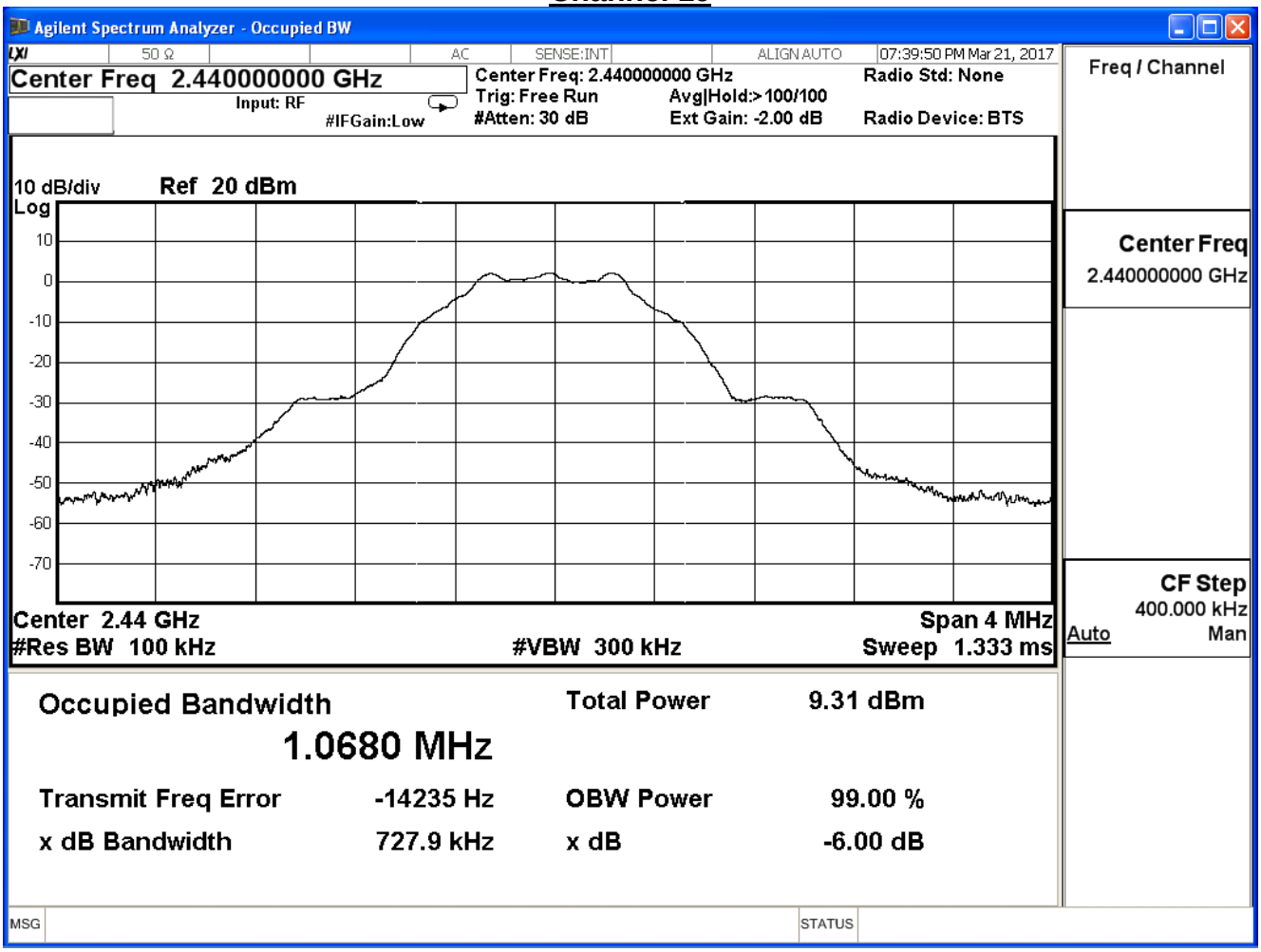
GFSK

Channel No.	Frequency (MHz)	Measure Level (KHz)	Limit (MHz)	Result
00	2402	722.10	≧0.5	Pass
19	2440	727.90	≧0.5	Pass
39	2480	727.30	≧0.5	Pass

