FCC Test Report

Product Name	：	UHD551-L
Trade Name	：	Vestel
Model No.	：	UHD551-L
FCC ID.	：	XU6-UHD551L

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

Date of Receipt	：	Mar. 28, 2017
Issued Date	：	Apr. 20, 2017
Report No.	：	1740037R-RFUSP27V00-A
Report Version	：	V1.0

Testing Laboratory
3024

Test Report Certification

Issued Date : Apr. 20, 2017
Report No. : 1740037R-RFUSP27V00-A

Product Name	:	UHD551-L
Applicant	:	VESTEL TRADE CO.
Address	:	Organize Sanayi Bölgesi (45030) Manisa/Türkiye
Manufacturer	:	VESTEL TRADE CO.
Model No.	:	UHD551-L
FCC ID.	:	XU6-UHD551L
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

(Lyla Yang / Engineering Adm. Assistant)

Tested By : Carter Hsu

(Carter Hsu / Senior Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1740037R-RFUSP27V00-A	V1.0	Initial issue of report	Apr. 20, 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	UHD551-L
Trade Name	Vestel
Model No.	UHD551-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 UHD551-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 1740037R-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

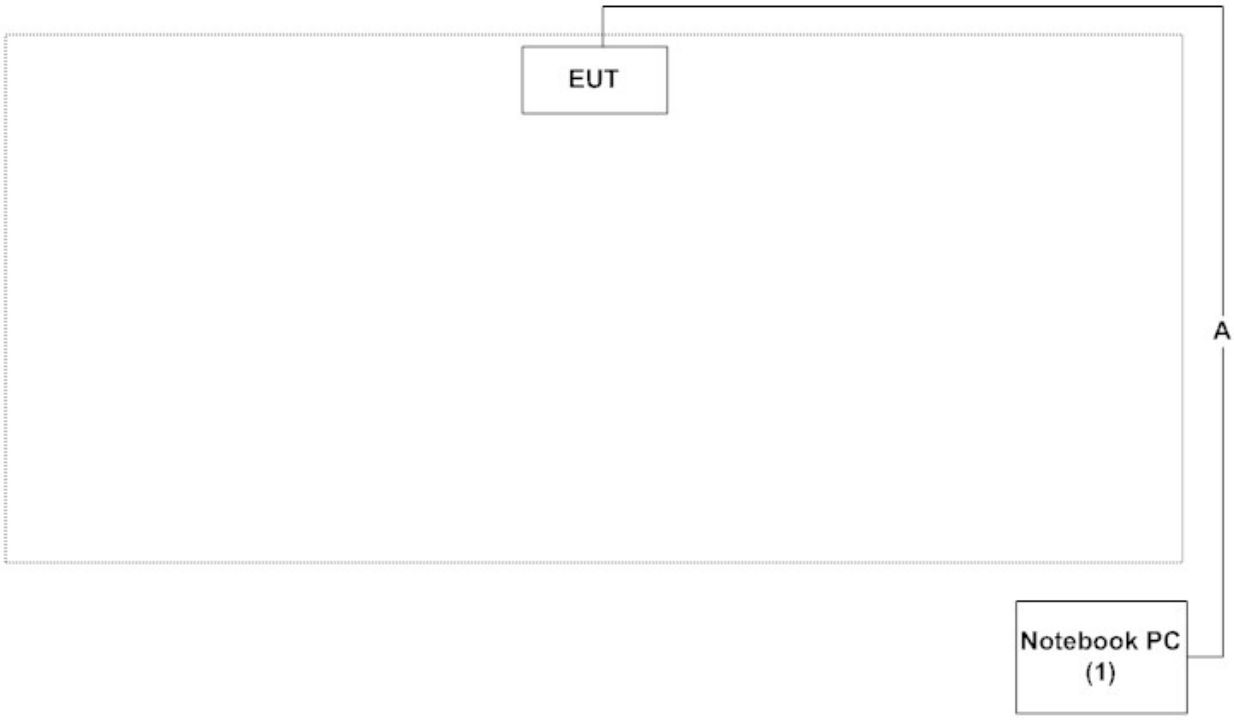
1.3. Tested System Details

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

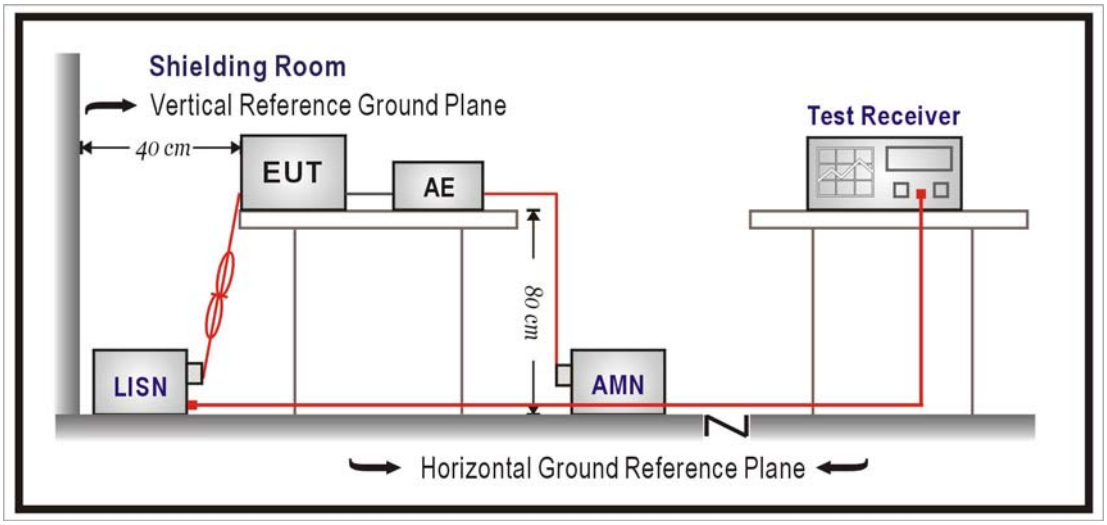
The following test equipments are used during the test:

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

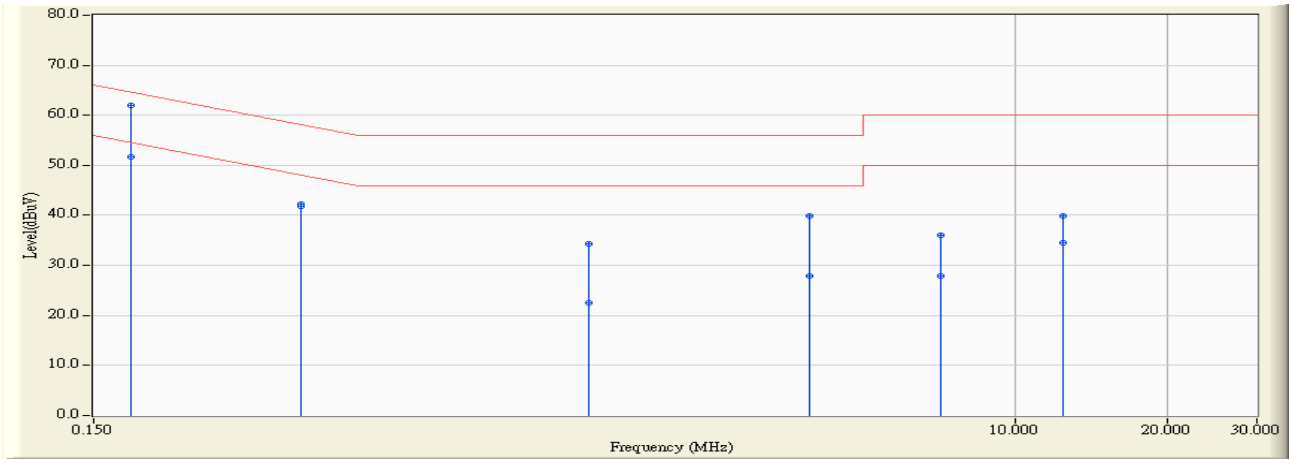
According to FCC Part 15 Subpart C Paragraph 15.207: 2015

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2-H	**Time : 2017/04/13**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2-H_LISN(16A)-6_0712 - Line1	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

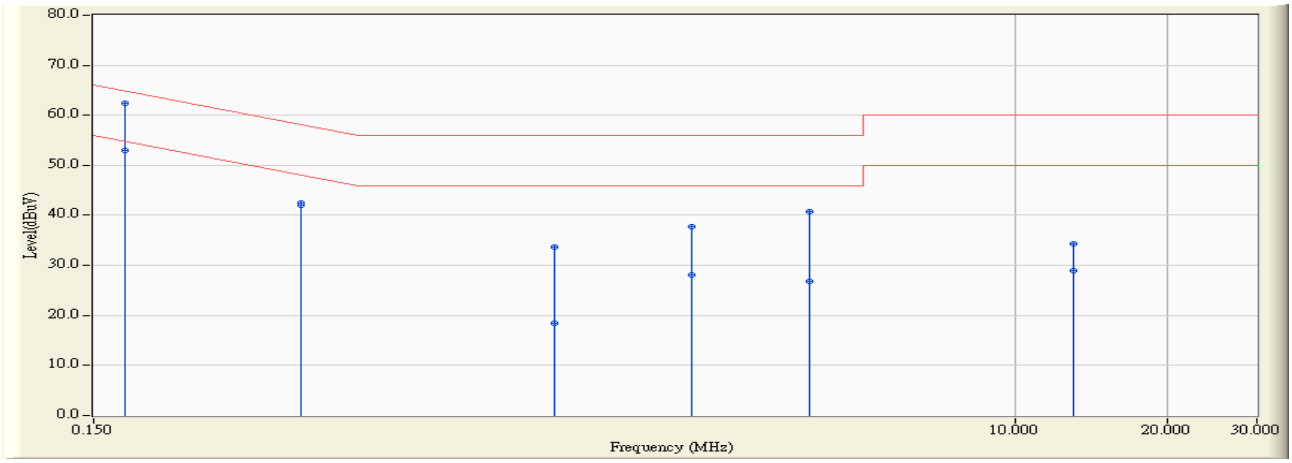


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.177	9.752	52.180	61.932	-2.677	64.609	QUASIPEAK
2		0.177	9.752	41.920	51.672	-2.937	54.609	AVERAGE
3		0.384	9.732	32.490	42.222	-15.963	58.184	QUASIPEAK
4		0.384	9.732	32.140	41.872	-6.313	48.184	AVERAGE
5		1.431	9.837	24.420	34.257	-21.743	56.000	QUASIPEAK
6		1.431	9.837	12.660	22.497	-23.503	46.000	AVERAGE
7		3.916	9.918	29.960	39.878	-16.122	56.000	QUASIPEAK
8		3.916	9.918	18.030	27.948	-18.052	46.000	AVERAGE
9		7.115	10.010	26.000	36.010	-23.990	60.000	QUASIPEAK
10		7.115	10.010	17.960	27.970	-22.030	50.000	AVERAGE
11		12.373	10.172	29.800	39.973	-20.027	60.000	QUASIPEAK
12		12.373	10.172	24.410	34.583	-15.417	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 : 2017/04/13**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2-H_LISN(16A)-6_0712 - Line2	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.753	52.600	62.353	-2.441	64.794	QUASIPEAK
2	*	0.173	9.753	43.310	53.063	-1.731	54.794	AVERAGE
3		0.384	9.750	32.710	42.460	-15.724	58.184	QUASIPEAK
4		0.384	9.750	32.250	42.000	-6.184	48.184	AVERAGE
5		1.220	9.827	23.940	33.767	-22.233	56.000	QUASIPEAK
6		1.220	9.827	8.650	18.477	-27.523	46.000	AVERAGE
7		2.287	9.849	27.870	37.719	-18.281	56.000	QUASIPEAK
8		2.287	9.849	18.200	28.049	-17.951	46.000	AVERAGE
9		3.900	9.841	30.860	40.701	-15.299	56.000	QUASIPEAK
10		3.900	9.841	16.970	26.811	-19.189	46.000	AVERAGE
11		12.982	10.246	24.160	34.405	-25.595	60.000	QUASIPEAK
12		12.982	10.246	18.650	28.895	-21.105	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

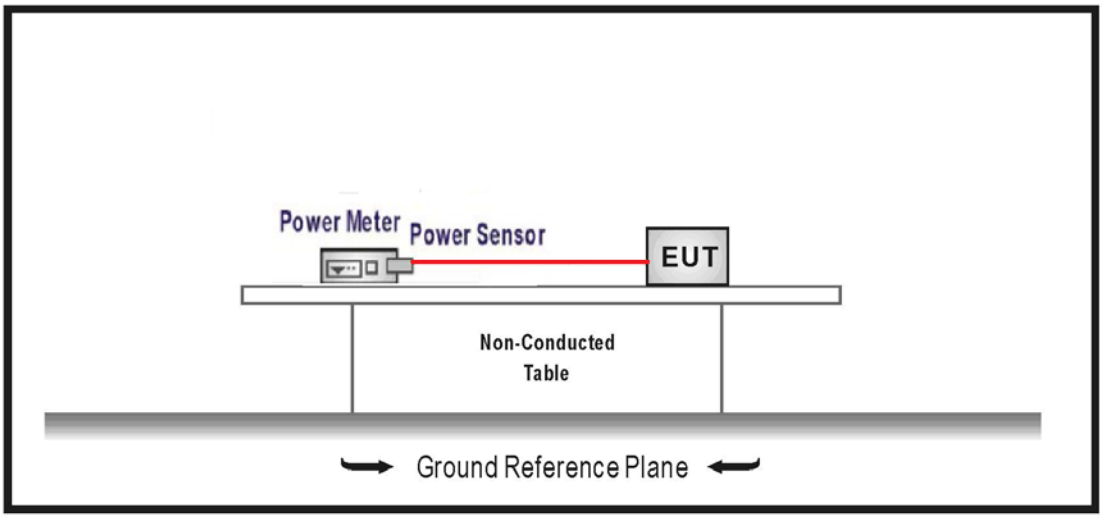
The following test equipment is used during the test:

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	UHD551-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:

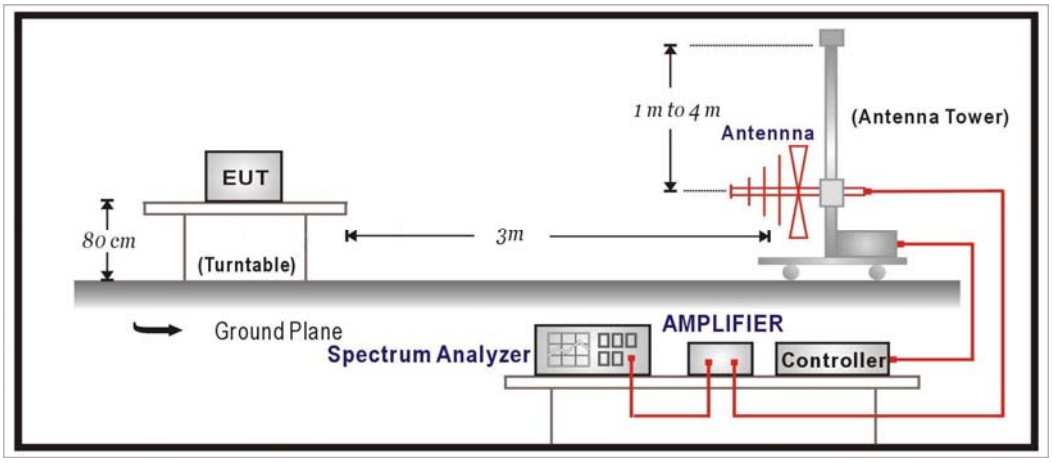
Radiated Emission / CB4-H

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

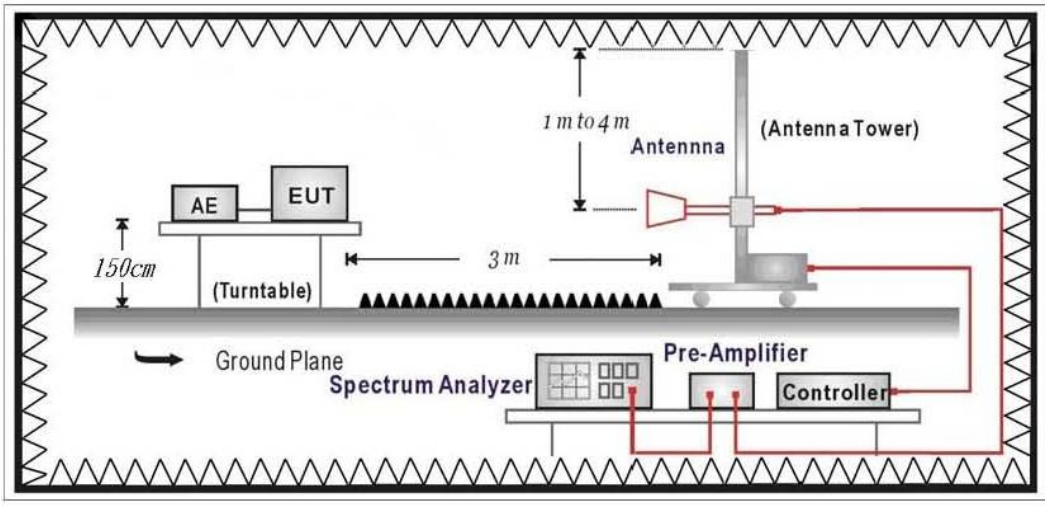
Note: All equipments that need to calibrate are with calibration period of 1 year.

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.

