



FCC/ IC TEST REPORT

According to

CFR47 §15.247/RSS-247 Issue 2

Applicant : Elo Touch Solutions, Inc
Address : 670 N. McCarthy Blvd., Suite 100, Milpitas, CA95035
Manufacturer : Elo Touch Solutions, Inc.
Address : 670 N. McCarthy Blvd., Suite 100, Milpitas, CA95035
Equipment : Touch All in one Computer
Model No. : ESY10I1B, ESY10I1C
FCC ID : RBWESY10I1B
IC ID : 10757B-ESY10I1B
Test Period : Sept.03,2017~ Sept.18, 2017

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **Cerpass Technology Corporation Test Laboratory**, the test report shall not be reproduced except in full.
- The test report must not be used by the clients to claim product certification approval by any agency of the Government.

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013** and the energy emitted by this equipment was **passed**.

FCC Part 15 in both radiated and conducted emission class B limits. Testing was carried out on Sept 18,2017~Sept 20,2017 at **Cerpass Technology Corporation Test Laboratory**.

Approved by:

Laboratory Accreditation:

Mark Liao / Assistant Manager



Cerpass Technology Corporation Test Laboratory

TAF LAB Code:

1439



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History of this Test Report

Report No.	Version	Issue Date	Description
TEFI1707267-A	Rev 01	Sept. 21, 2017	Original.



1. Report of Measurements and Examinations

Reference STD		Description of Test	Compliance results
1	FCC Rules §15.207(a); RSS-GEN Section 8.8	AC Conducted Emission	PASS
2	FCC Rules §15.209(a); RSS-247 Issue 2 Section 5.5	Radiated Emission	PASS
3	FCC Rules §15.247(a)(1); RSS-247 Issue 2 Section 5.1(a)	20dB Bandwidth	PASS
4	FCC Rules §15.247(a)(1); RSS-247 Issue 2 Section 5.1(b)	Channel Carrier Frequencies Separation	PASS
5	FCC Rules §15.247(a)(1); RSS-247 Issue 2 Section 5.1(c)		PASS
6	FCC Rules §15.247(b); RSS-247 Issue 2 Section 5.1(b)	Number of Hopping Channels	PASS
7	FCC Rules §15.247(b); RSS-247 Issue 2 Section 5.1(b)	Peak Output Power	PASS
8	FCC Rules §15.247(d)	Band-edge Compliance & Conducted Spurious Emissions	PASS
9	FCC Rules §15.247(d); RSS-247 Issue 2 Section 5.5	Radiated Emission Band Edges	PASS



2. General Info

2.1 Description of EUT

Product name	Touch All in one Computer	
Model No.	ESY10I1B, ESY10I1C (two models were identical except for marketing purpose)	
Operational Climate	Tnomal:	25°C
	Tmin:	0°C
	Tmax:	35°C
Power supply	Model:	ADP-65JH HB
	Input:	100-240V~ 50/60Hz 1.5A
	Output:	19V $\overline{\text{---}}$ 3.42A

2.2 Description of wireless module

Module Name	80-WL024-12
Bluetooth Specification	V2.1 + EDR
Modulation Type	GFSK, Pi/4 DQPSK, 8DPSK
Frequency Range	2402 - 2480 MHz
Channel Number	79
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Channel Separation	1MHz

Note: For more details, please refer to the EUT User manual.

2.3 Description of Antenna

Model	Antenna	Peak Gain
ESY10I1B, ESY10I1C	PCB Antenna	2.92dBi for 2.4~2.4835GHz band
		2.67dBi for 5.15~5.25GHz band
		2.64dBi for 5.725~5.85GHz band
ESY15I1B, ESY15I1C	PCB Antenna	2.68dBi for 2.4~2.4835GHz band
		2.50dBi for 5.15~5.25GHz band
		2.54dBi for 5.725~5.85GHz band
ESY22I1B	PCB Antenna	2.68dBi for 2.4~2.4835GHz band
		2.50dBi for 5.15~5.25GHz band
		2.54dBi for 5.725~5.85GHz band

Note: We choose the maximum peak gain (ESY10I1B) for final test of each channel shown as the table.