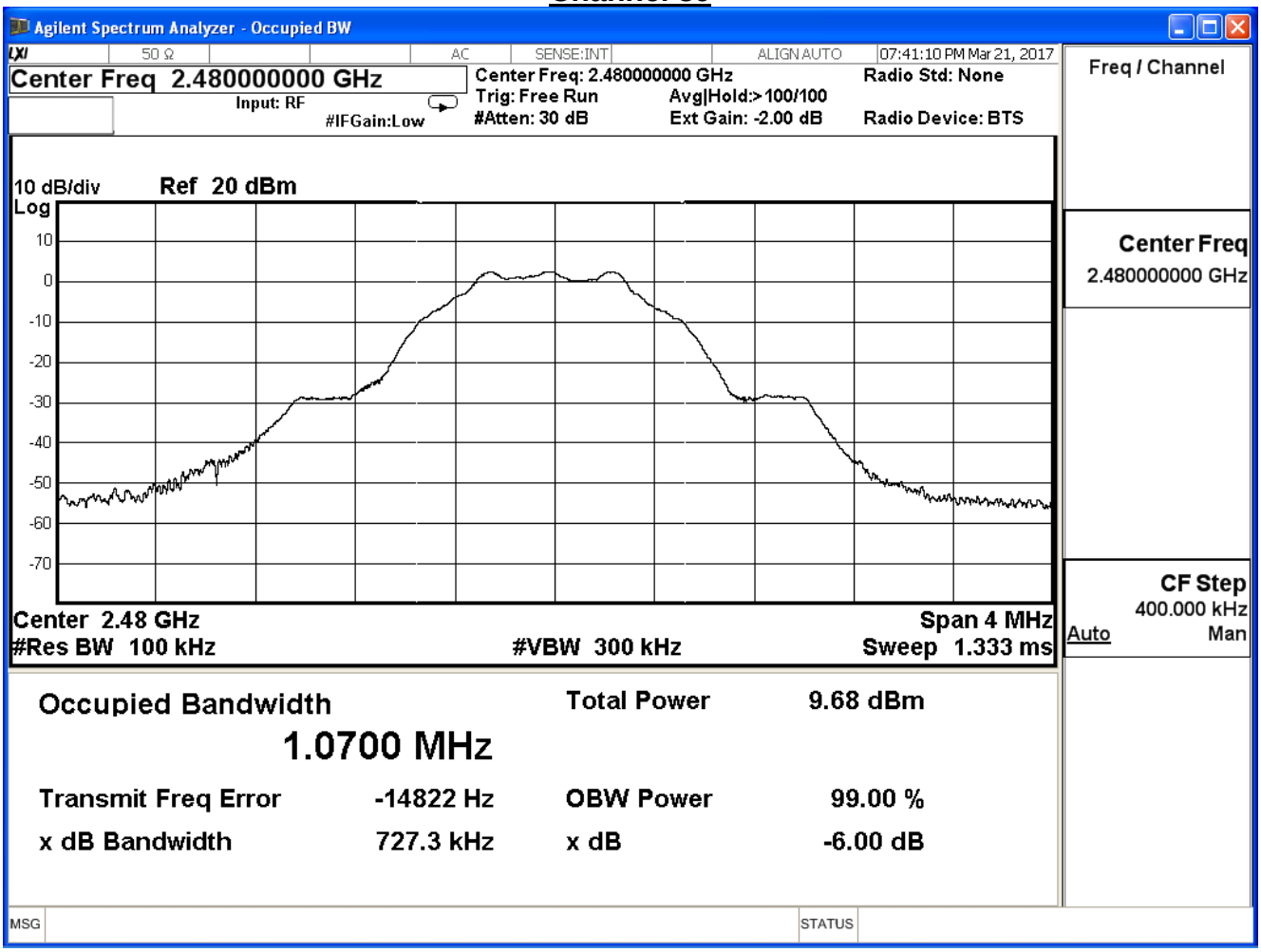
Channel 00



Channel 19


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
07:39:50 PM Mar 21, 2017
Center Freq 2.440000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.440000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 30 dB
Ext Gain: -2.00 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center Freq
2.440000000 GHz
Center 2.44 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4 MHz
Sweep 1.333 ms
CF Step
400.000 kHz
Auto
Man
Occupied Bandwidth
1.0680 MHz
Total Power
9.31 dBm
Transmit Freq Error
-14235 Hz
OBW Power
99.00 %
x dB Bandwidth
727.9 kHz
x dB
-6.00 dB
MSG
STATUS

Channel 39


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
07:41:10 PM Mar 21, 2017
Center Freq 2.480000000 GHz
Input: RF
#IFGain:Low
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 30 dB
Ext Gain: -2.00 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 20 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4 MHz
Sweep 1.333 ms
CF Step
400.000 kHz
Auto
Man
Occupied Bandwidth
1.0700 MHz
Total Power
9.68 dBm
Transmit Freq Error
-14822 Hz
OBW Power
99.00 %
x dB Bandwidth
727.3 kHz
x dB
-6.00 dB
MSG
STATUS

8. Power Density

8.1. Test Equipment

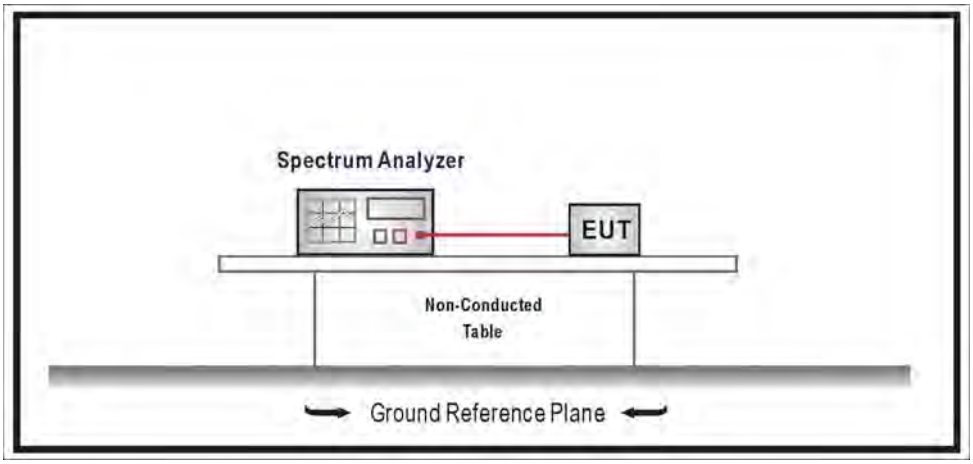
The following test equipment is used during the test:

Power Density / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/08/08

Note: All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 V03R02 for compliance to FCC 47CFR 15.247 requirements.

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

8.6. Uncertainty

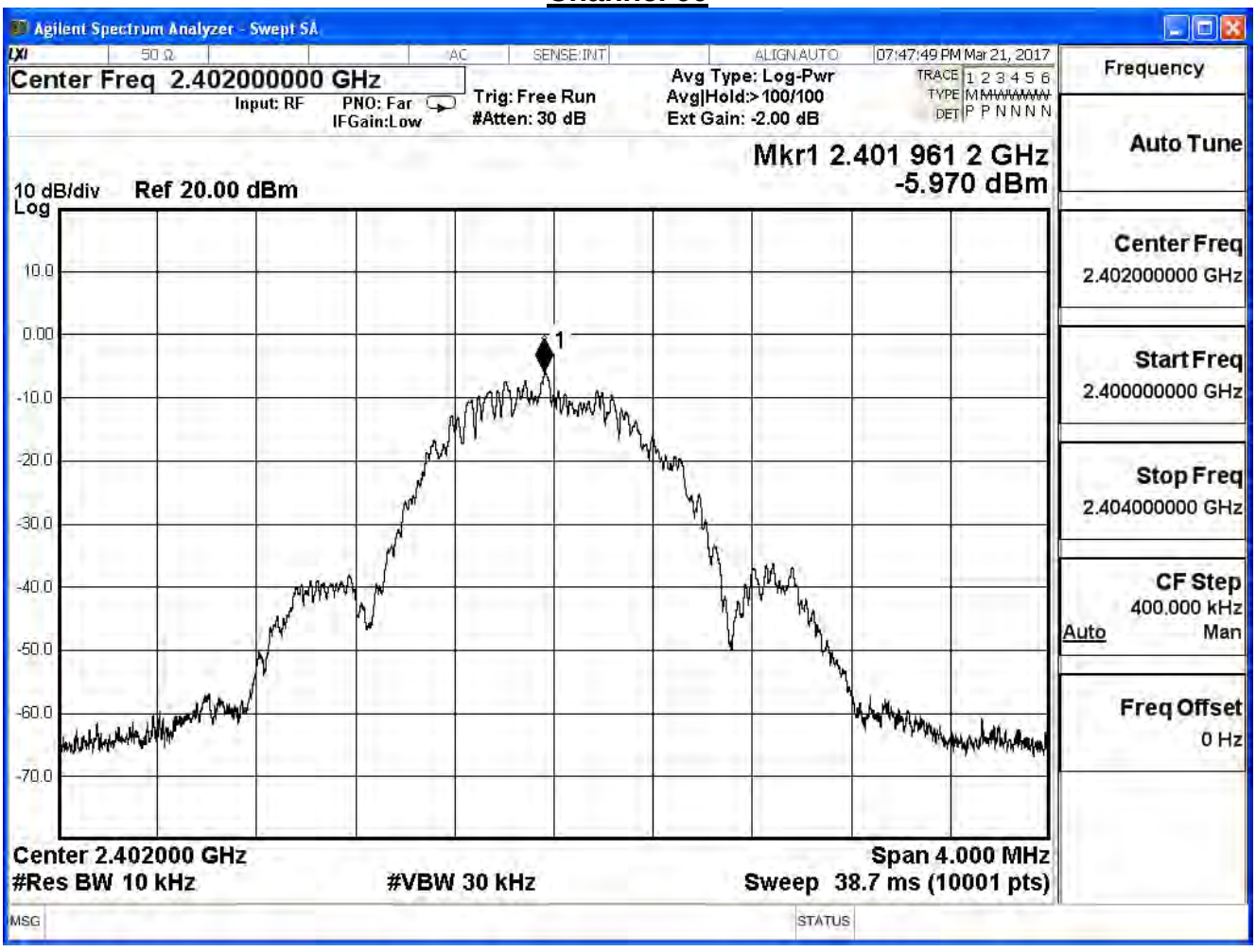
The measurement uncertainty is defined as ±1.27dB.