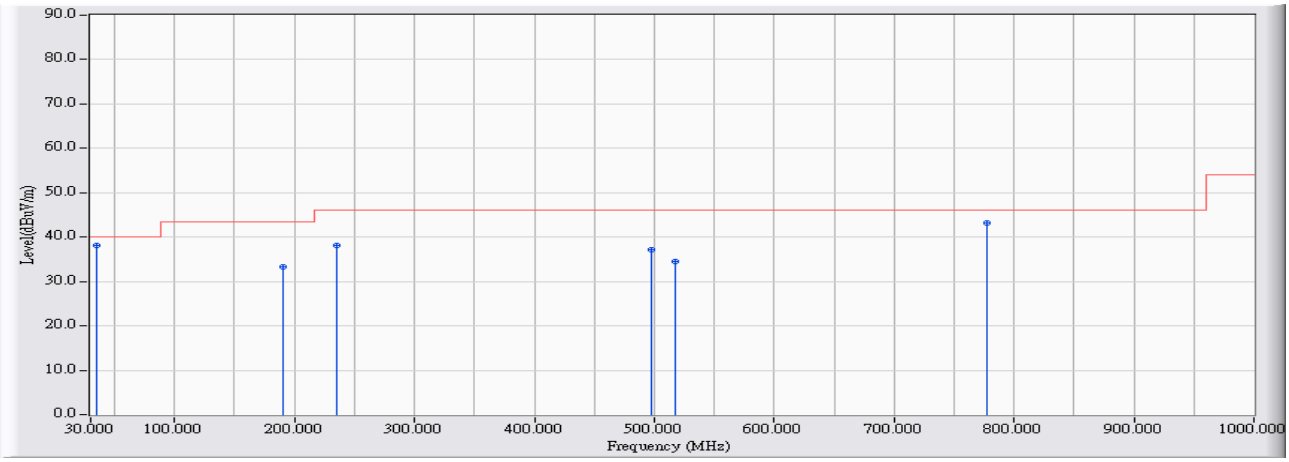
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.6. Test Result

30MHz-1GHz Spurious

Site : CB4-H	**Time : 2017/04/13**
Limit : FCC_CLASS_B_03M_QP	**Margin : 0**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

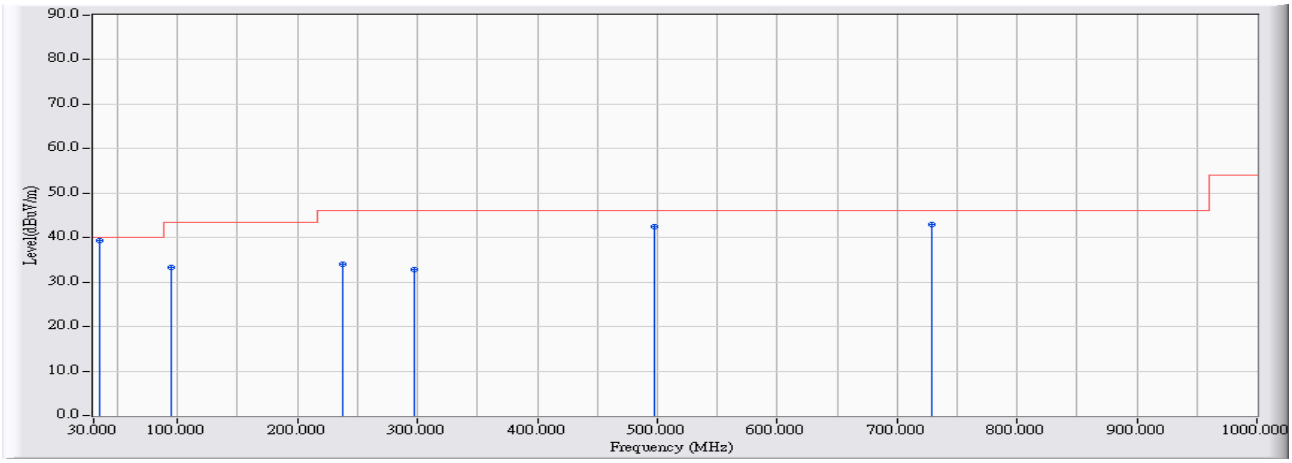


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	34.850	-16.784	54.865	38.081	-1.919	40.000	QUASIPEAK
2		190.050	-23.590	56.965	33.376	-10.124	43.500	QUASIPEAK
3		235.640	-21.087	59.097	38.010	-7.990	46.000	QUASIPEAK
4		497.540	-14.083	51.175	37.092	-8.908	46.000	QUASIPEAK
5		517.910	-13.563	48.047	34.484	-11.516	46.000	QUASIPEAK
6		776.900	-9.835	52.990	43.155	-2.845	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 : 2017/04/13**
Limit : FCC_CLASS_B_03M_QP	**Margin : 0**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**



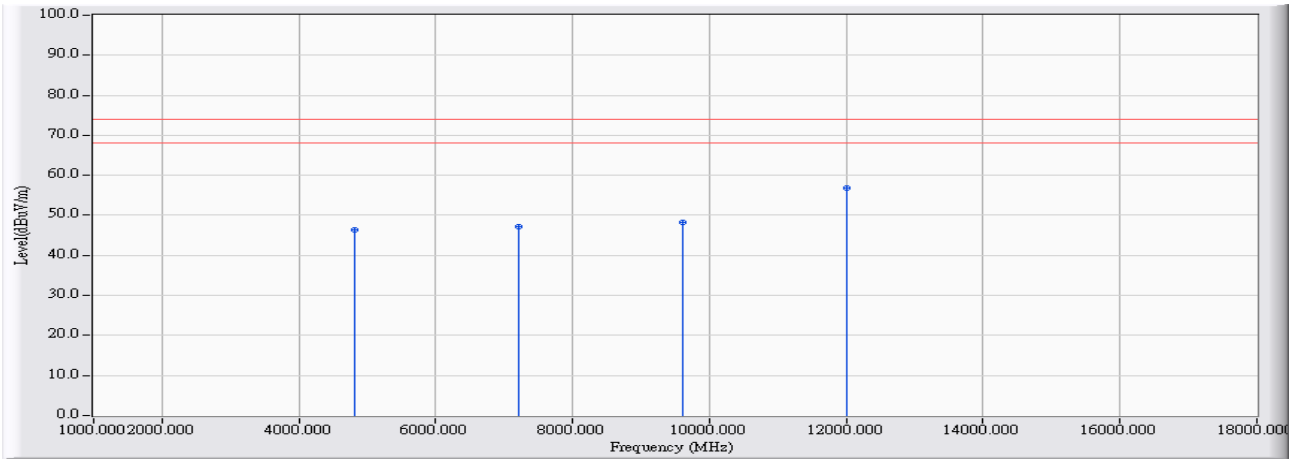
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	35.335	-16.750	56.065	39.315	-0.685	40.000	QUASIPEAK
2		94.505	-24.554	57.787	33.233	-10.267	43.500	QUASIPEAK
3		237.095	-21.005	54.992	33.987	-12.013	46.000	QUASIPEAK
4		297.235	-19.379	52.175	32.797	-13.203	46.000	QUASIPEAK
5		497.540	-14.083	56.576	42.493	-3.507	46.000	QUASIPEAK
6		729.370	-10.583	53.524	42.942	-3.058	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2402MHz**

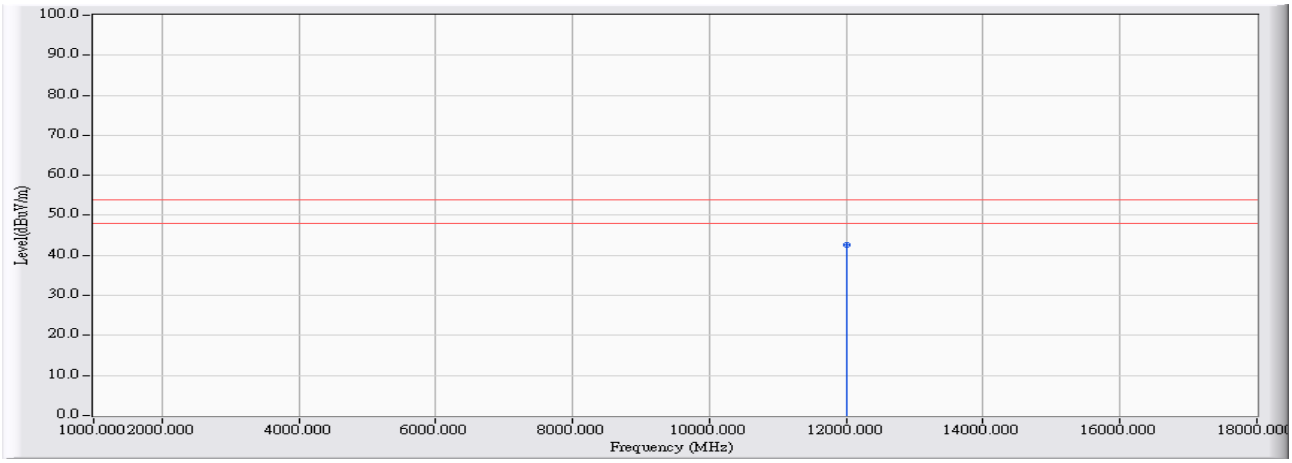


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	7.579	38.760	46.339	-27.661	74.000	PEAK
2		7206.000	14.387	32.930	47.318	-26.682	74.000	PEAK
3		9608.000	17.645	30.580	48.225	-25.775	74.000	PEAK
4	*	12010.000	26.454	30.290	56.743	-17.257	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2402MHz**

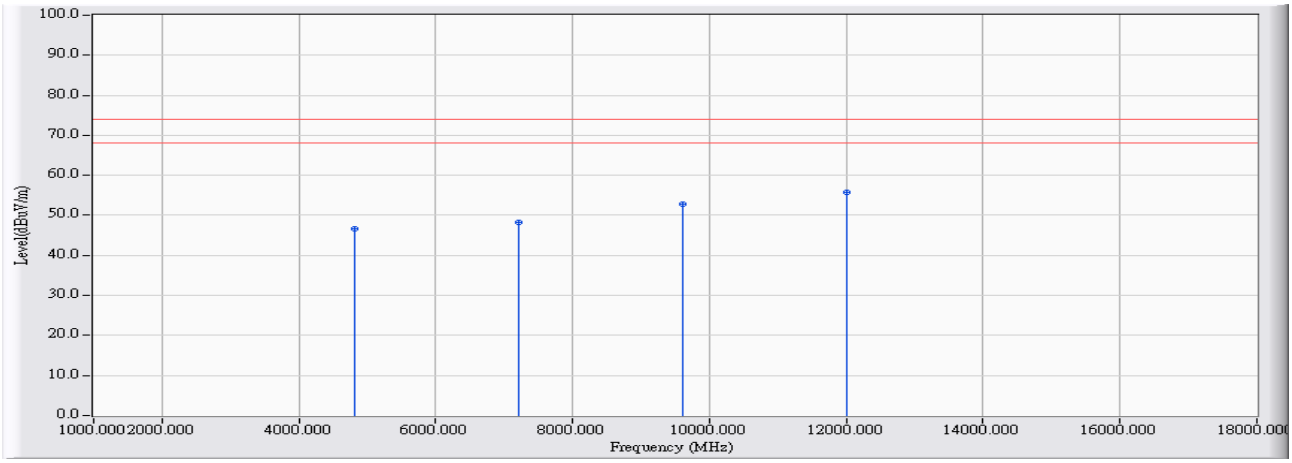


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12010.000	26.454	16.170	42.623	-11.377	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2402MHz**

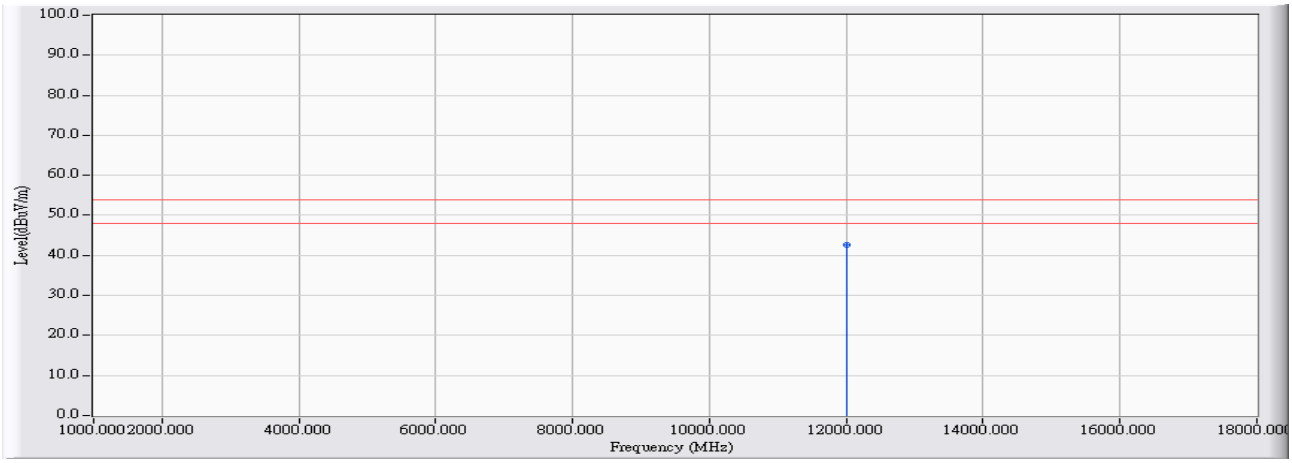


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	7.579	38.980	46.559	-27.441	74.000	PEAK
2		7206.000	16.160	32.150	48.311	-25.689	74.000	PEAK
3		9608.000	21.887	30.950	52.838	-21.162	74.000	PEAK
4	*	12010.000	26.454	29.400	55.853	-18.147	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2402MHz**

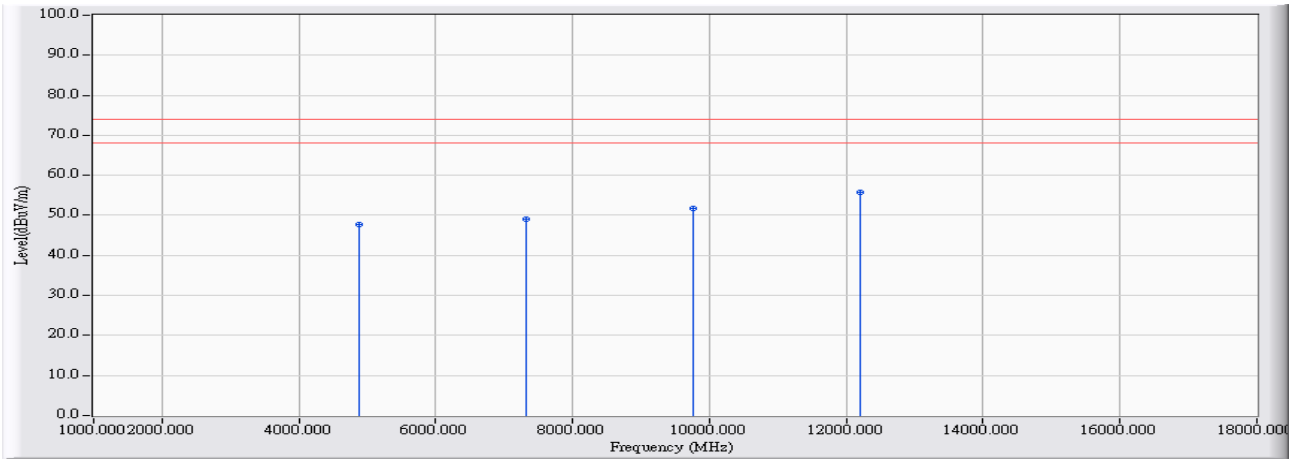


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12010.000	26.454	16.240	42.693	-11.307	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2440MHz**

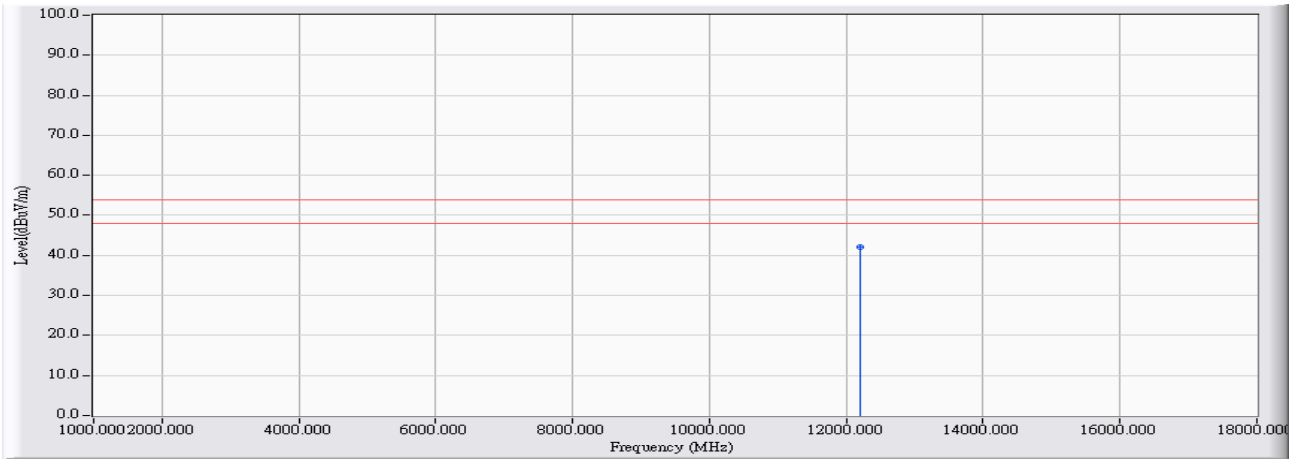


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	7.843	39.790	47.633	-26.367	74.000	PEAK
2		7320.000	16.716	32.330	49.045	-24.955	74.000	PEAK
3		9760.000	22.239	29.560	51.799	-22.201	74.000	PEAK
4	*	12200.000	26.301	29.510	55.811	-18.189	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2440MHz**

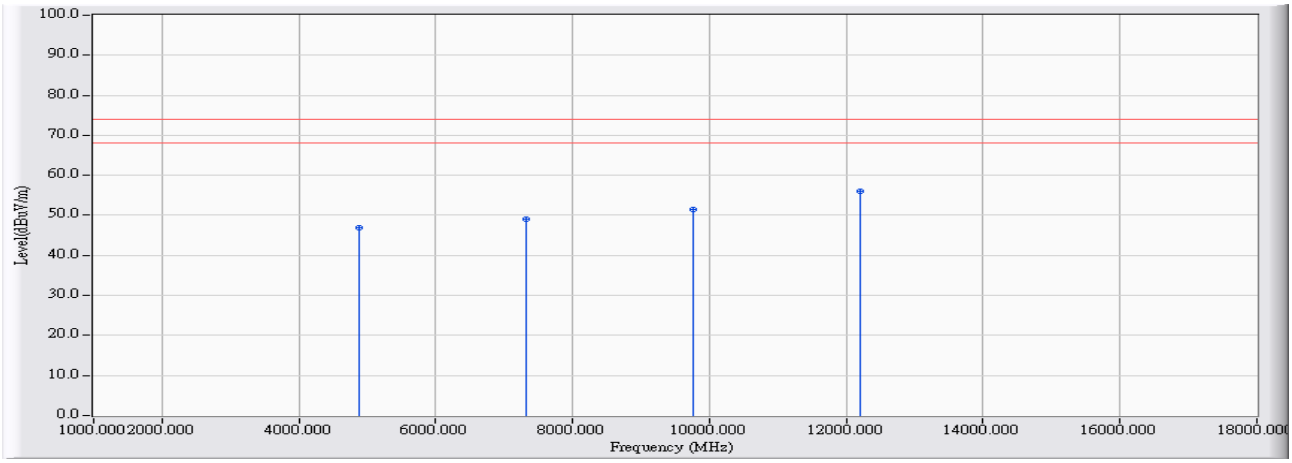


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12200.000	26.301	15.770	42.071	-11.929	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2440MHz**

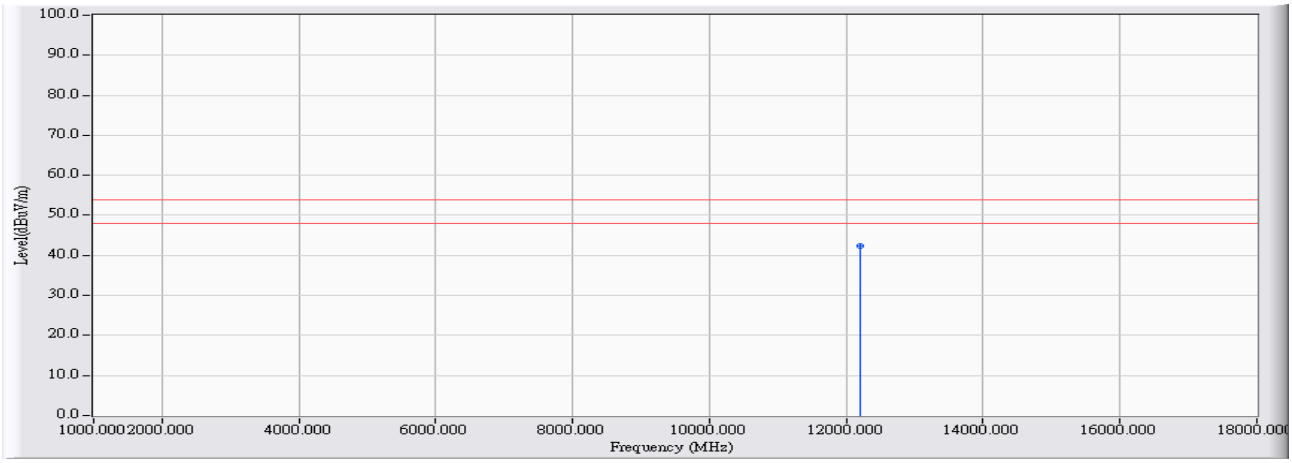


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	7.843	39.150	46.993	-27.007	74.000	PEAK
2		7320.000	16.716	32.240	48.955	-25.045	74.000	PEAK
3		9760.000	22.239	29.170	51.409	-22.591	74.000	PEAK
4	*	12200.000	26.301	29.650	55.951	-18.049	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2440MHz**