2.4 Carrier Frequency of Channels

Bluetooth Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	N/A	N/A



2.5 The Worst Case Configuration

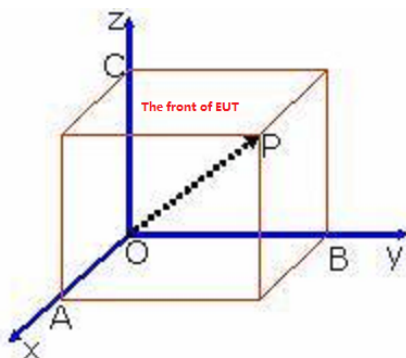
Data rate Configuration:

Modulation Mode	Test Channel	Data Rate	Peak Power(dBm)
GFSK	39	1Mbps(DH1)	6.12
		1Mbps(DH3)	6.33
		1Mbps(DH5)	6.39
Pi/4 DQPSK	39	2Mbps(2DH1)	6.37
		2Mbps(2DH3)	6.41
		2Mbps(2DH5)	6.45
8DPSK	39	3Mbps(3DH1)	6.78
		3Mbps(3DH3)	6.82
		3Mbps(3DH5)	6.85

Modulation Mode	Worst Data Rate
GFSK	1Mbps(DH5)
Pi/4 DQPSK	2Mbps(2DH5)
8DPSK	3Mbps(3DH5)

Note: 1. Power output test was verified over all data rates of each mode, and then choose the maximum power output for final test of each channel shown as the table.

2. EUT is put X,Y,Z three axial assessment test, and Y axial is the worst case, so the EUT is put Y axial for all RF items tested.