8.7. Test Result

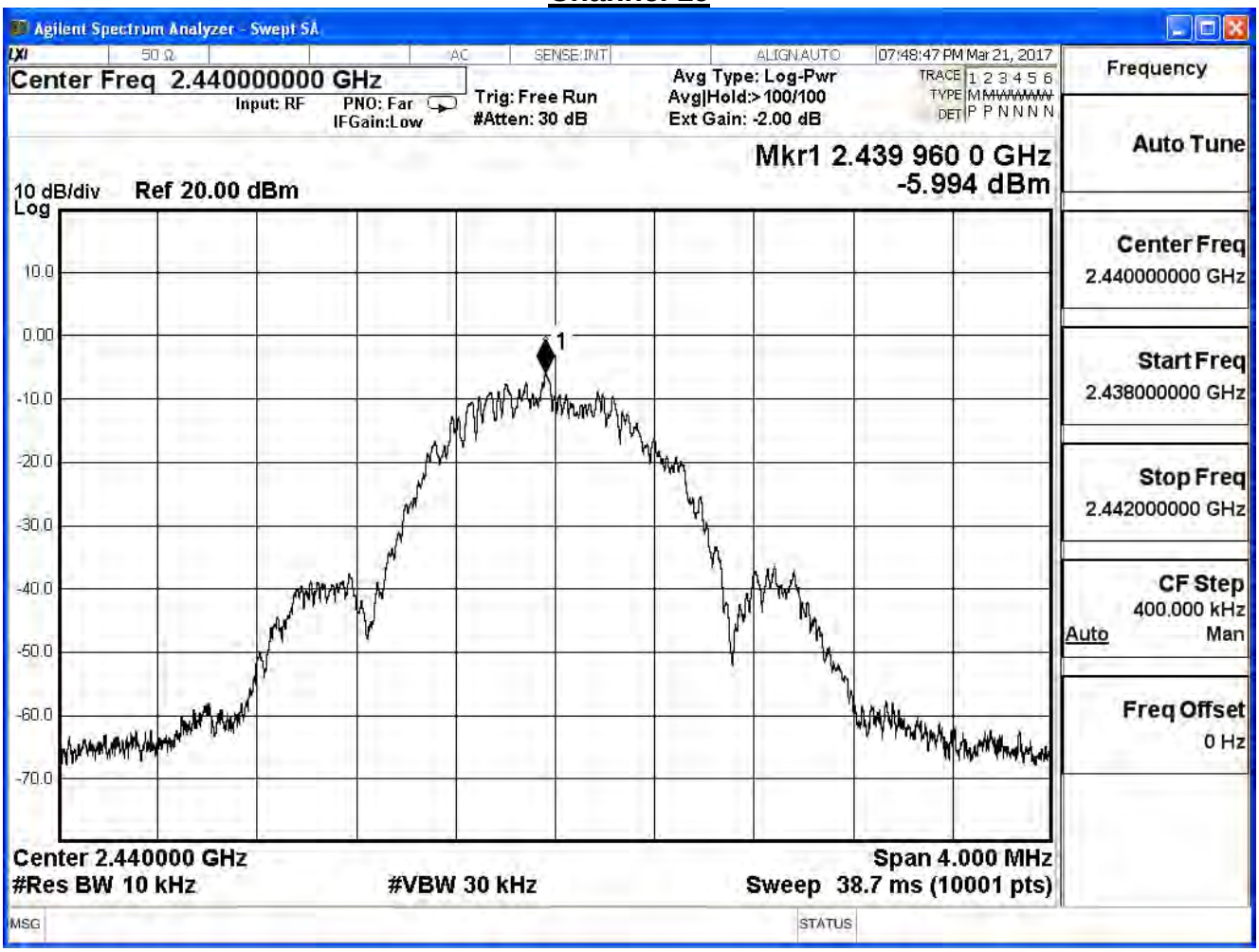
Product	UHD651-L		
Test Item	Power Density		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level(dBm)	Limit (dBm)	Result
00	2402	-5.970	≦8	Pass
19	2440	-5.994	≦8	Pass
39	2480	-5.697	≦8	Pass