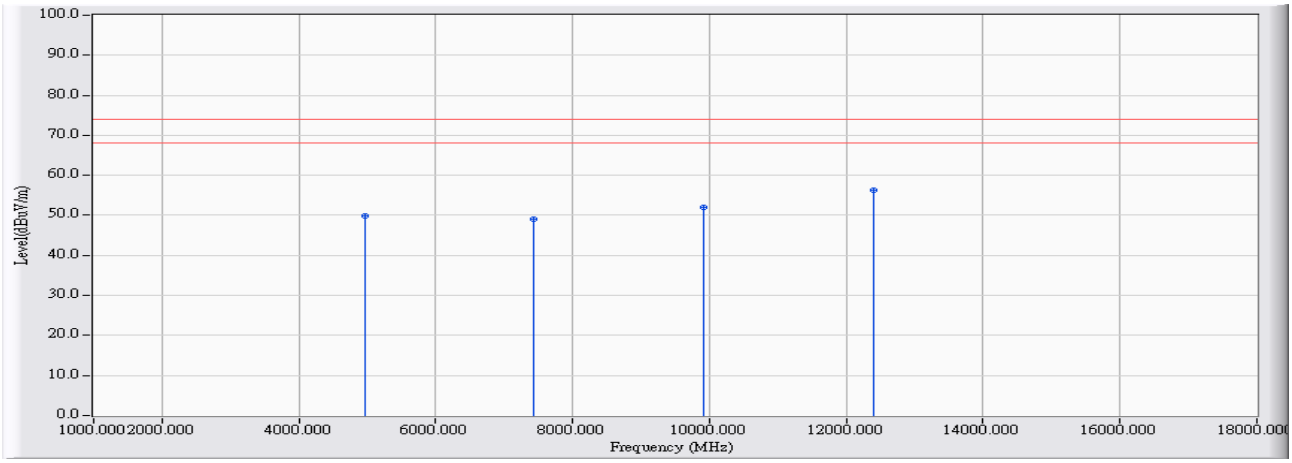


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12200.000	26.301	16.180	42.481	-11.519	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2480MHz**

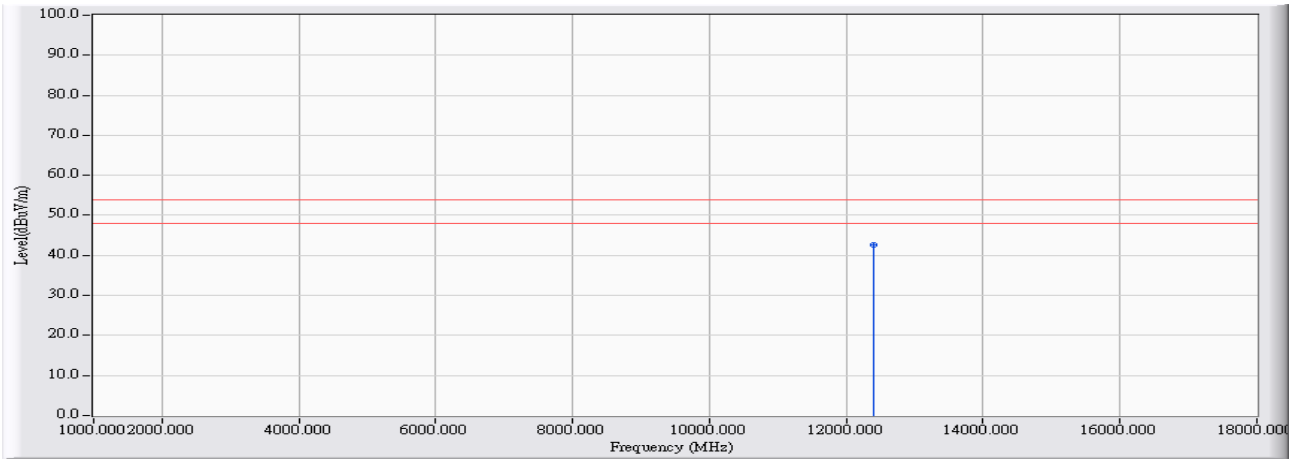


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	8.121	41.650	49.771	-24.229	74.000	PEAK
2		7440.000	17.278	31.890	49.167	-24.833	74.000	PEAK
3		9920.000	22.512	29.510	52.022	-21.978	74.000	PEAK
4	*	12400.000	26.150	30.220	56.370	-17.630	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 : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2480MHz**

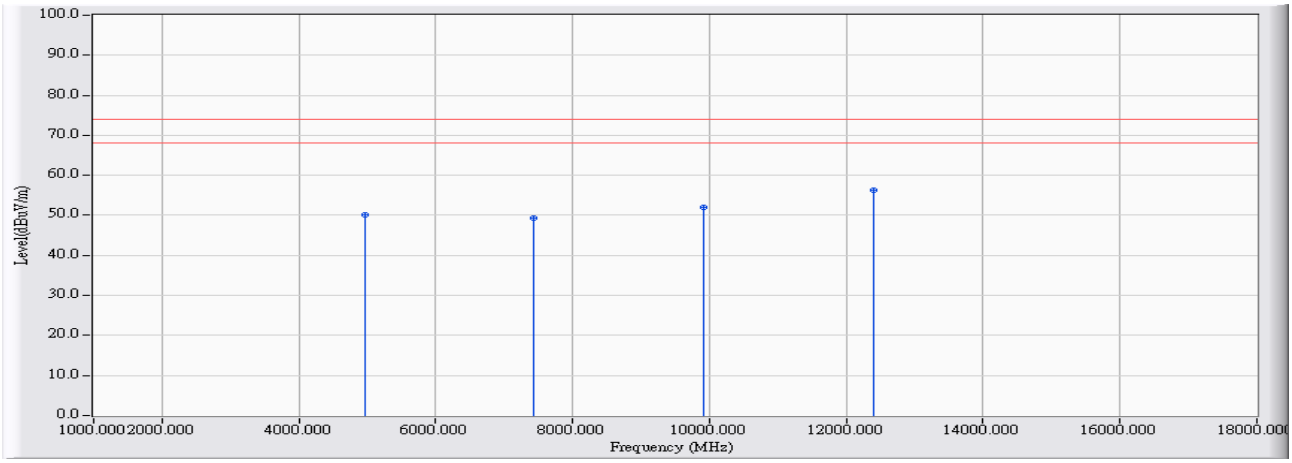


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12400.000	26.150	16.460	42.610	-11.390	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/04/08**
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 : UHD551-L	**Note : Mode 1: Tx_2480MHz**

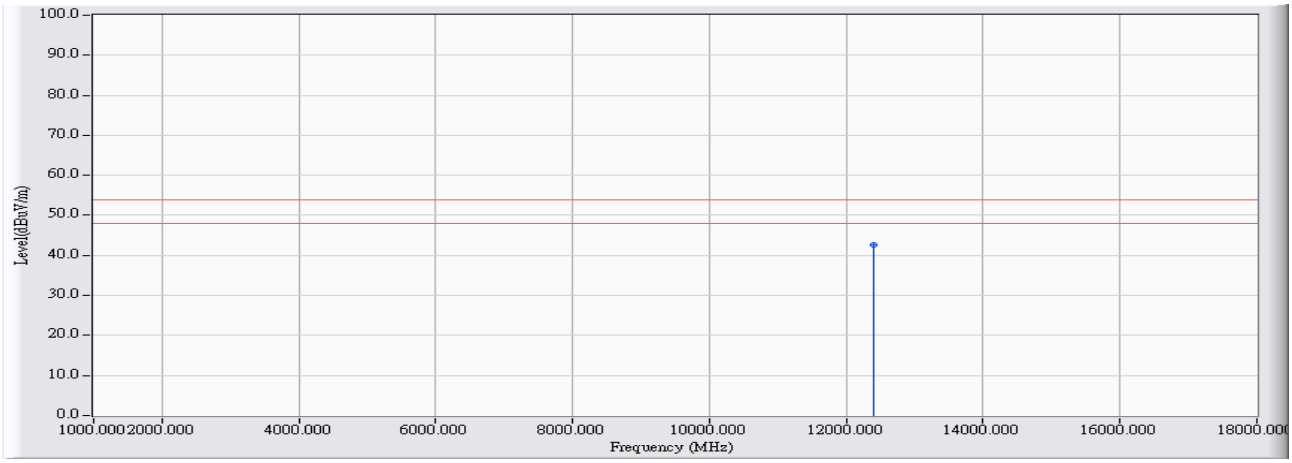


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	8.121	41.880	50.001	-23.999	74.000	PEAK
2		7440.000	17.278	32.180	49.457	-24.543	74.000	PEAK
3		9920.000	22.512	29.450	51.962	-22.038	74.000	PEAK
4	*	12400.000	26.150	30.040	56.190	-17.810	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 : 2017/04/08**
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 : UHD551-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	*	12400.000	26.150	16.430	42.580	-11.420	54.000	AVERAGE

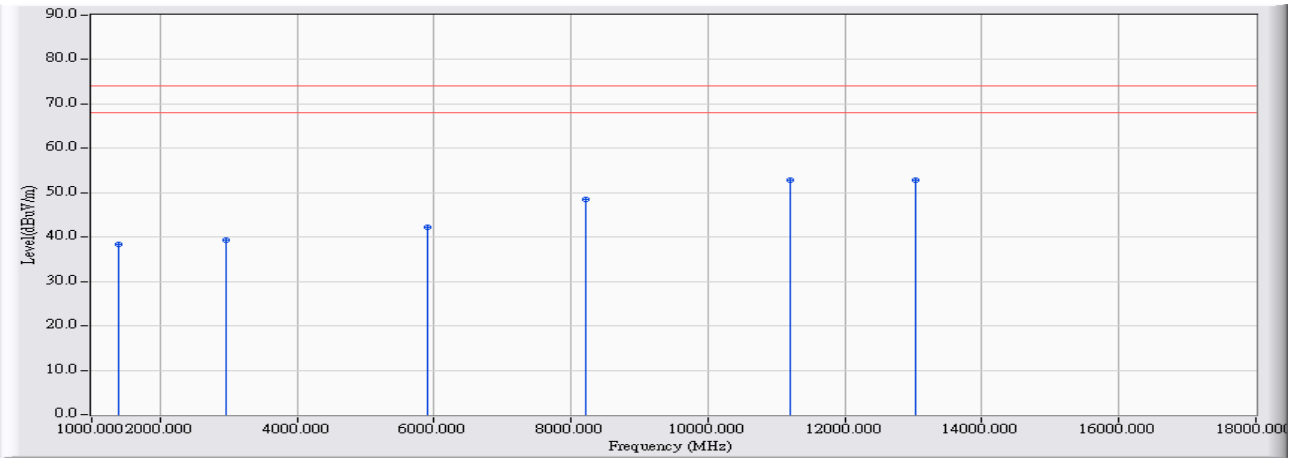
Note:

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.
7. The Emission above 13GHz were not included is because their levels are too low.

4.7. Test Result for Co-location

Section 15.247 Subclause (d). Emission limitations radiated (Transmitter)
The test was performed with the equipment transmitting first in only 2.4 GHz BT mode and repeated with the 5 GHz WiFi radio transmitting simultaneously to check the impact of the co-location of both radio interfaces. The results and plots below show the worst results obtained in both modes.

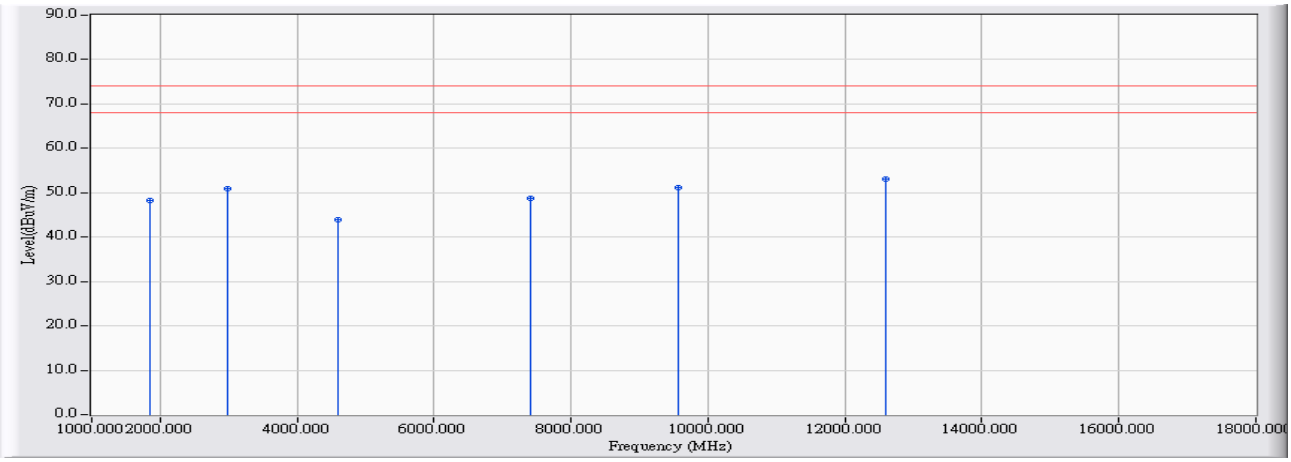
Site : CB4-H	**Time : 2017/05/04**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : BT + WiFi 5G _co-location mode**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1382.500	-4.317	42.586	38.269	-35.731	74.000	PEAK
2		2963.500	1.684	37.537	39.221	-34.779	74.000	PEAK
3		5913.000	9.878	32.240	42.119	-31.881	74.000	PEAK
4		8208.000	16.916	31.554	48.470	-25.530	74.000	PEAK
5		11191.500	25.381	27.397	52.778	-21.222	74.000	PEAK
6	*	13036.000	25.597	27.242	52.839	-21.161	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 = 1MHz, 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 : 2017/05/04**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz**
EUT : UHD551-L	**Note : BT + WiFi 5G _co-location mode**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1858.500	-2.517	50.857	48.341	-25.659	74.000	PEAK
2		2980.500	1.750	49.213	50.963	-23.037	74.000	PEAK
3		4587.000	6.861	37.012	43.873	-30.127	74.000	PEAK
4		7417.500	16.851	31.784	48.634	-25.366	74.000	PEAK
5		9559.500	21.595	29.475	51.069	-22.931	74.000	PEAK
6	*	12585.500	25.343	27.634	52.977	-21.023	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 = 1MHz, 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:

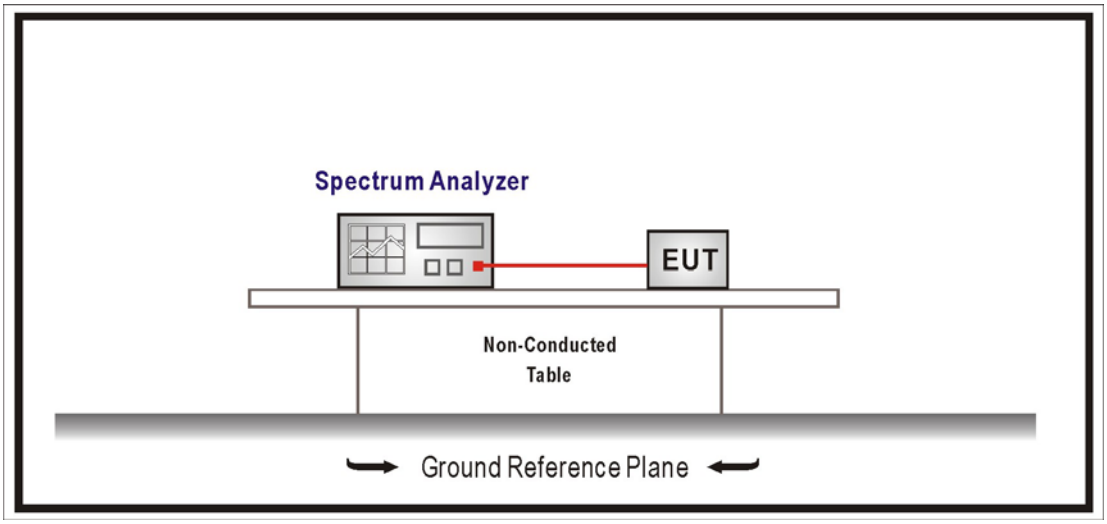
RF antenna conducted test / SR10-H

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

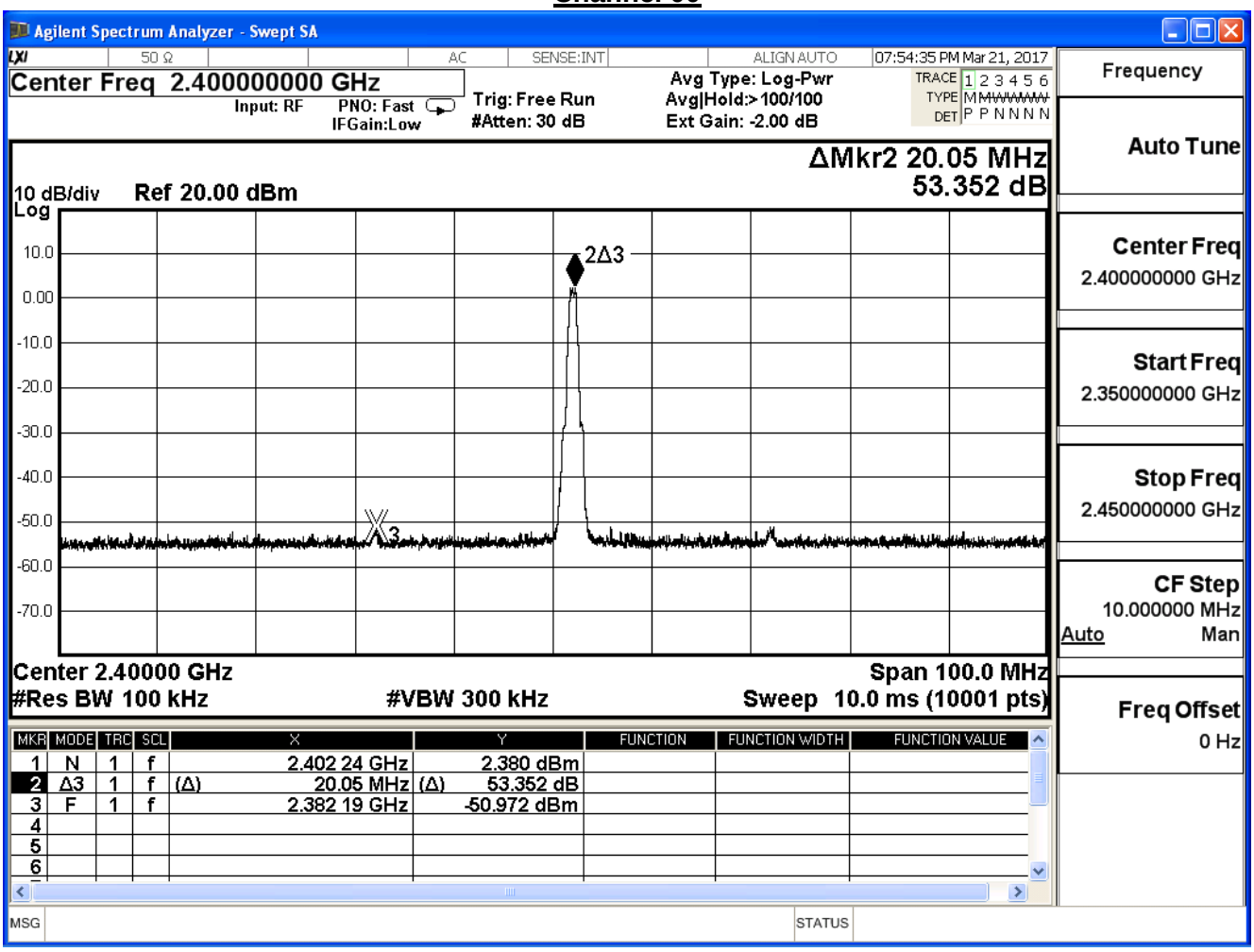
5.6. Test Result

Product	UHD551-L		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

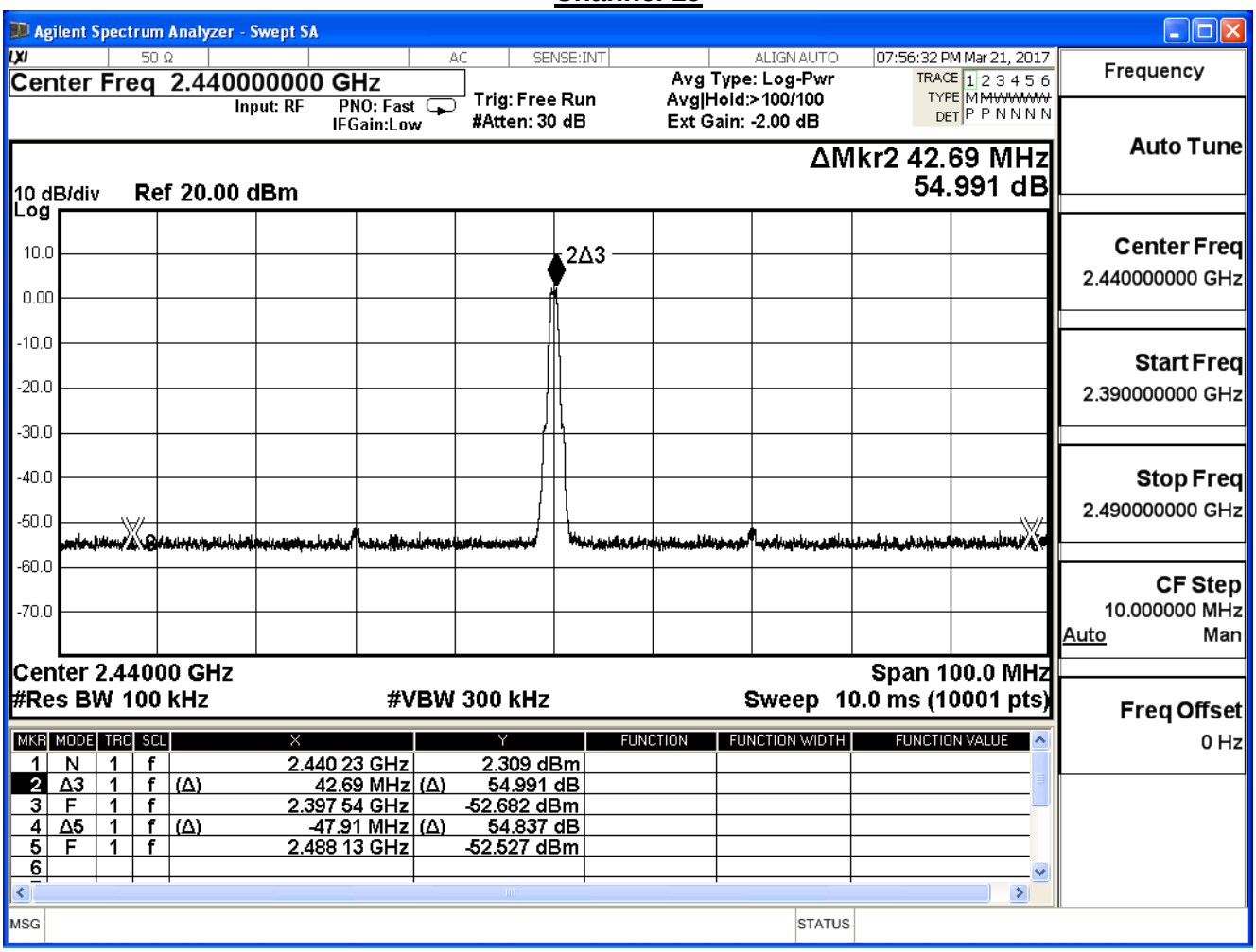
GFSK

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

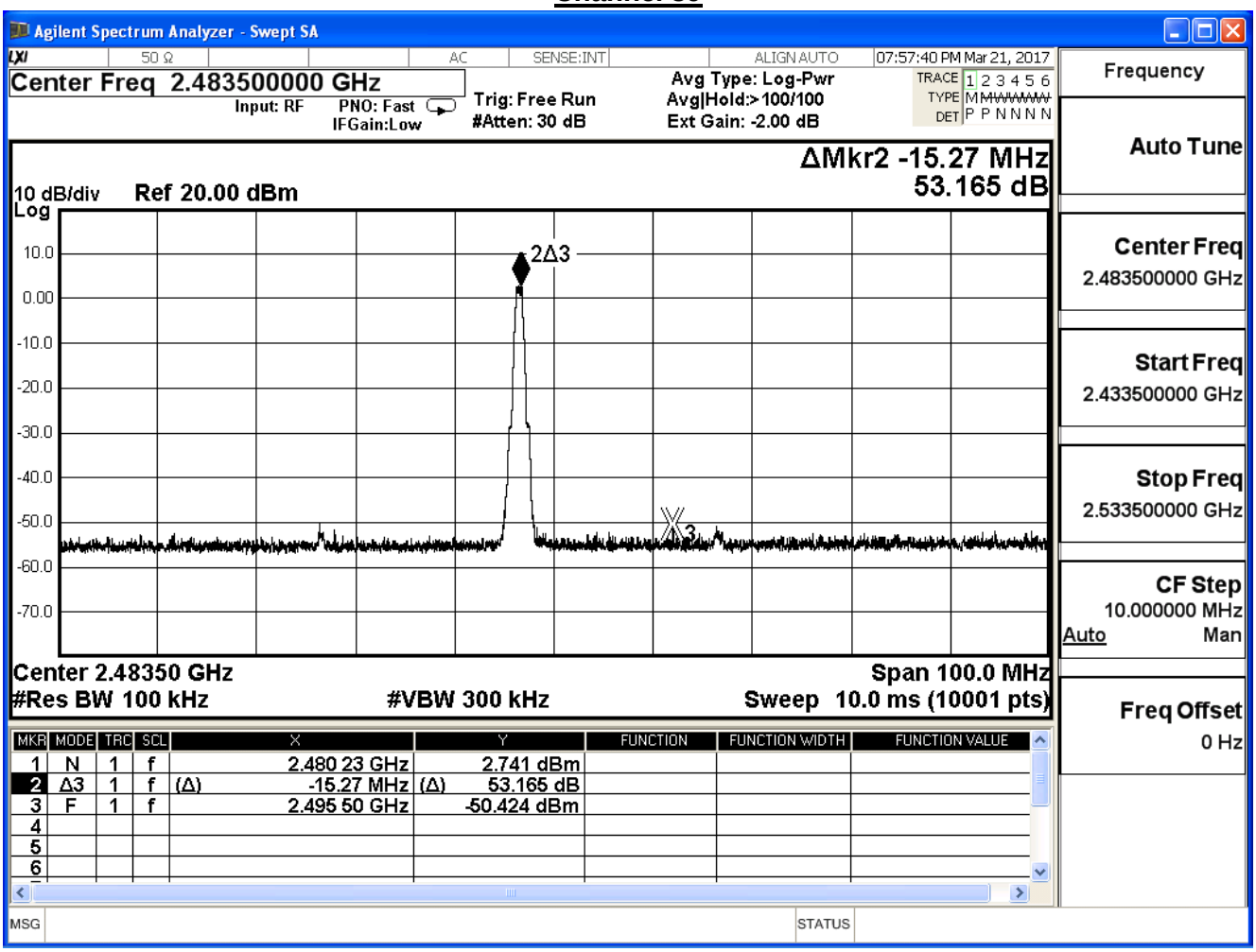
Channel 00



Channel 19

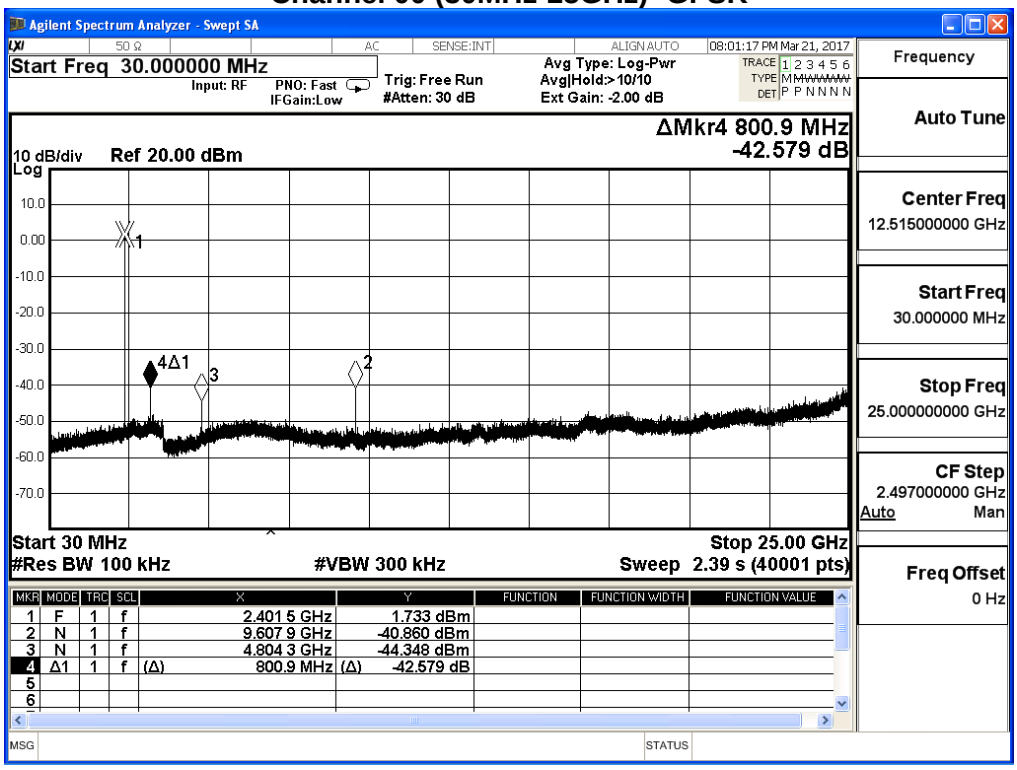

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.440000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
07:56:32 PM Mar 21, 2017
ΔMkr2 42.69 MHz
54.991 dB
10 dB/div
Log
Ref 20.00 dBm
2Δ3
Center 2.44000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 100.0 MHz
Sweep 10.0 ms (10001 pts)
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
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

Channel 39

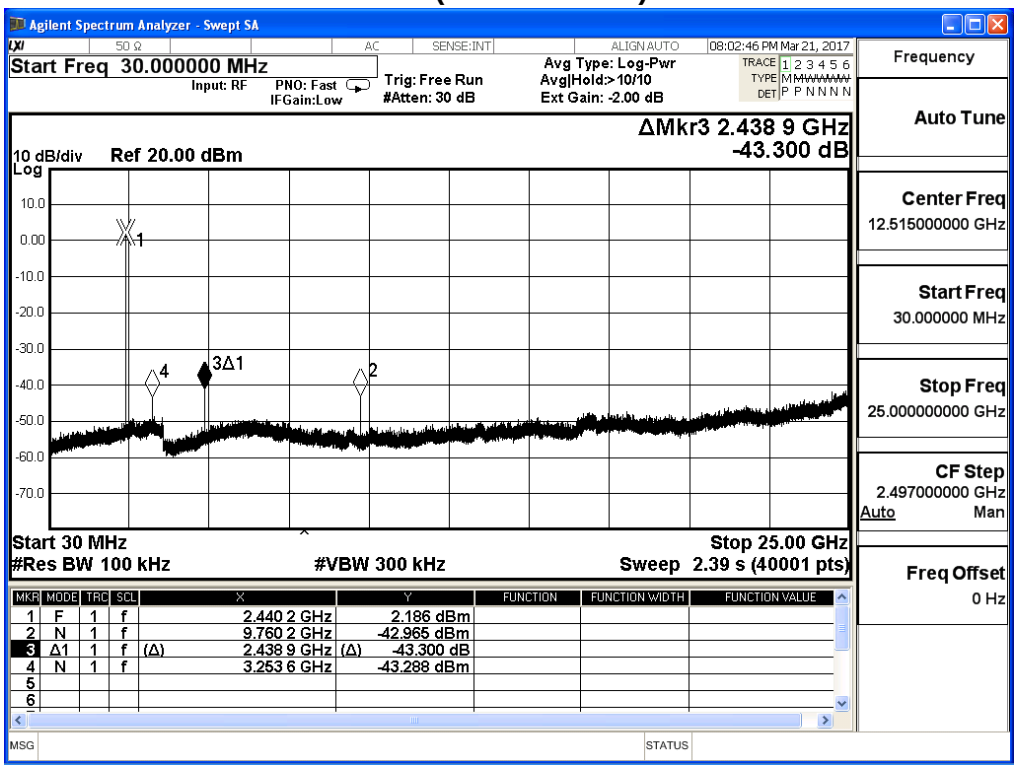

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.483500000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -2.00 dB
07:57:40 PM Mar 21, 2017
ΔMkr2 -15.27 MHz
53.165 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
2Δ3
Center 2.48350 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 2.480 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
MSG
STATUS

Product	UHD551-L		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

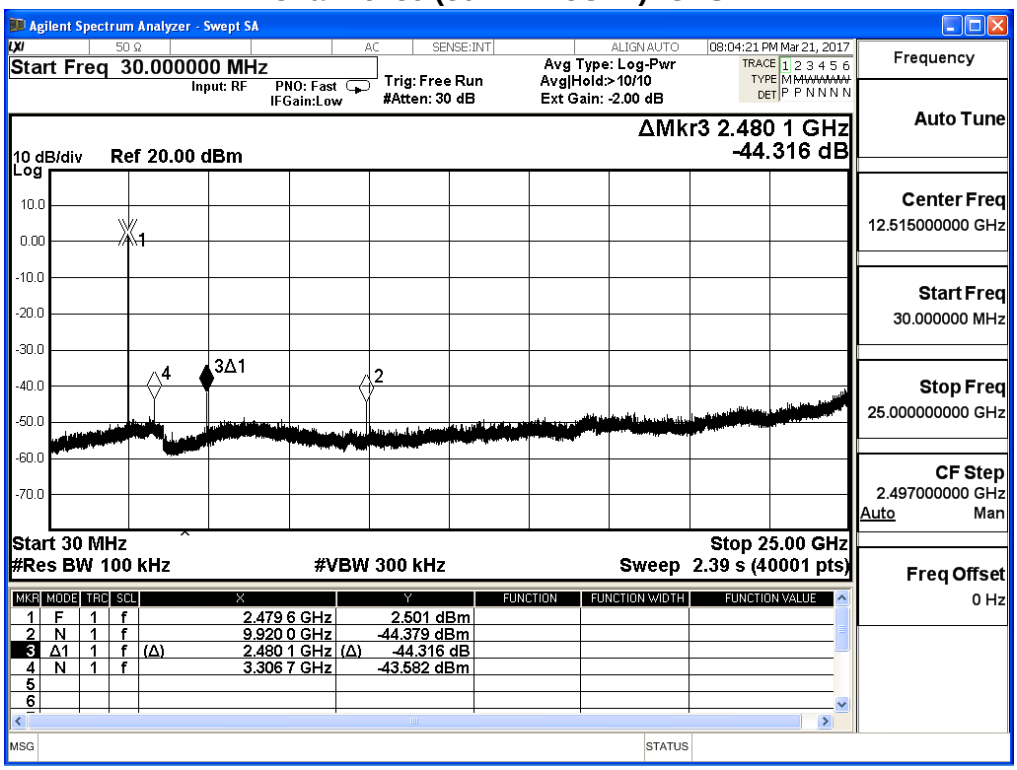
Channel 00 (30MHz-25GHz)- GFSK



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:

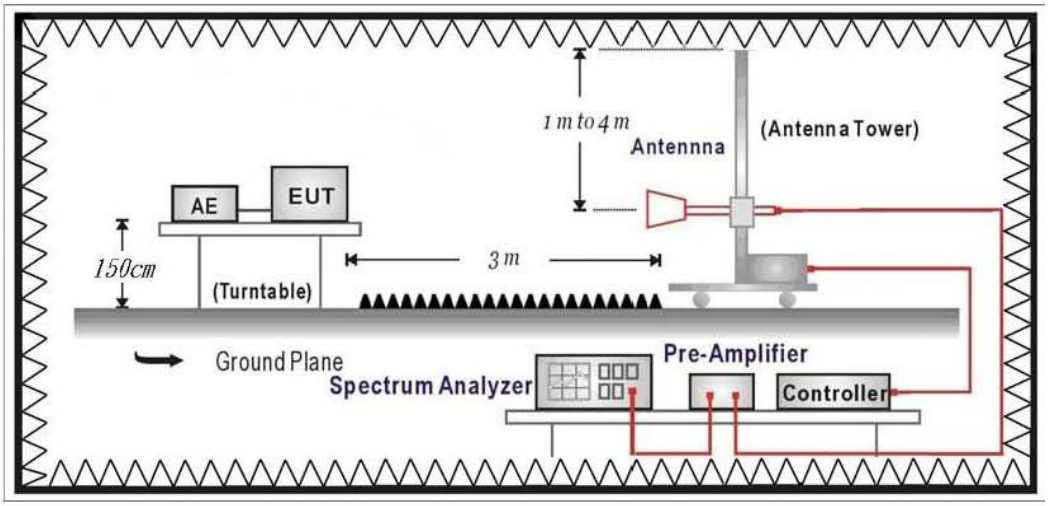
Band Edge / CB4-H

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.

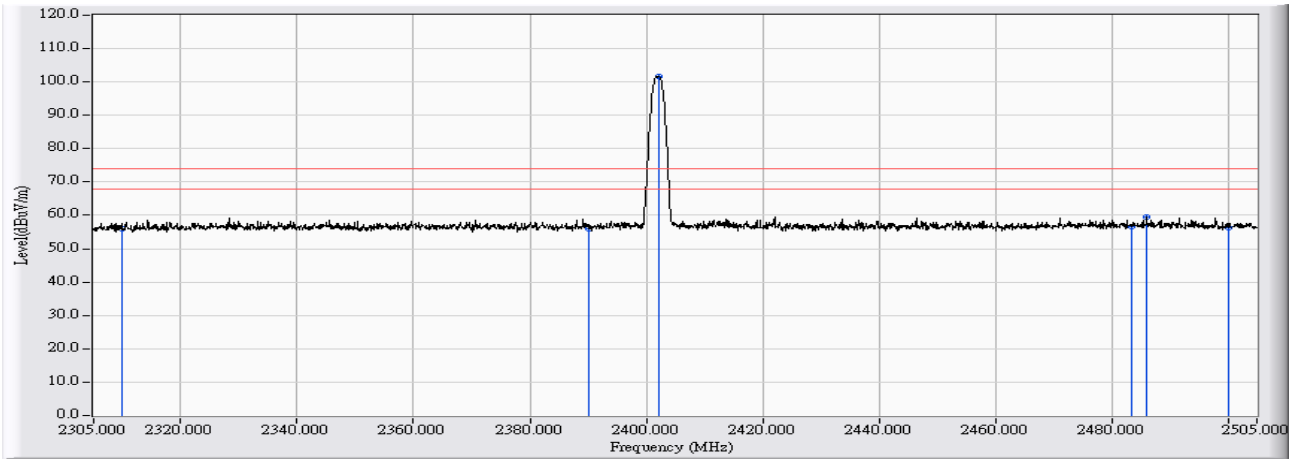
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

6.6. Test Result

Site : CB4-H	**Time : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2402MHz**

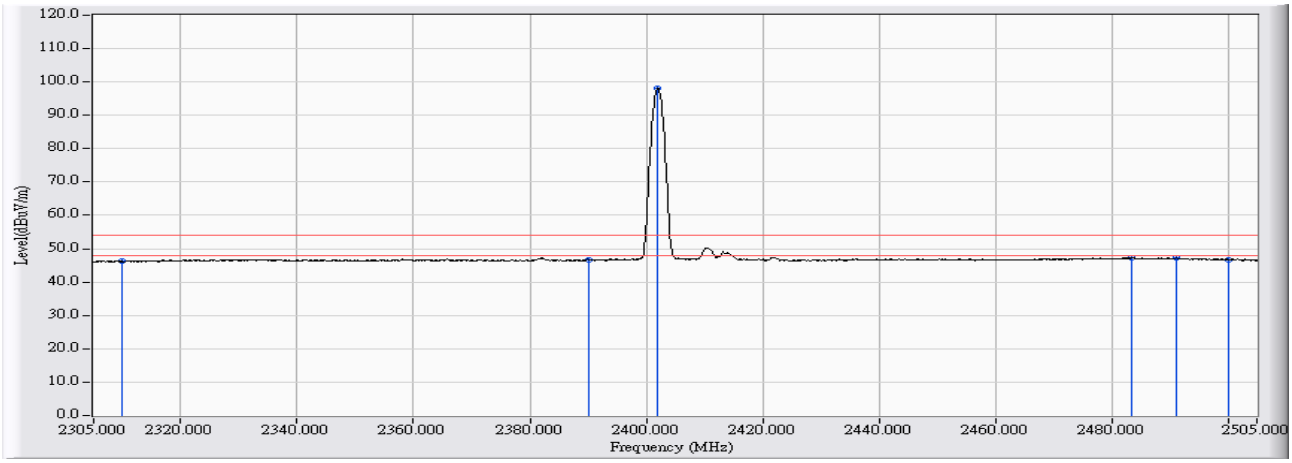


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	56.364	55.862	-18.138	74.000	PEAK
2		2390.000	-0.193	56.071	55.878	-18.122	74.000	PEAK
3	*	2402.200	-0.146	101.804	101.658	27.658	74.000	PEAK
4		2483.500	0.168	56.574	56.742	-17.258	74.000	PEAK
5		2486.000	0.178	59.284	59.462	-14.538	74.000	PEAK
6		2500.000	0.230	56.121	56.352	-17.648	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2402MHz**

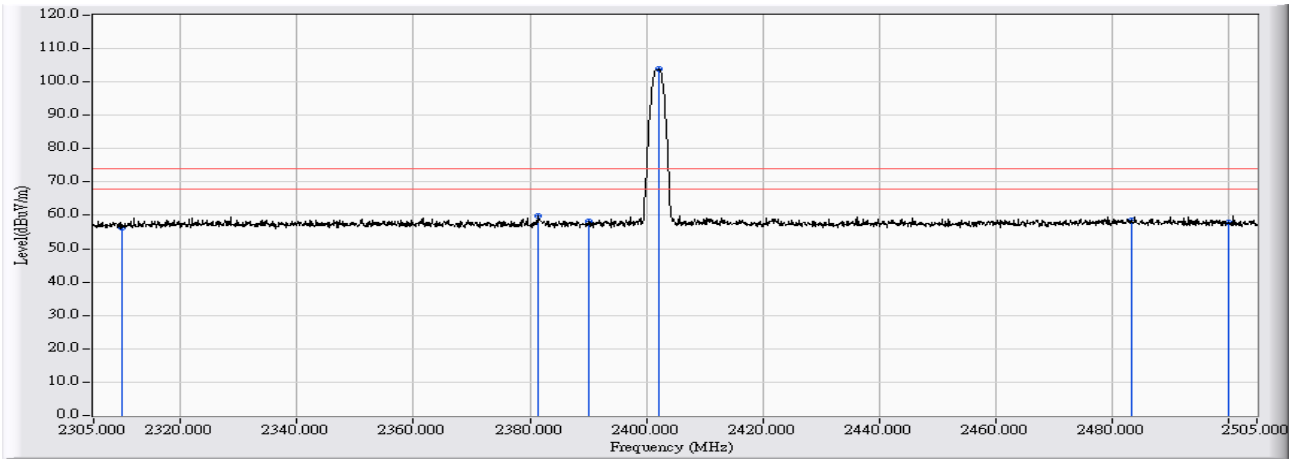


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	46.683	46.181	-7.819	54.000	AVERAGE
2		2390.000	-0.193	46.972	46.779	-7.221	54.000	AVERAGE
3	*	2402.000	-0.146	98.221	98.075	44.075	54.000	AVERAGE
4		2483.500	0.168	47.159	47.327	-6.673	54.000	AVERAGE
5		2491.100	0.198	47.096	47.294	-6.706	54.000	AVERAGE
6		2500.000	0.230	46.374	46.605	-7.395	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2402MHz**

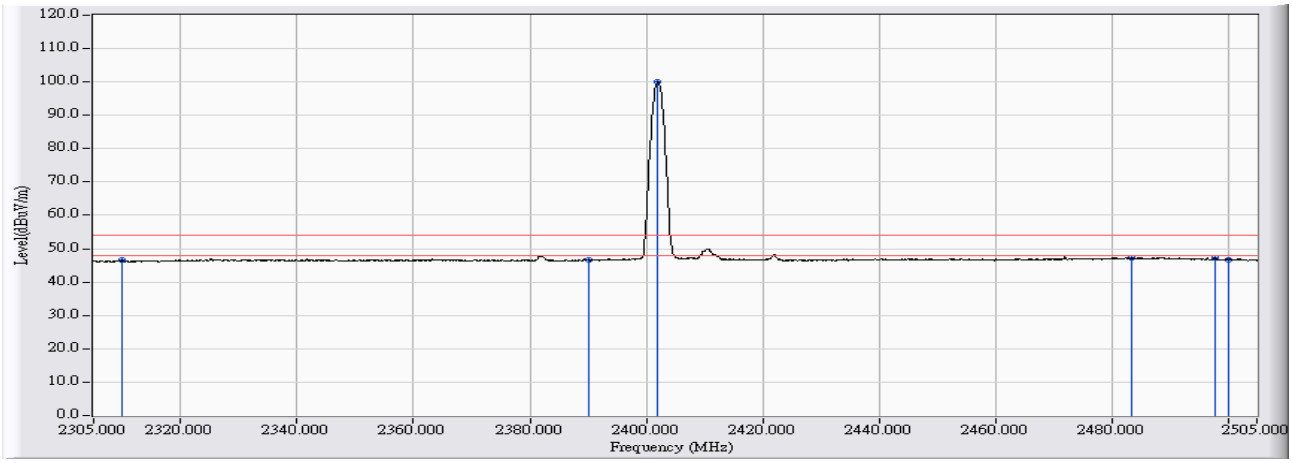


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	56.934	56.432	-17.568	74.000	PEAK
2		2381.500	-0.225	60.189	59.963	-14.037	74.000	PEAK
3		2390.000	-0.193	58.449	58.256	-15.744	74.000	PEAK
4	*	2402.200	-0.146	103.910	103.764	29.764	74.000	PEAK
5		2483.500	0.168	58.232	58.400	-15.600	74.000	PEAK
6		2500.000	0.230	57.609	57.840	-16.160	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2402MHz**

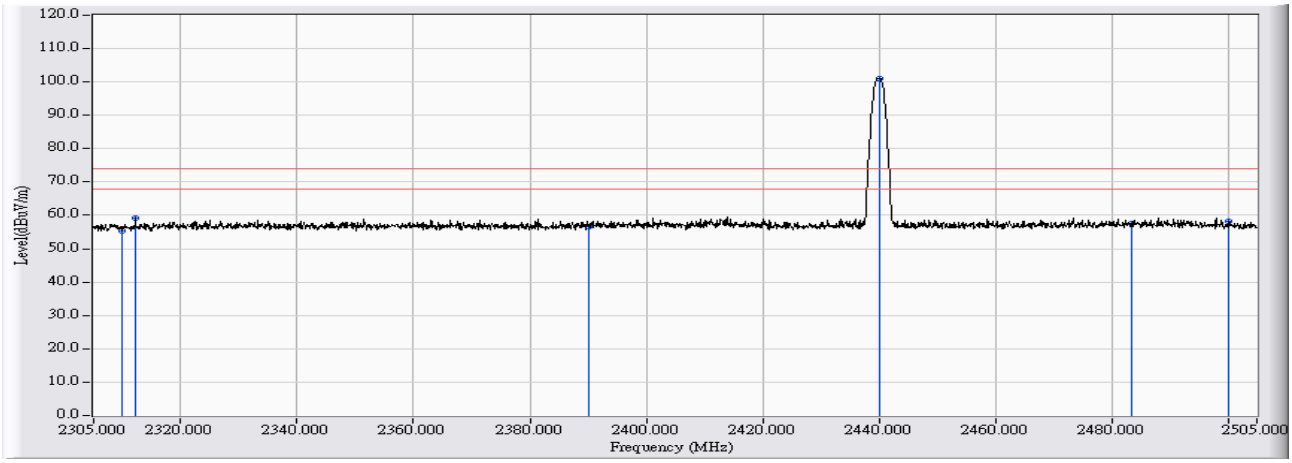


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	47.009	46.507	-7.493	54.000	AVERAGE
2		2390.000	-0.193	46.984	46.791	-7.209	54.000	AVERAGE
3	*	2402.000	-0.146	100.222	100.076	46.076	54.000	AVERAGE
4		2483.500	0.168	47.122	47.290	-6.710	54.000	AVERAGE
5		2497.700	0.223	47.058	47.281	-6.719	54.000	AVERAGE
6		2500.000	0.230	46.315	46.546	-7.454	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

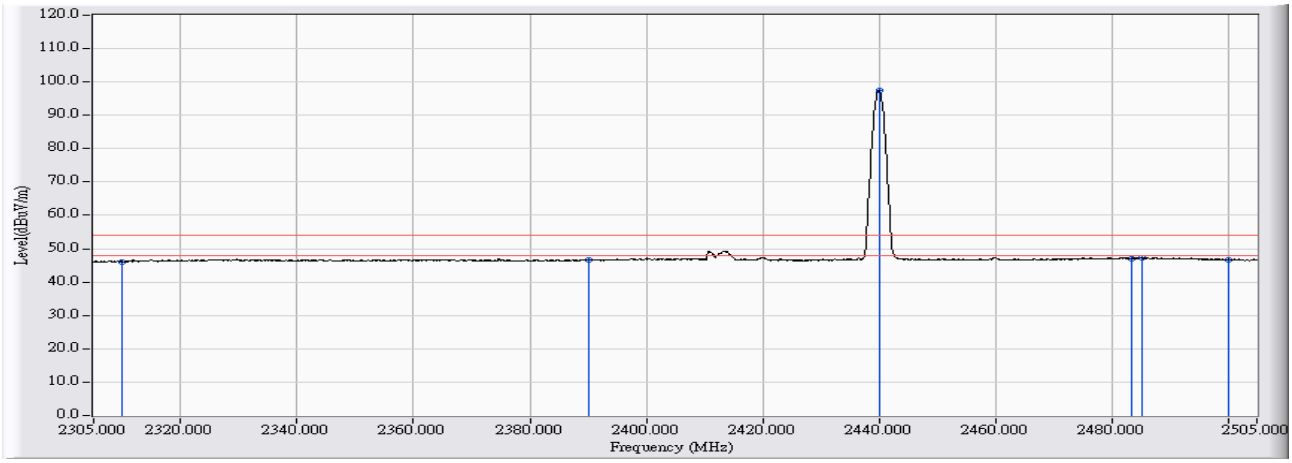


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	55.679	55.177	-18.823	74.000	PEAK
2		2312.200	-0.494	59.699	59.206	-14.794	74.000	PEAK
3		2390.000	-0.193	56.901	56.708	-17.292	74.000	PEAK
4	*	2440.200	0.001	100.978	100.979	26.979	74.000	PEAK
5		2483.500	0.168	57.466	57.634	-16.366	74.000	PEAK
6		2500.000	0.230	58.026	58.257	-15.743	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

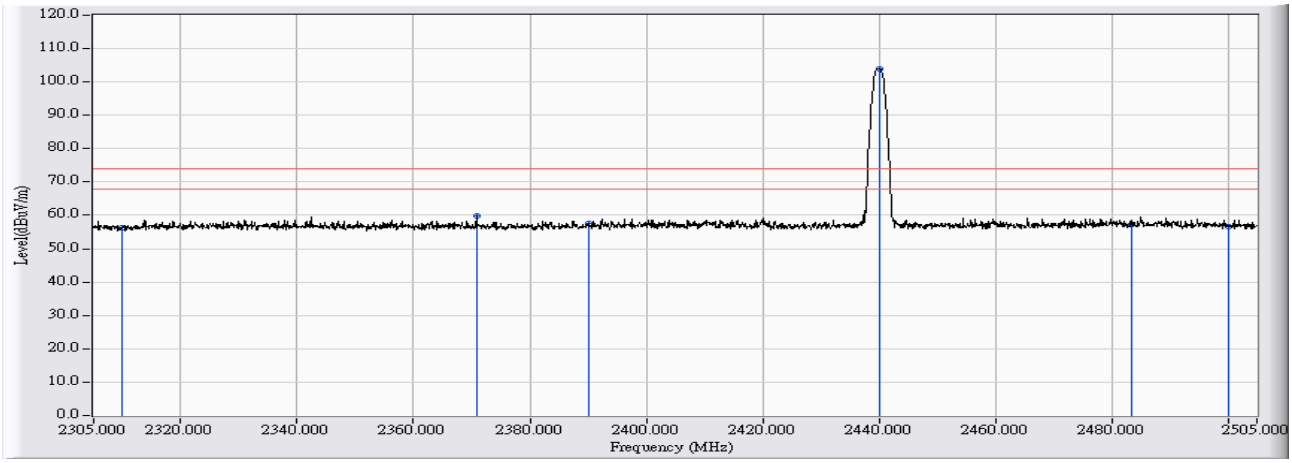


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	46.650	46.148	-7.852	54.000	AVERAGE
2		2390.000	-0.193	46.707	46.514	-7.486	54.000	AVERAGE
3	*	2440.000	0.000	97.422	97.422	43.422	54.000	AVERAGE
4		2483.500	0.168	46.834	47.002	-6.998	54.000	AVERAGE
5		2485.200	0.174	47.117	47.292	-6.708	54.000	AVERAGE
6		2500.000	0.230	46.486	46.717	-7.283	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

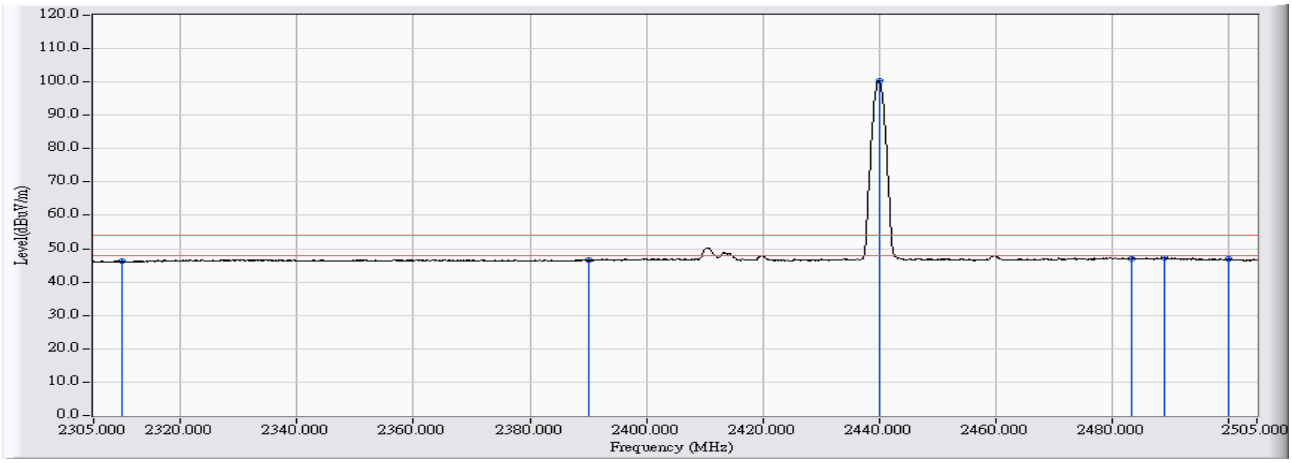


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	56.937	56.435	-17.565	74.000	PEAK
2		2370.800	-0.267	59.969	59.702	-14.298	74.000	PEAK
3		2390.000	-0.193	57.724	57.531	-16.469	74.000	PEAK
4	*	2440.200	0.001	103.959	103.960	29.960	74.000	PEAK
5		2483.500	0.168	56.990	57.158	-16.842	74.000	PEAK
6		2500.000	0.230	56.372	56.603	-17.397	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2440MHz**

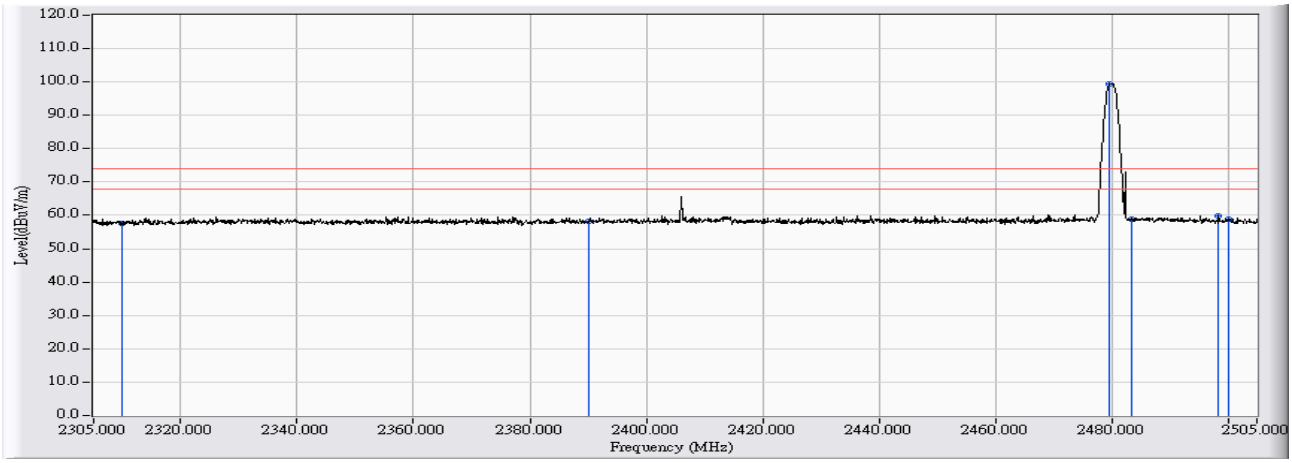


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	46.674	46.172	-7.828	54.000	AVERAGE
2		2390.000	-0.193	46.778	46.585	-7.415	54.000	AVERAGE
3	*	2440.000	0.000	100.281	100.281	46.281	54.000	AVERAGE
4		2483.500	0.168	46.879	47.047	-6.953	54.000	AVERAGE
5		2489.100	0.190	47.106	47.296	-6.704	54.000	AVERAGE
6		2500.000	0.230	46.660	46.891	-7.109	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2480MHz**

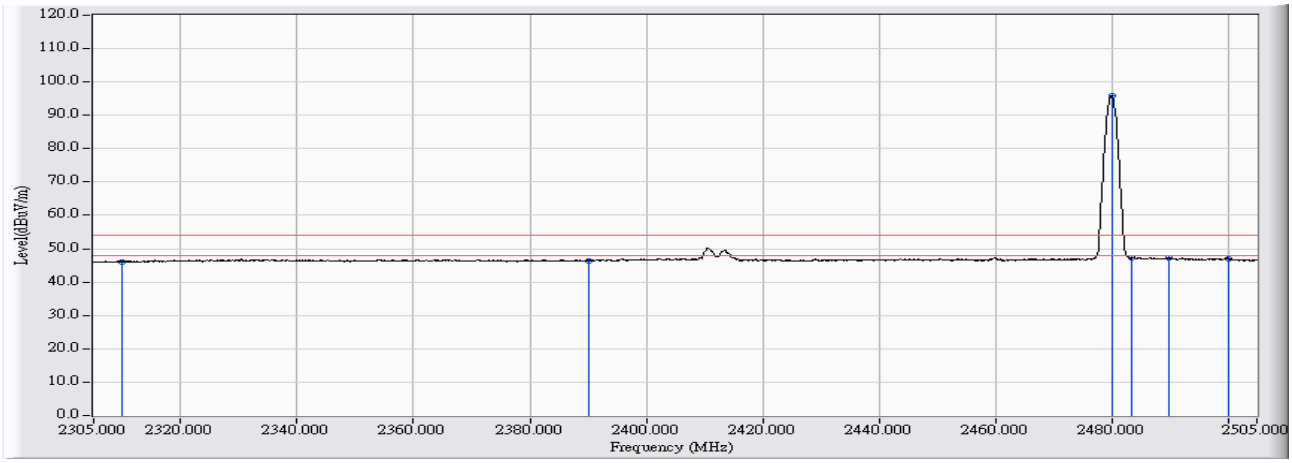


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	58.175	57.673	-16.327	74.000	PEAK
2		2390.000	-0.193	58.280	58.087	-15.913	74.000	PEAK
3	*	2479.700	0.153	99.231	99.385	45.385	54.000	PEAK
4		2483.500	0.168	58.557	58.725	-15.275	74.000	PEAK
5		2498.400	0.226	59.687	59.912	-14.088	74.000	PEAK
6		2500.000	0.230	58.500	58.731	-15.269	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2480MHz**