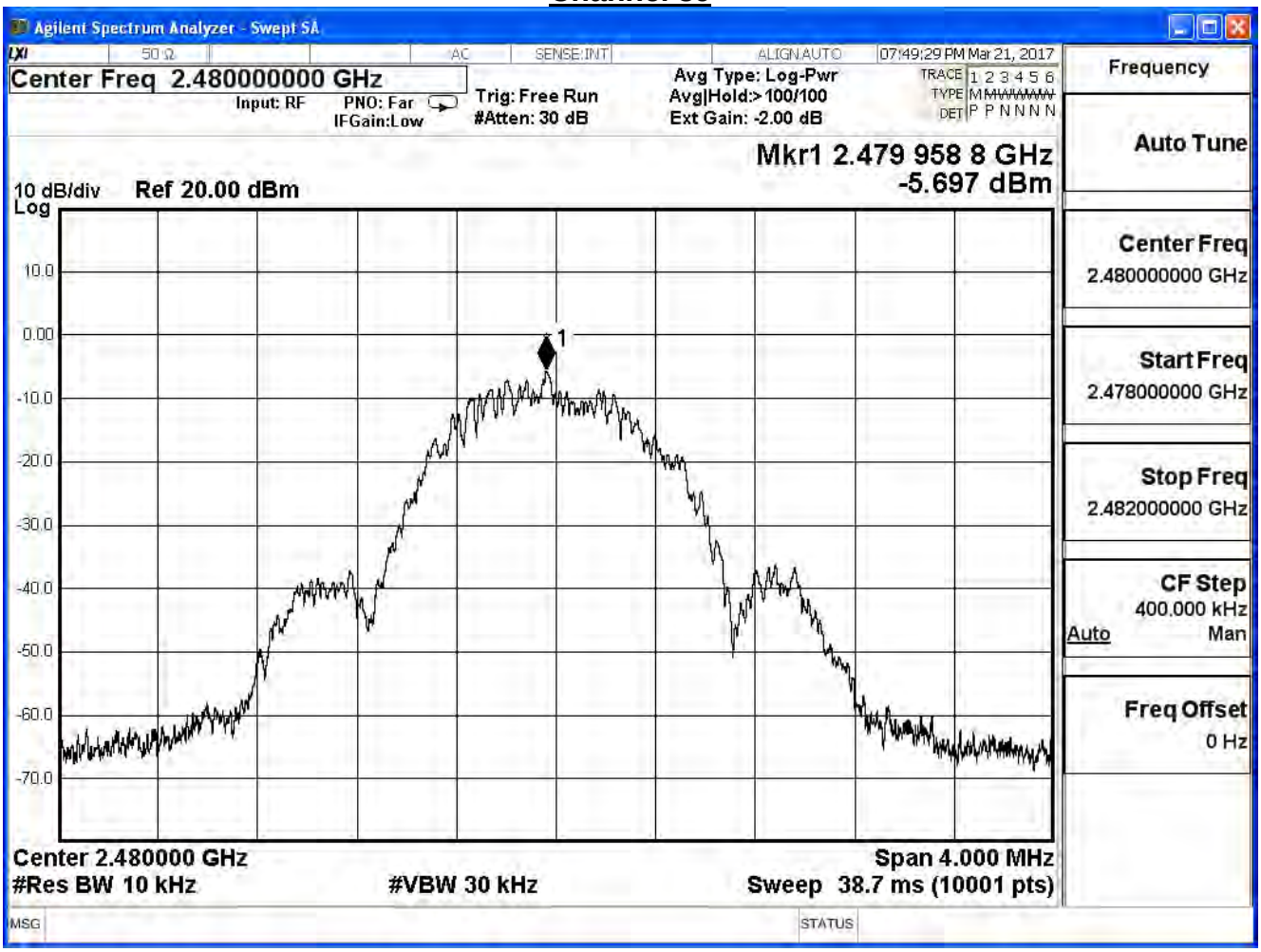
Channel 00



Channel 19


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
07:48:47 PM Mar 21, 2017
Center Freq 2.440000000 GHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P N N N N
Mkr1 2.439 960 0 GHz
-5.994 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.440000 GHz
#Res BW 10 kHz
#VBW 30 kHz
Span 4.000 MHz
Sweep 38.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.438000000 GHz
Stop Freq
2.442000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz

Channel 39


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
07:49:29 PM Mar 21, 2017
Mkr1 2.479 958 8 GHz
-5.697 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000 GHz
#Res BW 10 kHz
#VBW 30 kHz
Span 4.000 MHz
Sweep 38.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.482000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

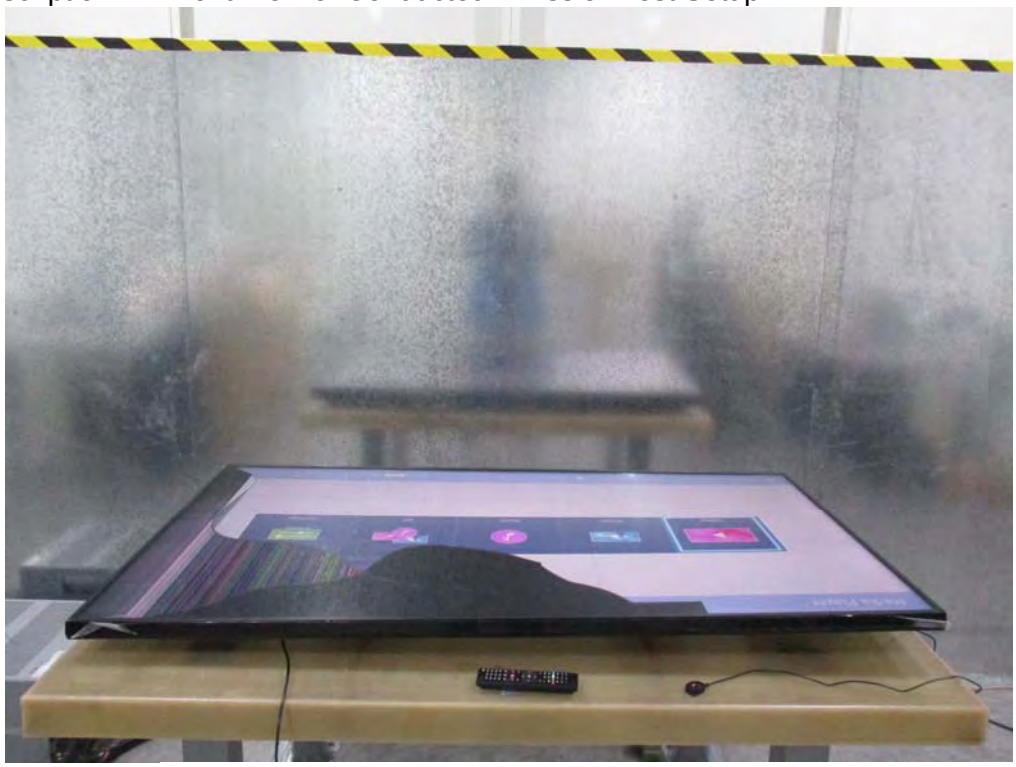
Attachment 1

➢ Test Setup Photograph

<Conducted Emission>

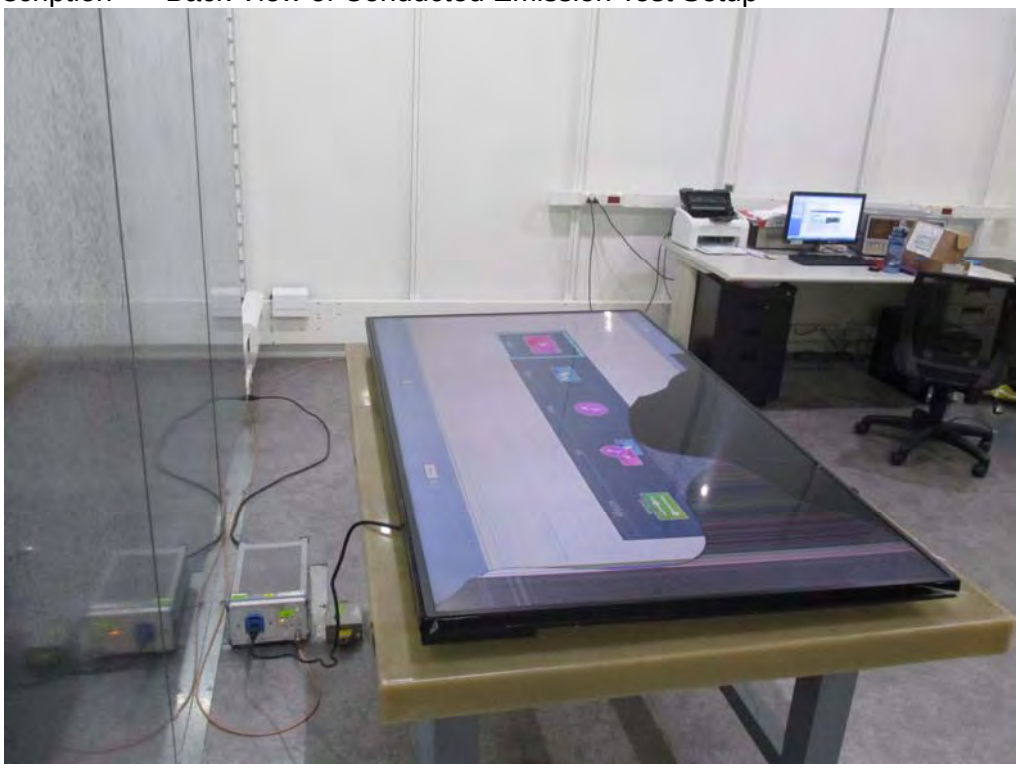
Test Mode ： Mode 1: Tx

Description： Front View of Conducted Emission Test Setup



Test Mode ： Mode 1: Tx

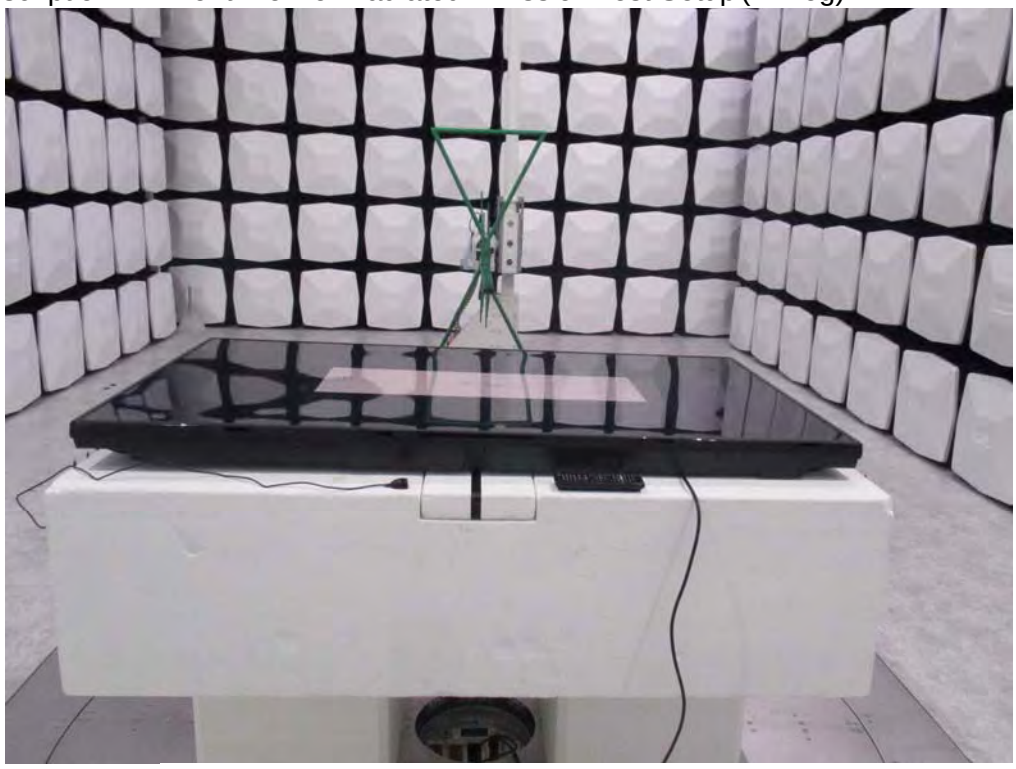
Description： Back View of Conducted Emission Test Setup



<Radiated Emission>

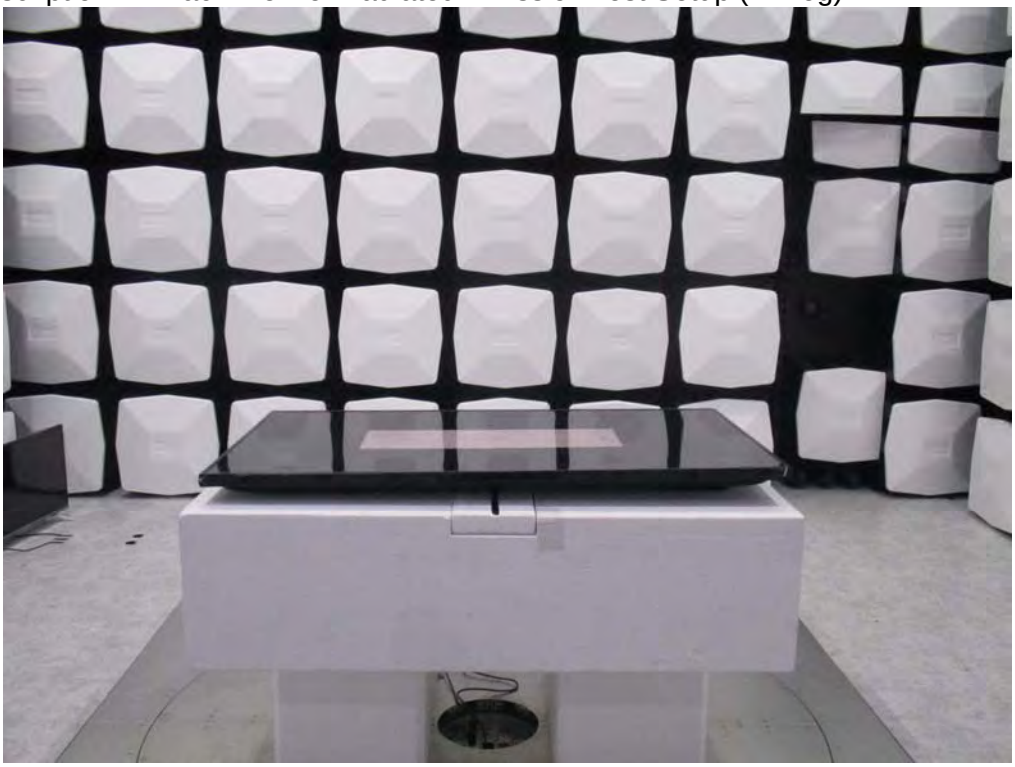
Test Mode ： Mode 1: Tx

Description： Front View of Radiated Emission Test Setup (Bi-Log)

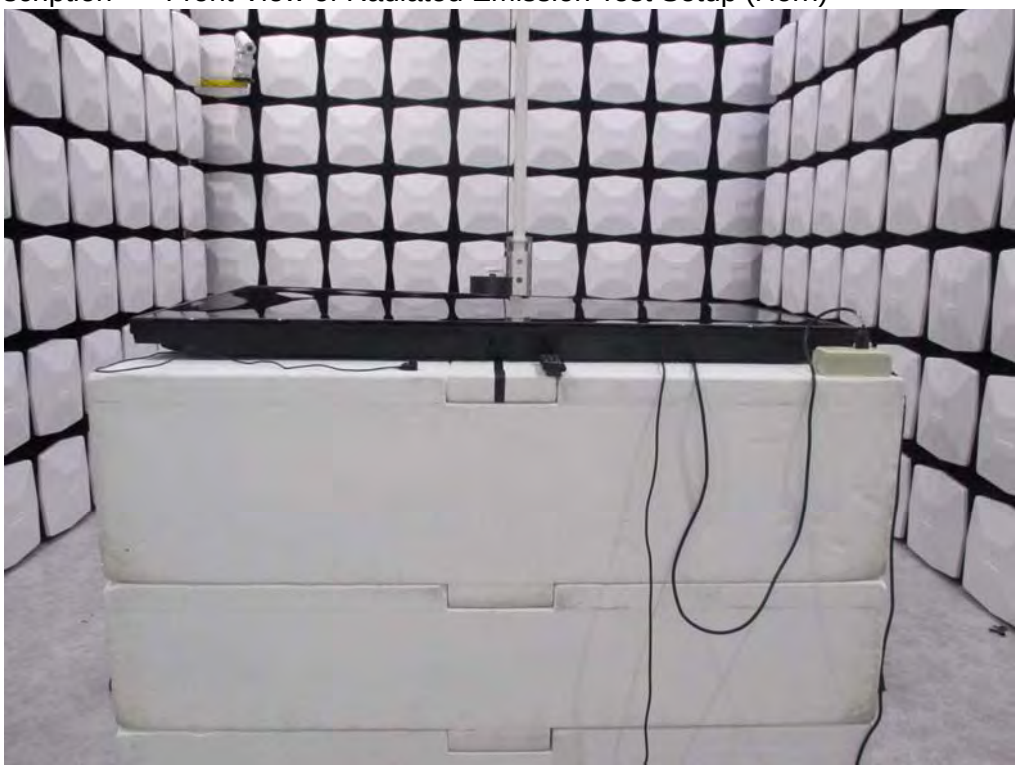


Test Mode ： Mode 1: Tx

Description： Back View of Radiated Emission Test Setup (Bi-Log)