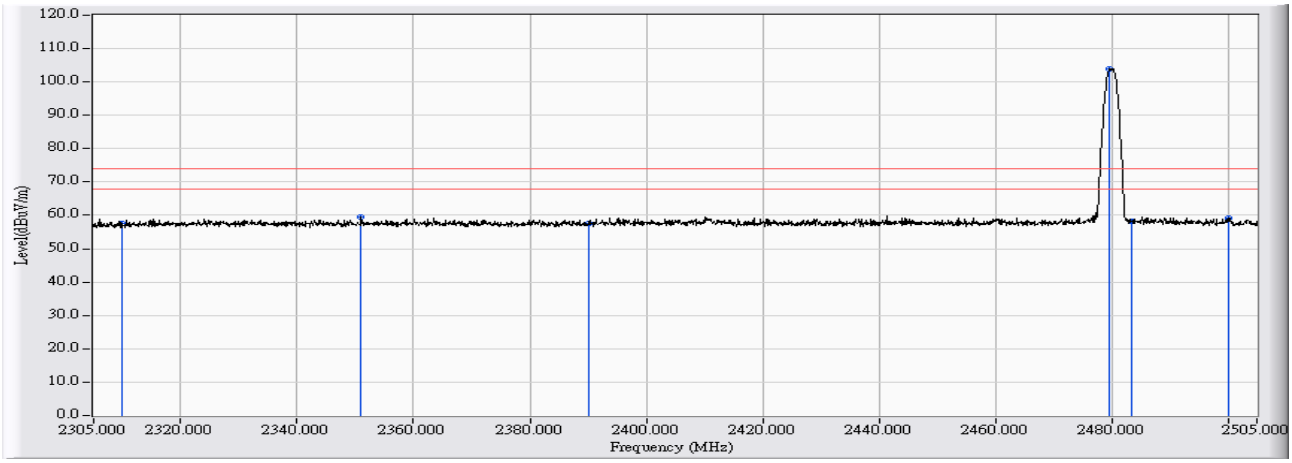


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	46.659	46.157	-7.843	54.000	AVERAGE
2		2390.000	-0.193	46.559	46.366	-7.634	54.000	AVERAGE
3	*	2480.000	0.155	95.713	95.868	41.868	54.000	AVERAGE
4		2483.500	0.168	46.975	47.143	-6.857	54.000	AVERAGE
5		2489.800	0.193	47.158	47.351	-6.649	54.000	AVERAGE
6		2500.000	0.230	46.797	47.028	-6.972	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-L	**Note : Mode 1: Tx_2480MHz**

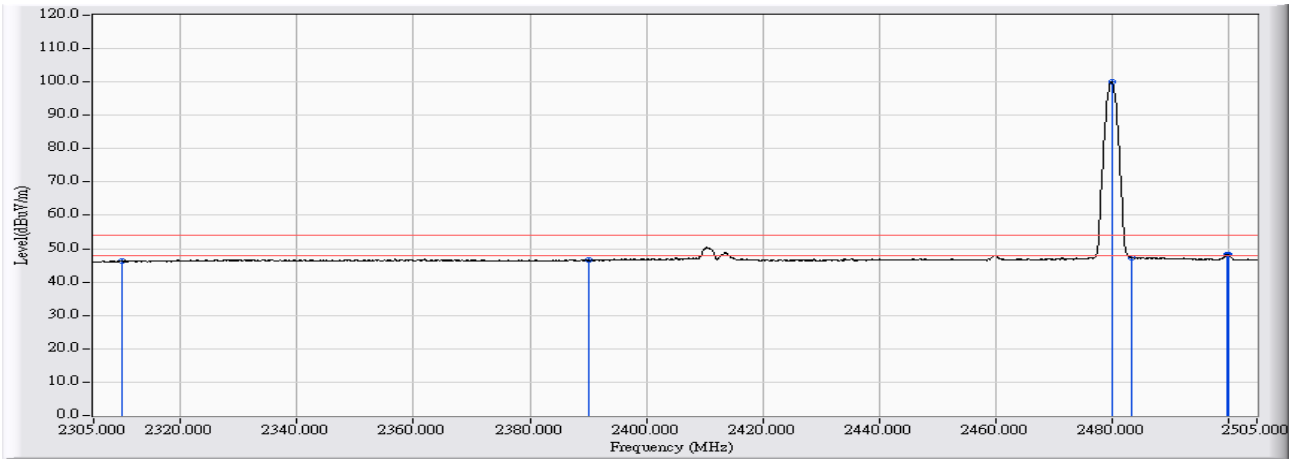


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	-0.502	57.967	57.465	-16.535	74.000	PEAK
2		2351.000	-0.344	59.872	59.528	-14.472	74.000	PEAK
3		2390.000	-0.193	57.693	57.500	-16.500	74.000	PEAK
4	*	2479.700	0.153	103.632	103.786	29.786	74.000	PEAK
5		2483.500	0.168	58.127	58.295	-15.705	74.000	PEAK
6		2500.000	0.230	58.816	59.047	-14.953	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 : 2017/04/08**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : UHD551-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	-0.502	46.890	46.388	-7.612	54.000	AVERAGE
2		2390.000	-0.193	46.728	46.535	-7.465	54.000	AVERAGE
3	*	2480.000	0.155	99.934	100.089	46.089	54.000	AVERAGE
4		2483.500	0.168	47.184	47.352	-6.648	54.000	AVERAGE
5		2499.900	0.230	47.998	48.229	-5.771	54.000	AVERAGE
6		2500.000	0.230	48.039	48.270	-5.730	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

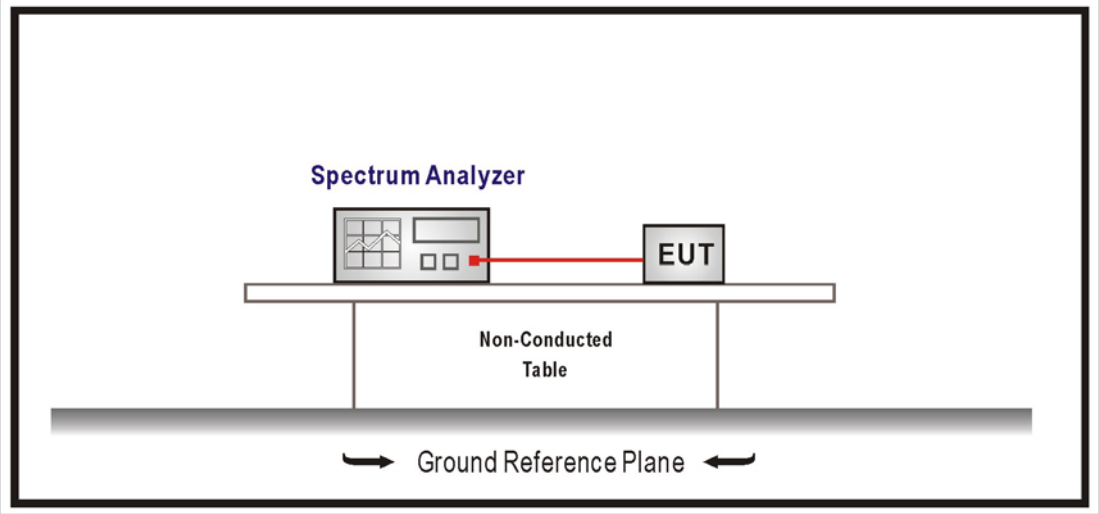
The following test equipment is used during the test:

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

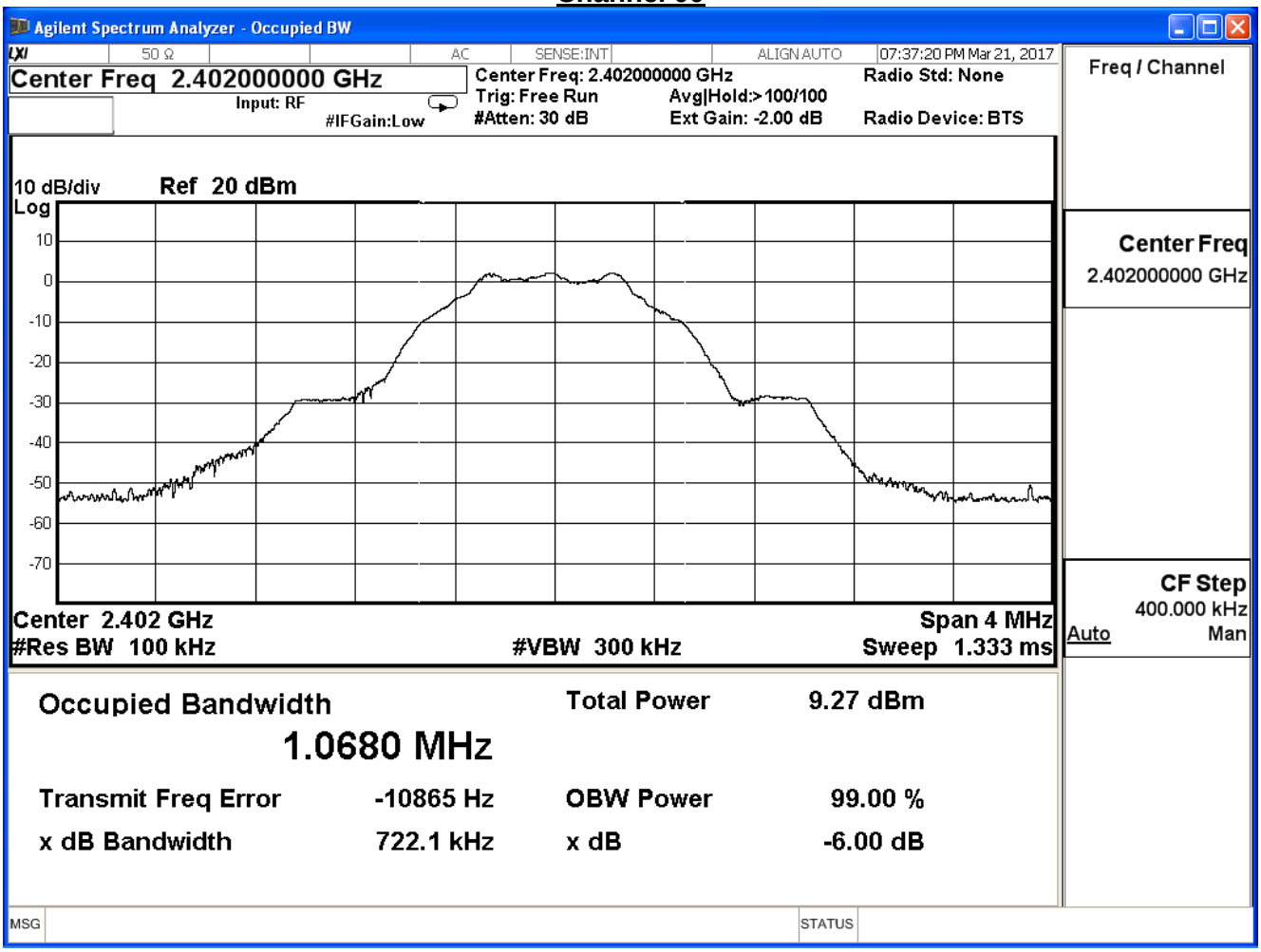
7.6. Test Result

Product	UHD551-L		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

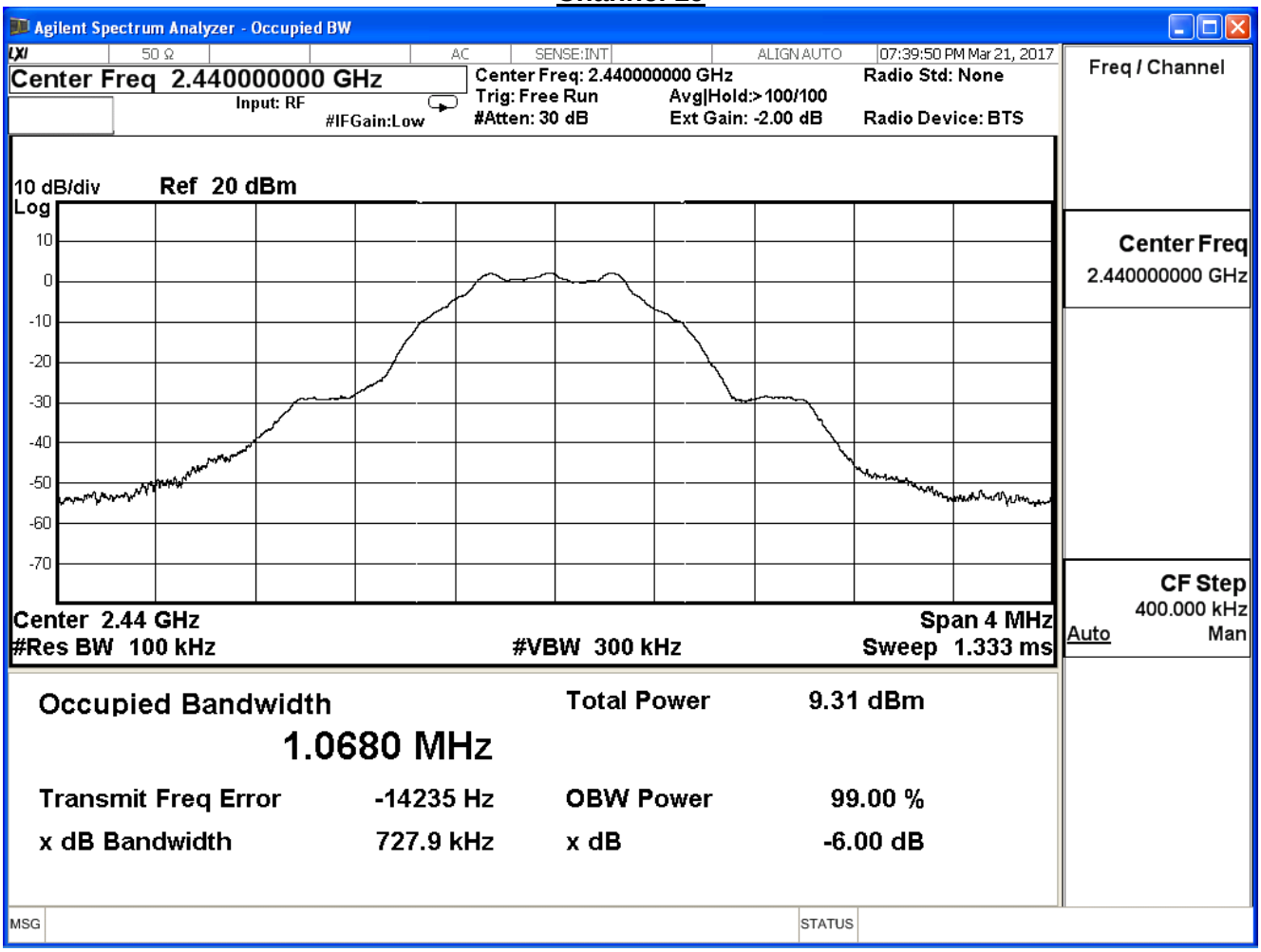
GFSK

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

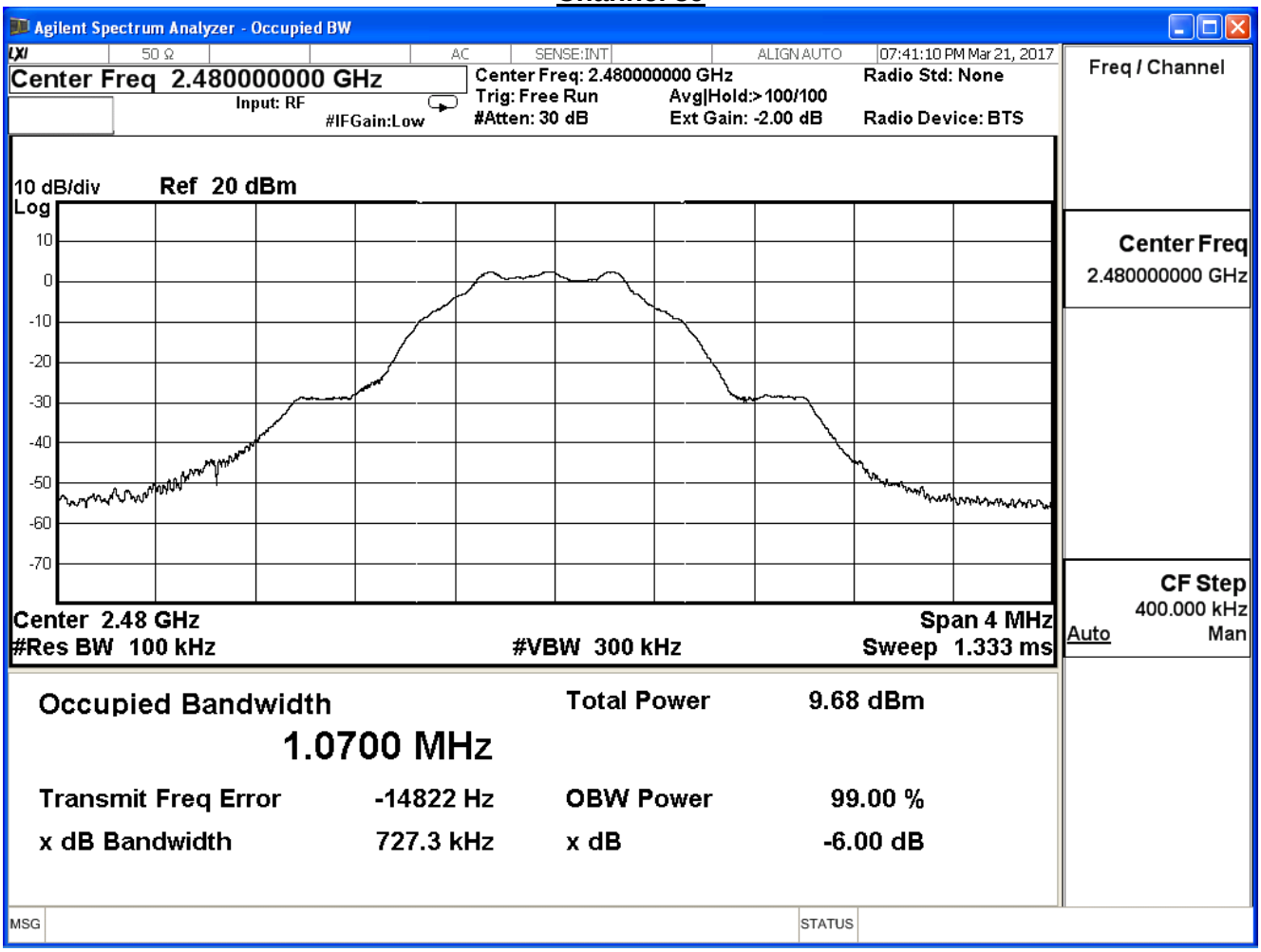
Channel 00



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

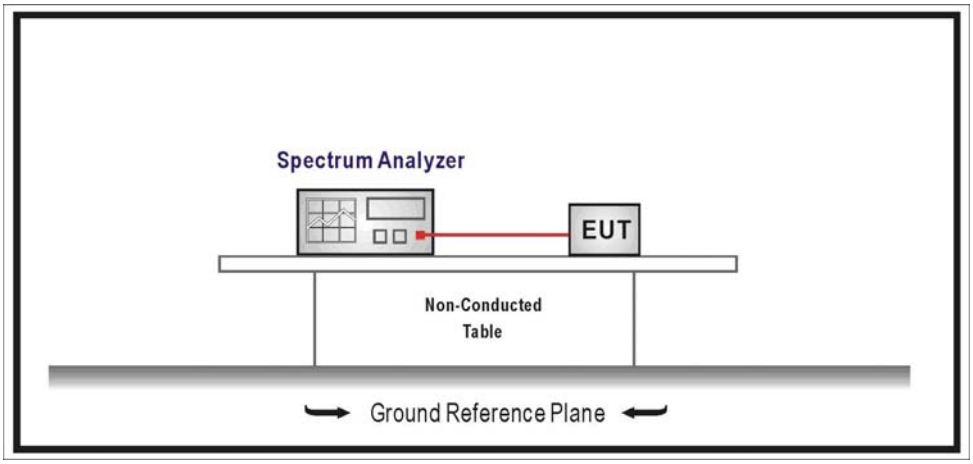
The following test equipment is used during the test:

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

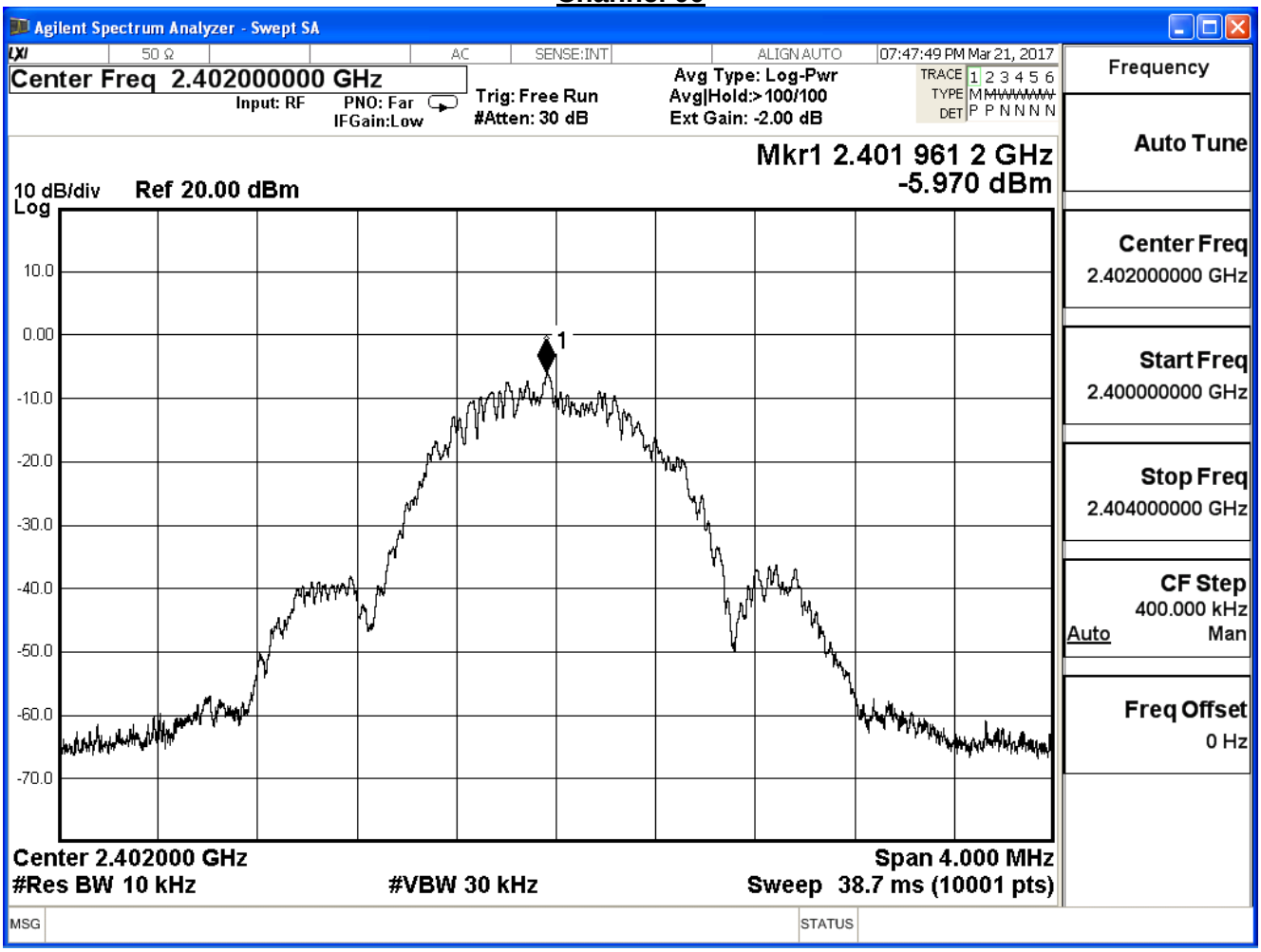
The measurement uncertainty is defined as ±1.27dB.

8.7. Test Result

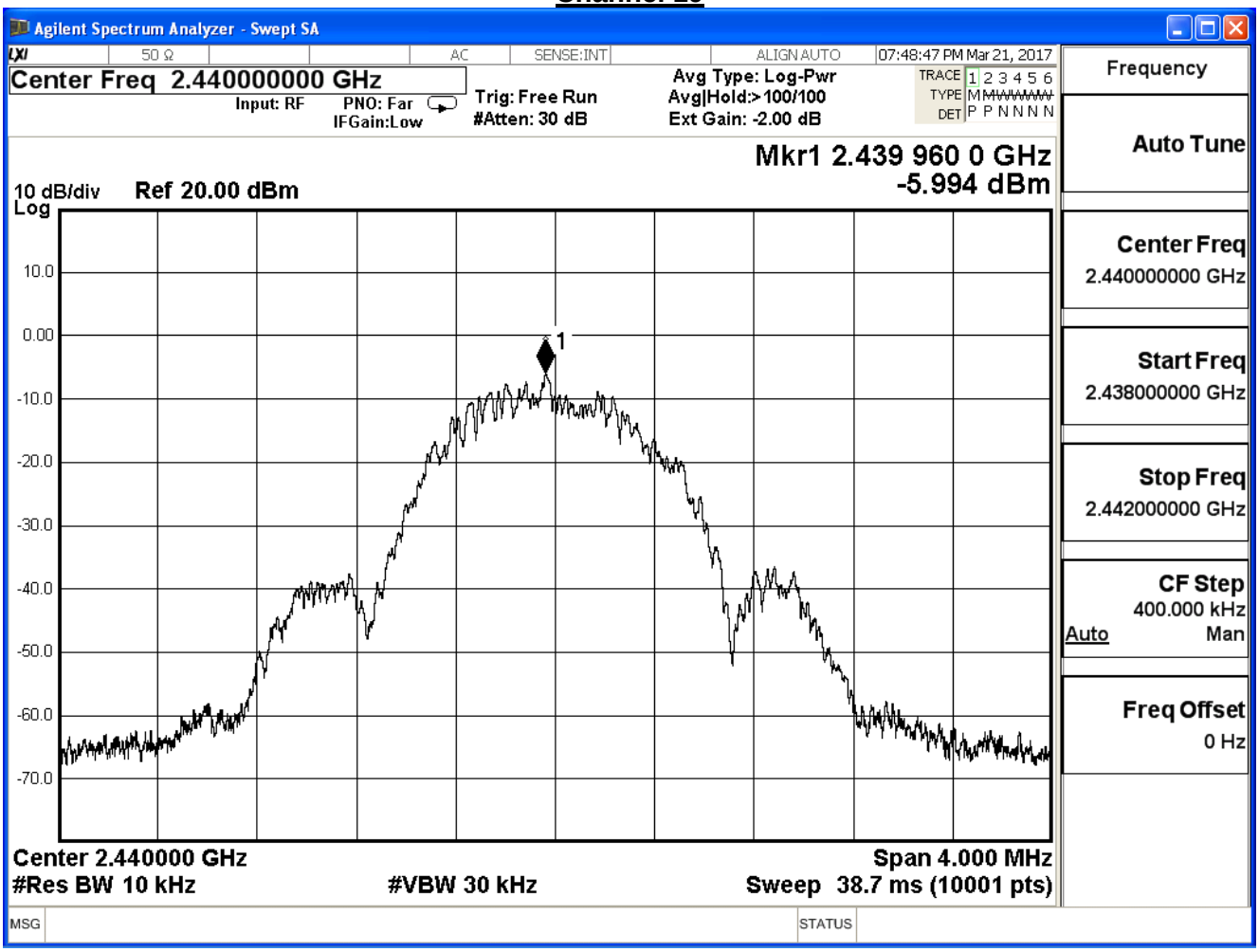
Product	UHD551-L		
Test Item	Power Density		
Test Mode	Mode 1: Tx		
Date of Test	2017/03/21	Test Site	SR10-H

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

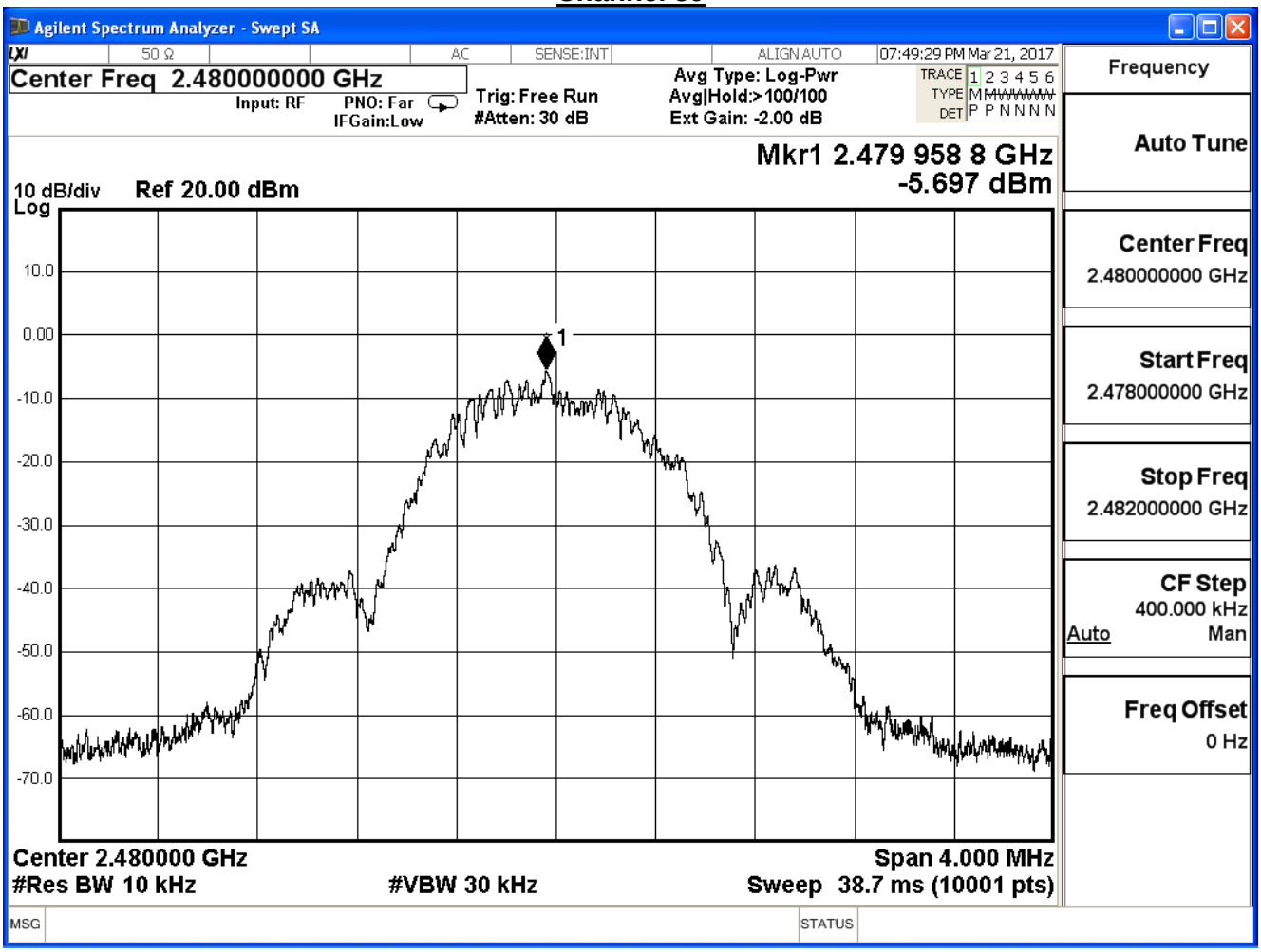
Channel 00



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
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)
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
MSG
STATUS

Channel 39


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
07:49:29 PM Mar 21, 2017
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
TRACE 1 2 3 4 5 6
TYPE M
DET P P N N N N
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
1
Center 2.480000 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
2.480000000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.482000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz

Attachment 1

➢ Test Setup Photograph

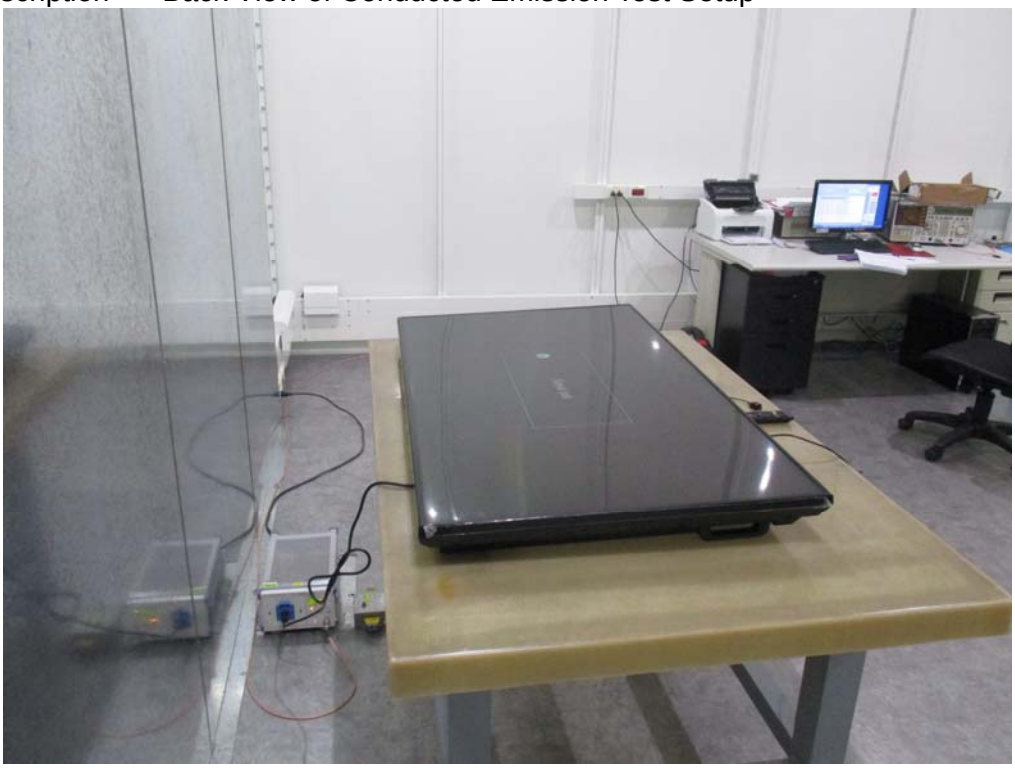
<Conducted Emission>

Test Mode ： Mode 1: Tx

Description： Front View of Conducted Emission Test Setup

Test Mode ： Mode 1: Tx

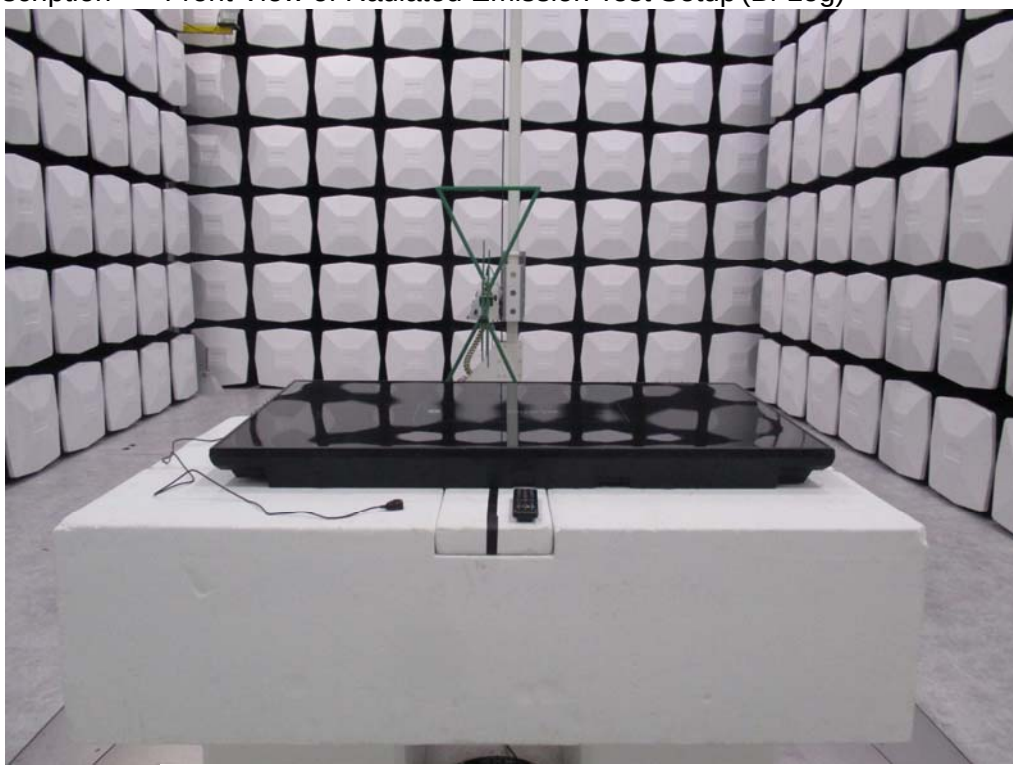
Description： Back View of Conducted Emission Test Setup