Test Mode ： Mode 1: Tx
Description： Front View of Radiated Emission Test Setup (Horn)



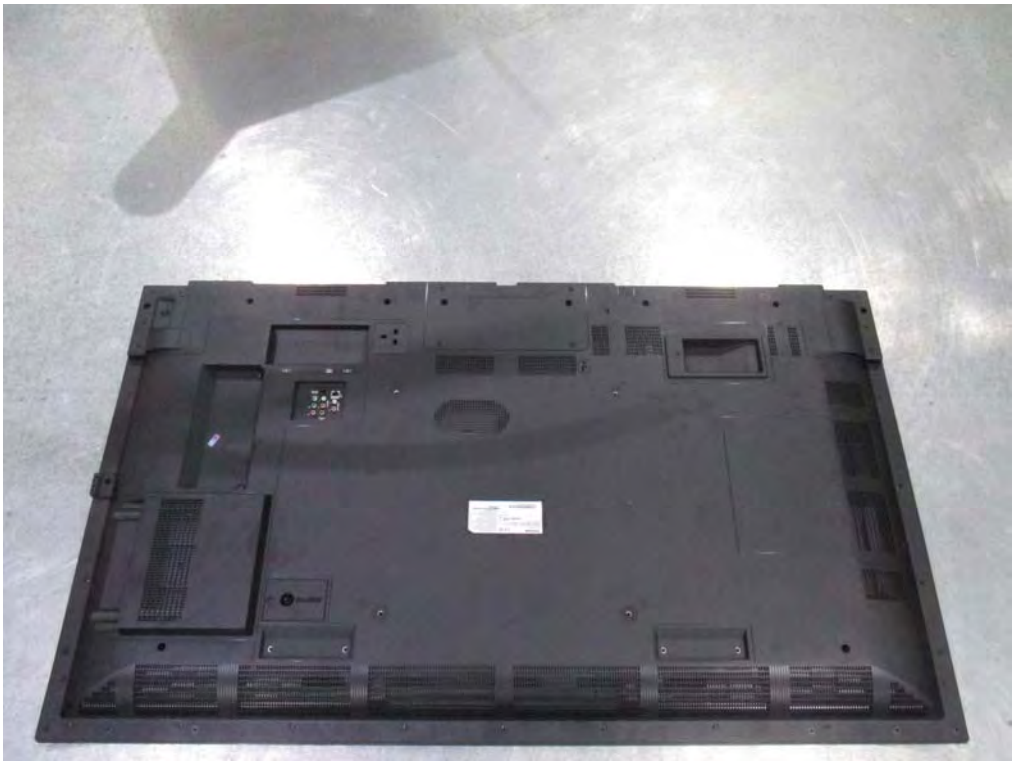
Test Mode ： Mode 1: Tx
Description： Back View of Radiated Emission Test Setup (Horn)

Attachment 2

➢ EUT External Photograph

(1) EUT Photo

(2) EUT Photo

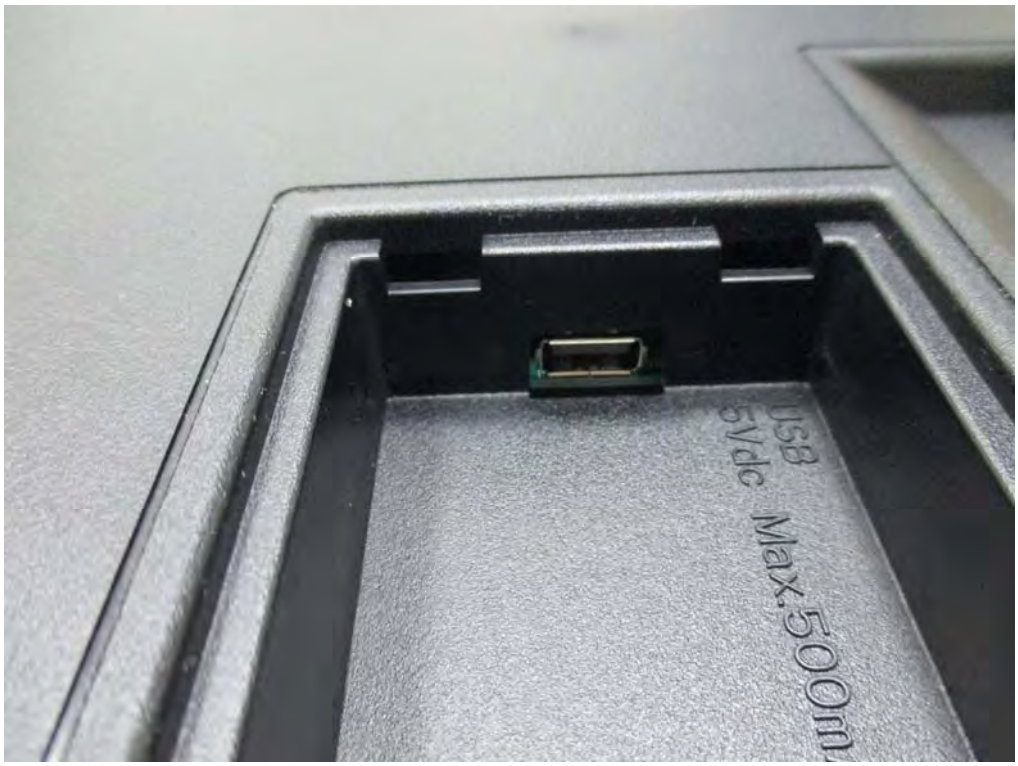


(3) EUT Photo

(4) EUT Photo

(5) EUT Photo

(6) EUT Photo

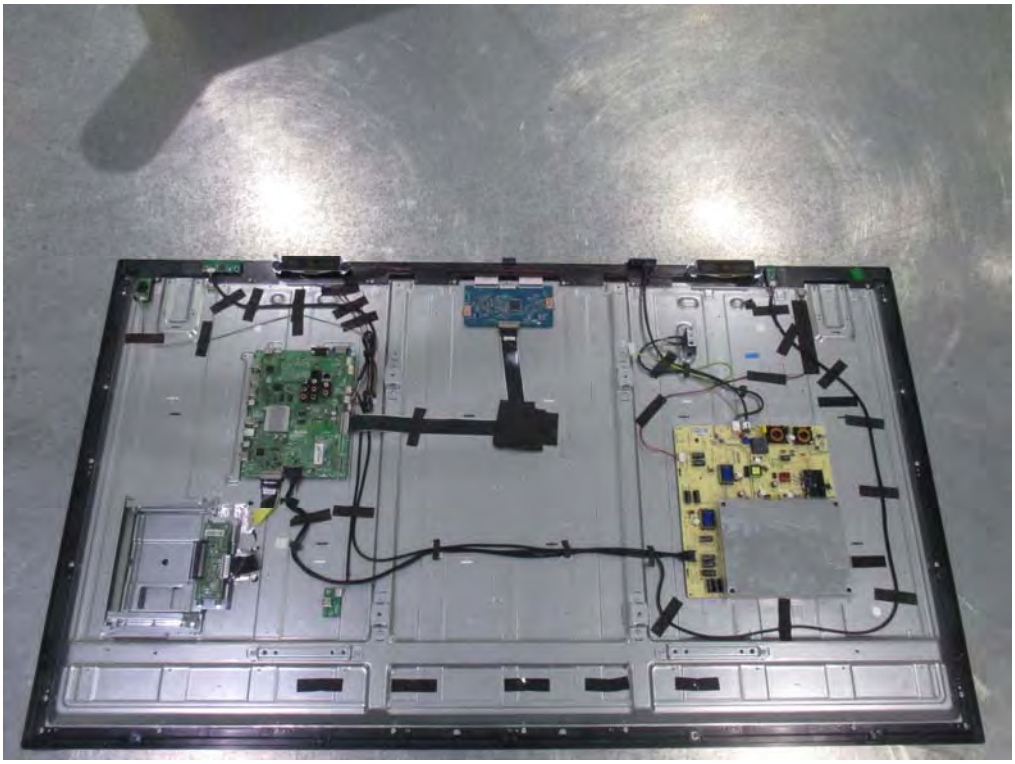


(7) EUT Photo

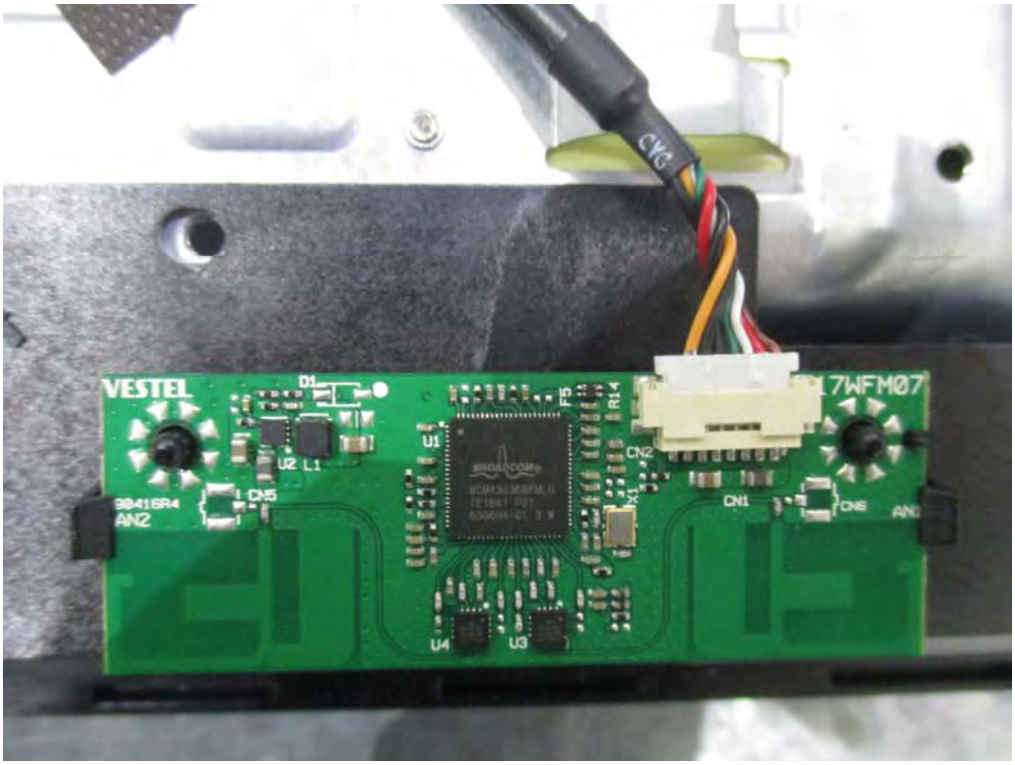
Attachment 3

- **EUT Internal Photograph**

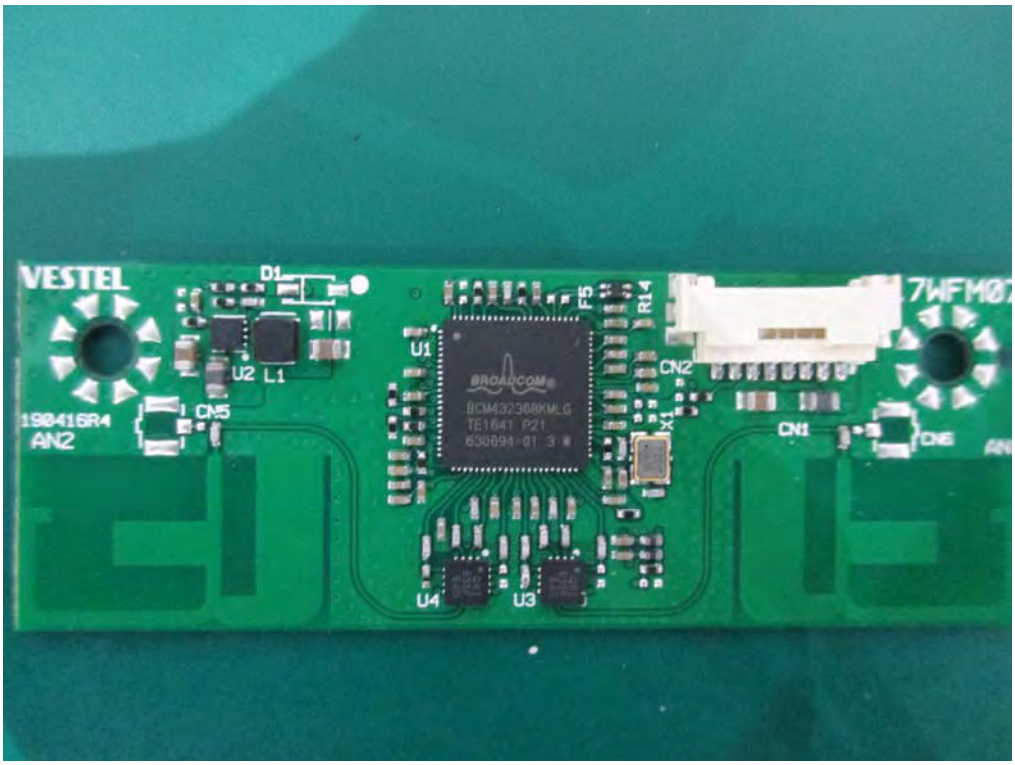