<Radiated Emission>

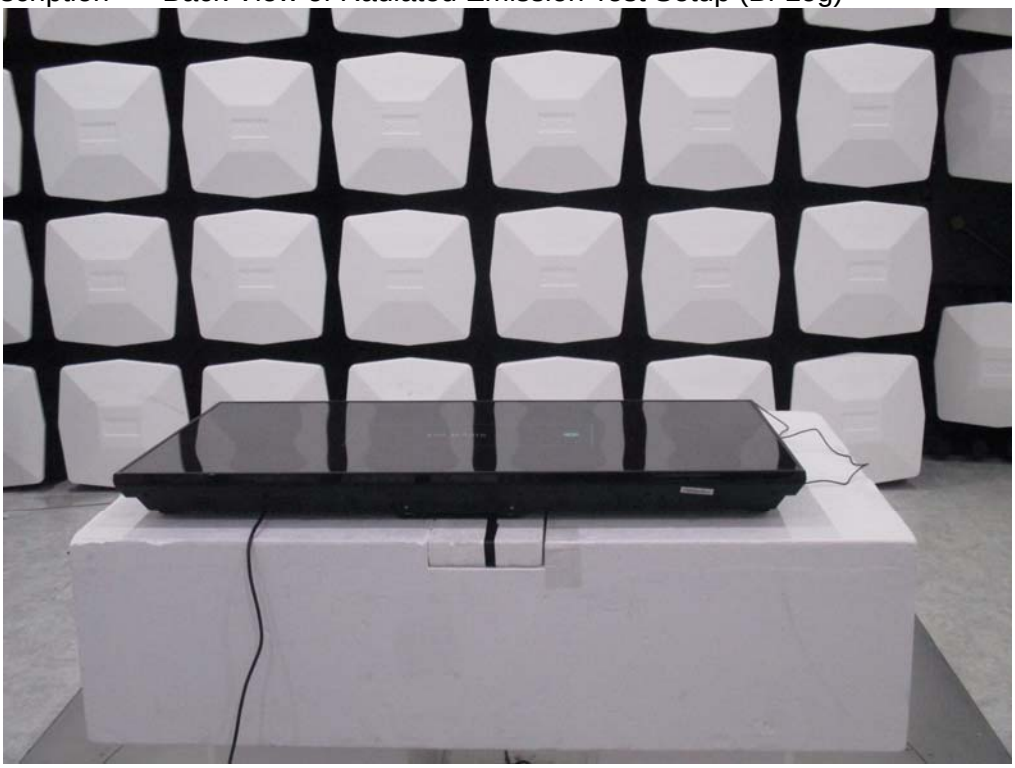
Test Mode ： Mode 1: Tx

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

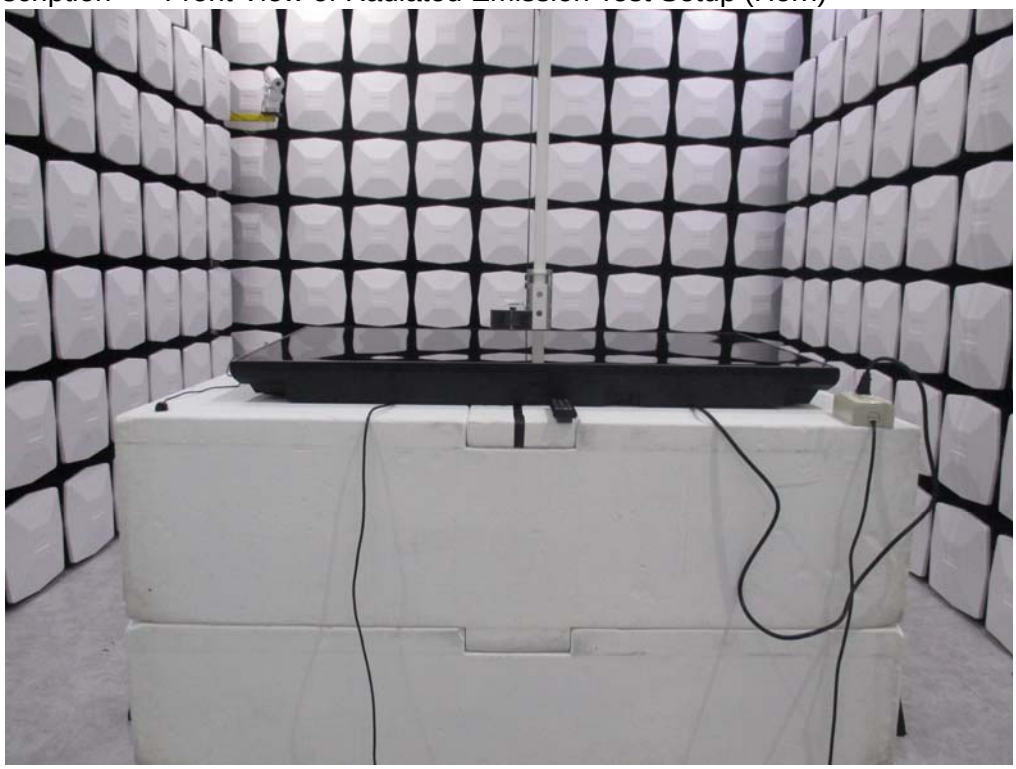


Test Mode ： Mode 1: Tx

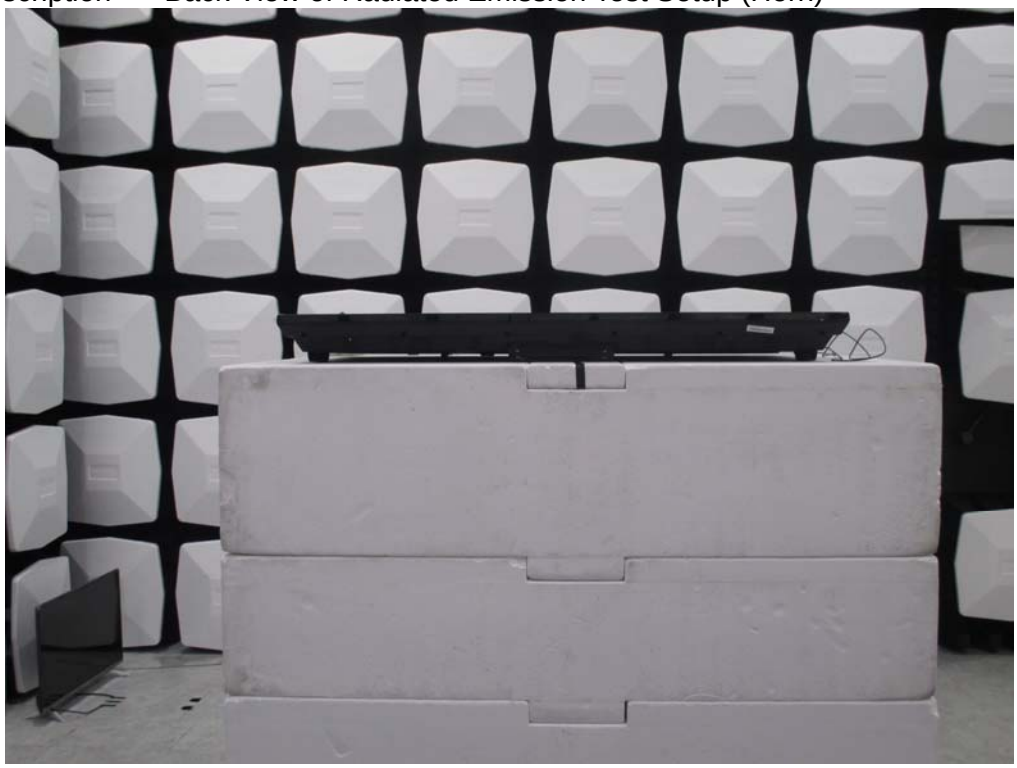
Description： Back View of Radiated Emission Test Setup (Bi-Log)



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

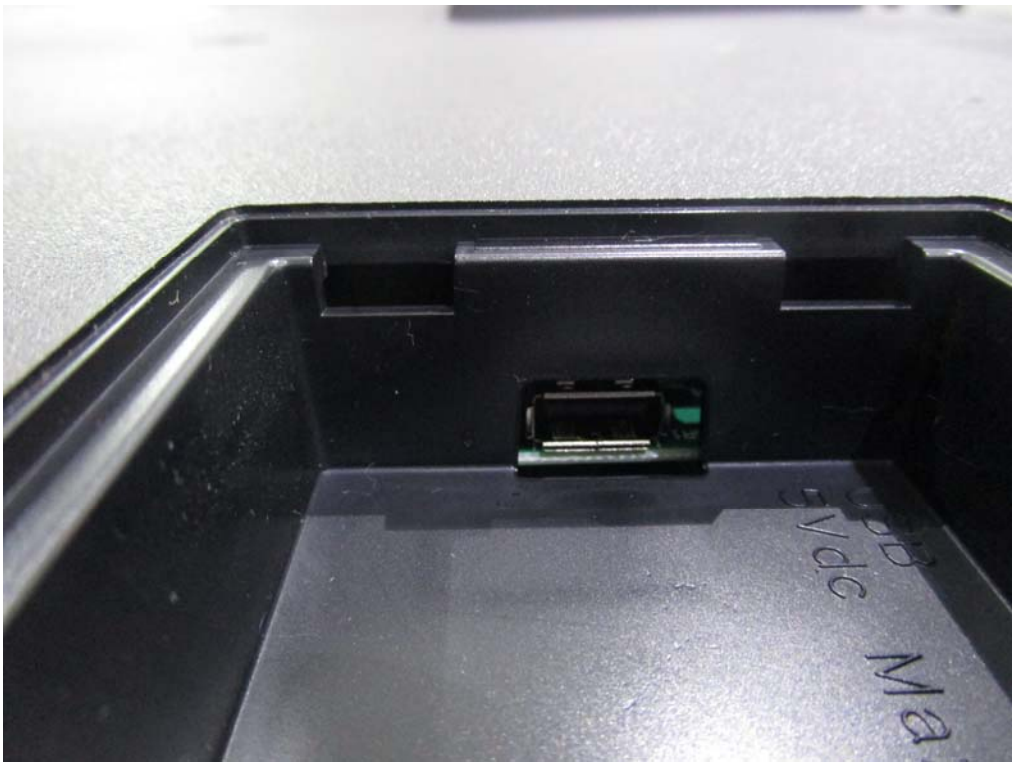
(2) EUT Photo

(3) EUT Photo

(4) EUT Photo

(5) EUT Photo

(6) EUT Photo

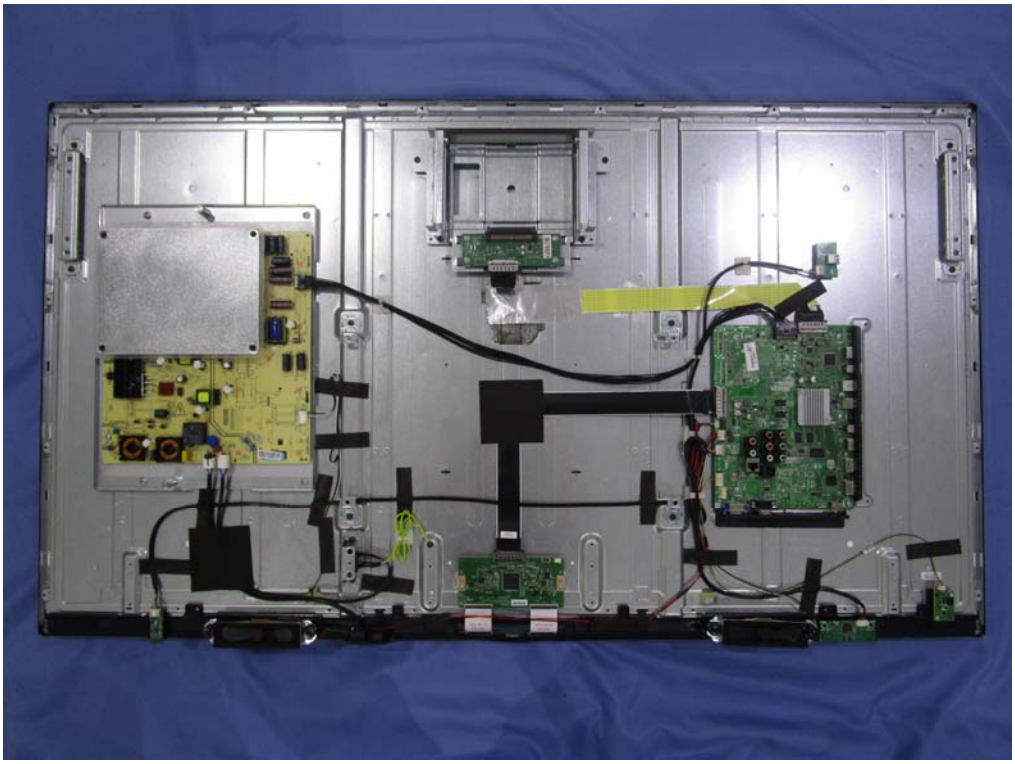


(7) EUT Photo

Attachment 3

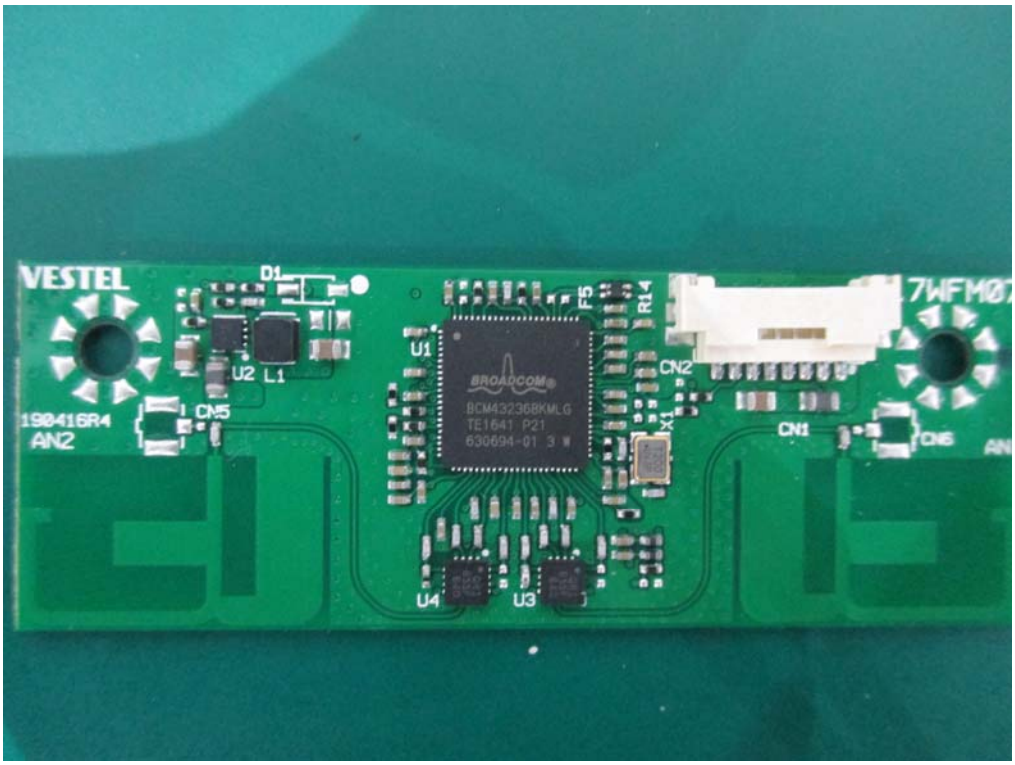
- **EUT Internal Photograph**

(1) EUT Photo



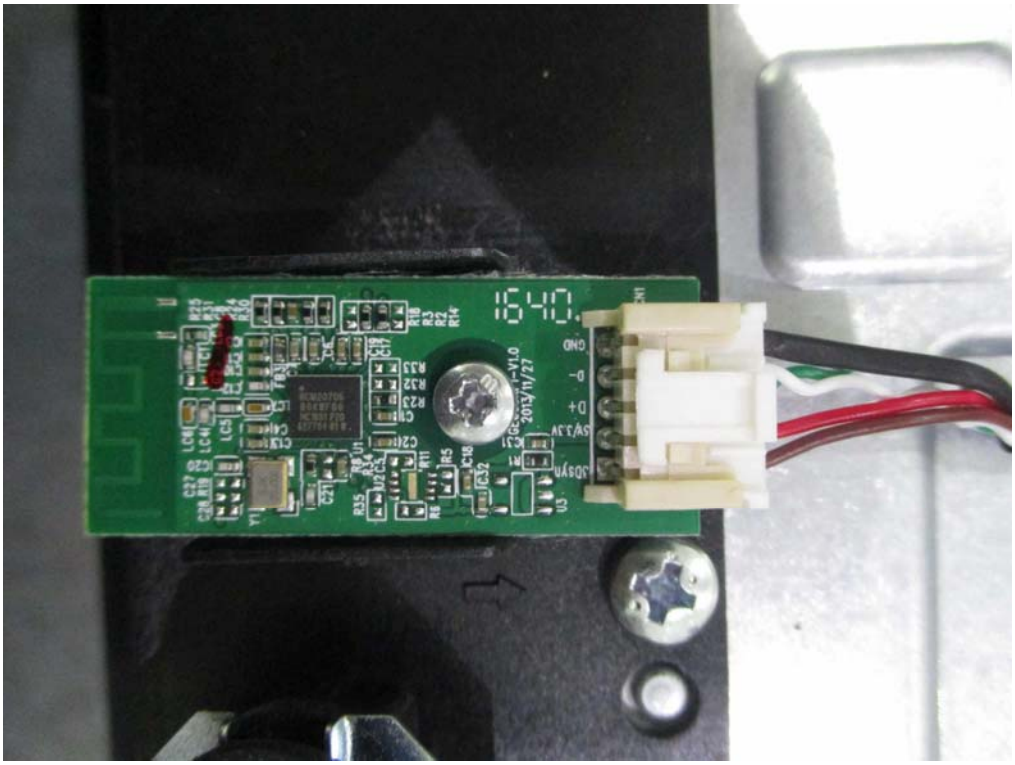
(2) EUT Photo (WiFi)

(3) EUT Photo

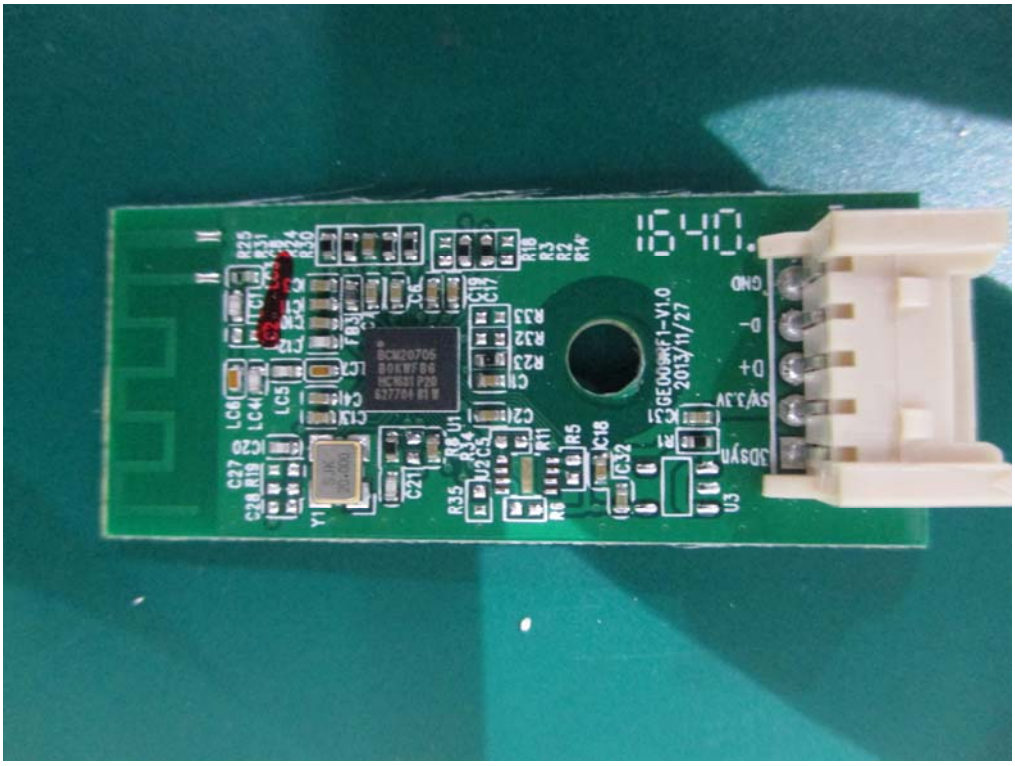


(4) EUT Photo

(5) EUT Photo (BT)

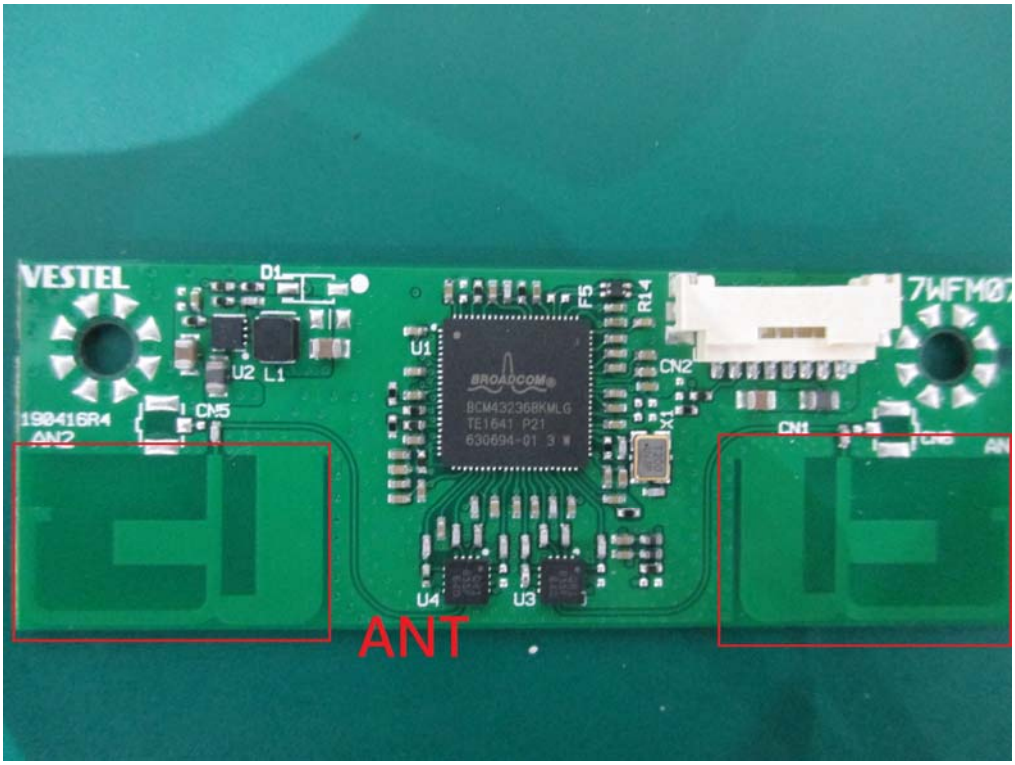


(6) EUT Photo



(7) EUT Photo

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



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