(1) EUT Photo



(2) EUT Photo

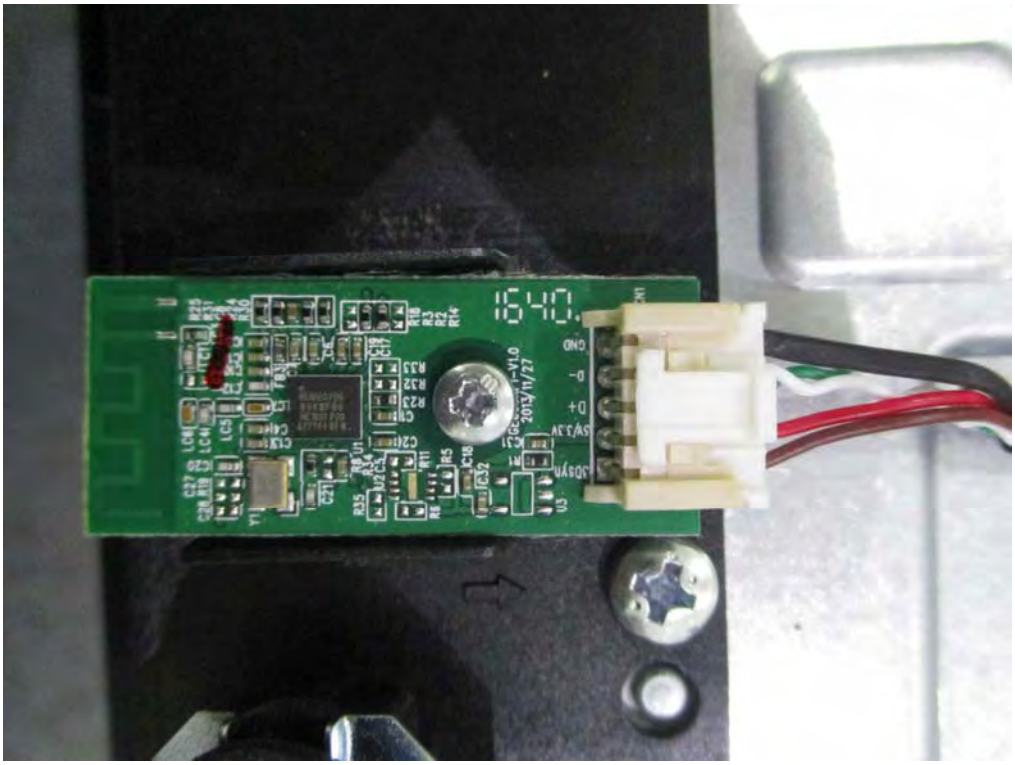


(3) EUT Photo (WiFi)

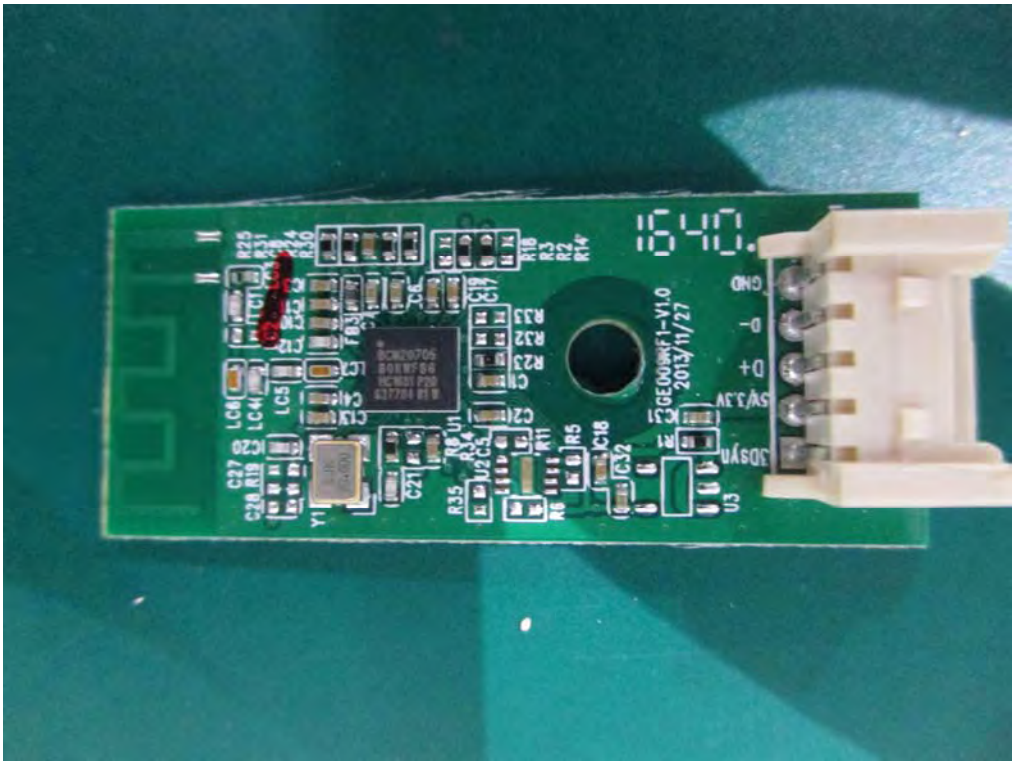


(4) EUT Photo

(5) EUT Photo (BT)

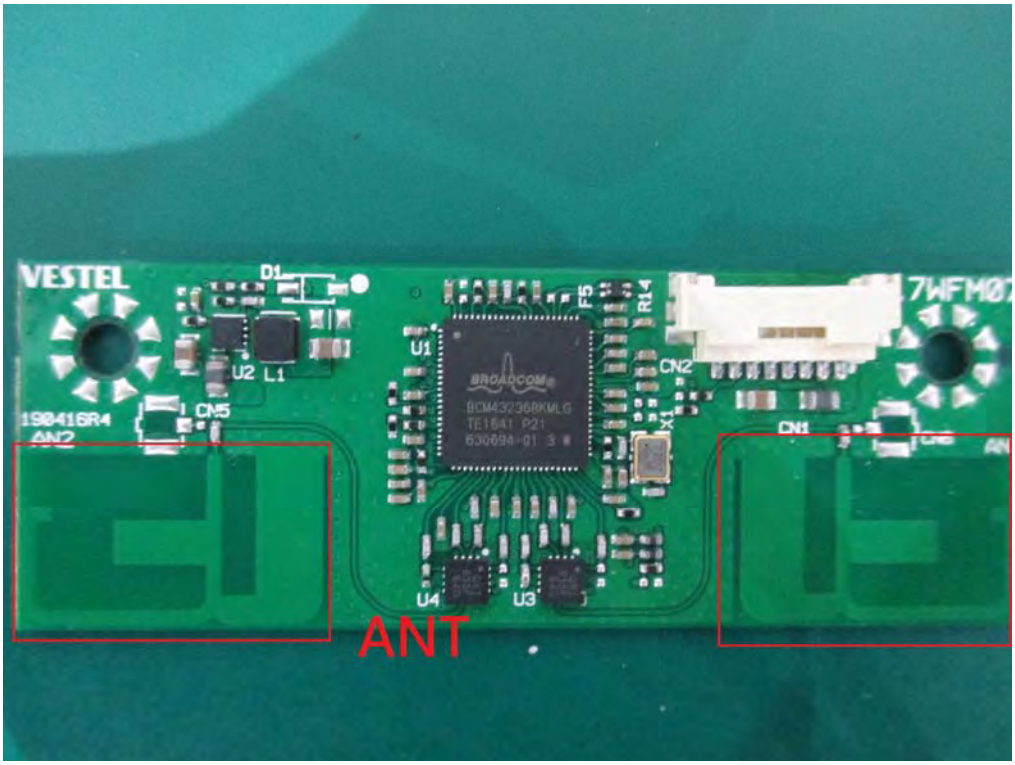


(6) EUT Photo



(7) EUT Photo

(8) EUT Photo (WLAN)(Antenna Location)



(9) EUT Photo (BT)(Antenna Location)