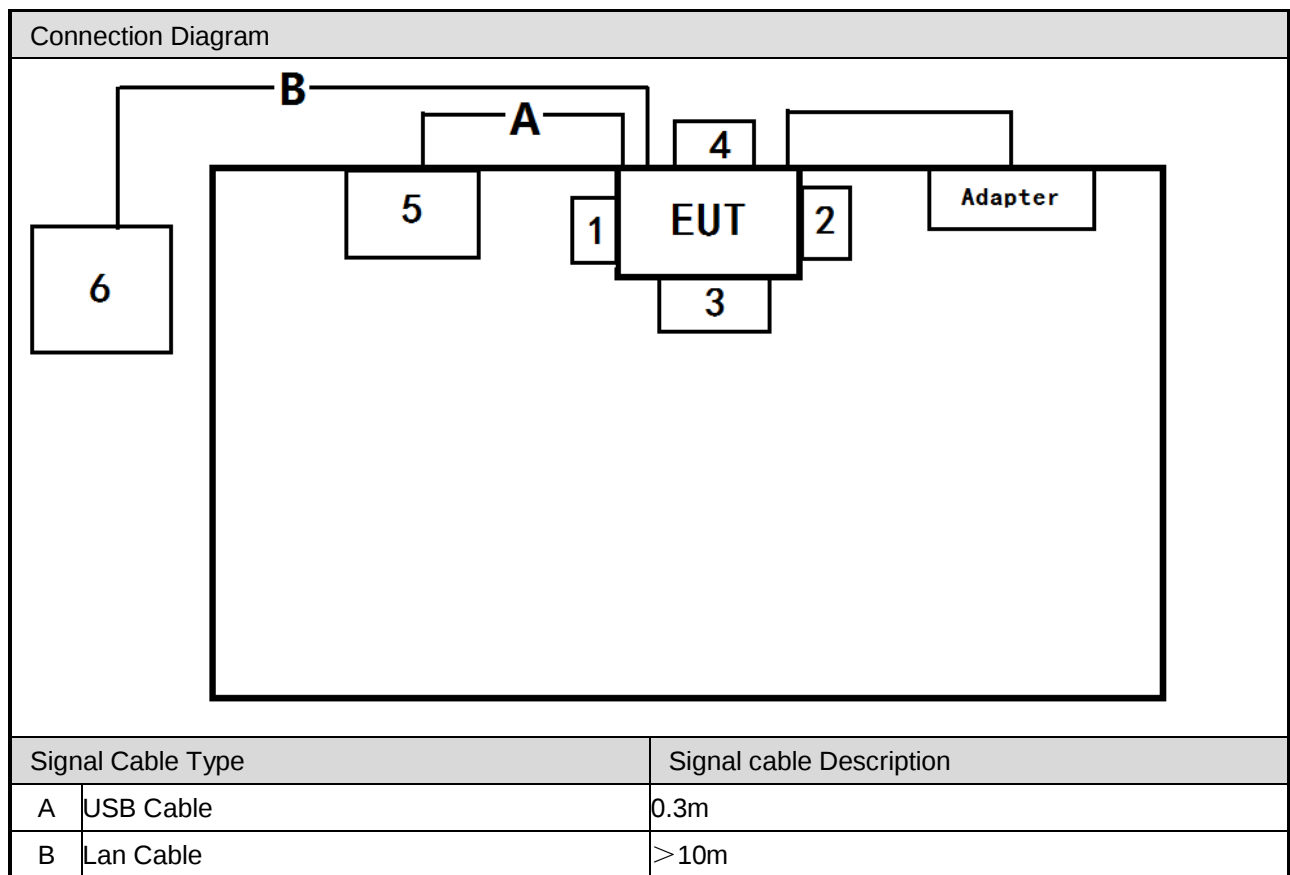
2.6 EUT Exercise Software

1	Turn on the power of equipment.
2	Run 'QRCT', input RF test command and set the test mode and channel, then press Transmit to start continue transmit.



2.7 Support equipment

Product	Manufacturer	Model No.	Serial No.
1 Barcode Scanner	Elo Touch Solutions, Inc.	KIT,BCR,USB, AAiO/02 Series	E093433
2 Barcode Scanner	Elo Touch Solutions, Inc.	KIT,FPR,USB,ESY X-Series	E001001
3 NFC	Elo Touch Solutions, Inc.	KIT,NFC,USB, ESY X Series/AAiO/02 Series	E001004
4 Barcode Scanner	Elo Touch Solutions, Inc.	ELOKIT, 2DBCR, USB, ESYELO-RGEN	E926356
5 HDD	HGST	HTS721010A9E630	N/A
6 Router	Zyxel	P-660HNU-T1	R33011





3. General Information of Test Site

3.1 Information of Test Site

Test Site :	Cerpass Technology Corporation Test Laboratory Location: No.10 Lane2 Lianfu Street Luzhu District, Taoyuan City Taiwan ROC <u>Tel:+886-3-3226-888</u> <u>Fax:+886-3-3226-881</u>
FCC Registration Number :	TW1439
IC Registration Number :	4934B-1
VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-4399, R-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz



3.2 Measuring Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2017.03.26	2018.03.25
AMN	R&S	ESH2-Z5	100182	2017.09.06	2018.09.05
Two-Line V-Network	R&S	ENV216	100325	/	/
Pulse Limiter	R&S	ESH3-Z2	100529	2017.03.26	2018.03.25
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2017.03.29	2018.03.28
EZ-EMC	Fala	Ver CT3A1	N/A	N/A	N/A

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	101183	2017.03.26	2018.03.25
Preamplifier	songyi	EM330	60618	2017.03.26	2018.03.25
Preamplifier	Agilent	8449B	3008A02342	2017.03.26	2018.03.25
Bilog Antenna	Sunol Science	JB1	A072414-1	2017.04.16	2018.04.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-618	2017.04.16	2018.04.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-347	2017.04.16	2018.04.15
Preamplifier	COM-POWER	PA-840	711885	2017.03.26	2018.03.25
Spectrum Analyzer	R&S	FSP40	100324	2017.03.26	2018.03.25
Spectrum Analyzer	KEYSIGHT	N9010A	MY54200207	2017.03.17	2018.03.16
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2017.03.29	2018.03.28
EZ-EMC	Fala	Ver CT3A1	N/A	N/A	N/A



3.3 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

RF Conducted Measurement

Test Item		Uncertainty	Limit
Radio Frequency		$\pm 8.7 \times 10^{-7}$	$\pm 1 \times 10^{-5}$
RF output power, conducted		$\pm 0.63\text{dB}$	$\pm 1.5\text{dB}$
Power density, conducted		$\pm 1.21\text{dB}$	$\pm 3\text{dB}$
Unwanted emissions, conducted	30-1000MHz	$\pm 0.51\text{dB}$	$\pm 3\text{dB}$
	1-12.75GHz	$\pm 0.67\text{dB}$	$\pm 3\text{dB}$
All emissions, radiated	30-1000MHz	$\pm 2.28\text{dB}$	$\pm 6\text{dB}$
	1-12.75GHz	$\pm 2.59\text{dB}$	$\pm 6\text{dB}$
Temperature		$\pm 0.8^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity		$\pm 3\%$	$\pm 5\%$
DC and low frequency voltages		$\pm 3\%$	$\pm 3\%$

AC Conducted Measurement

Measurement	Frequency	Uncertainty
Conducted emissions(LINE)	9KHz-30MHz	+/- 0.7738 dB
Conducted emissions(NEUTRAL)	9KHz-30MHz	+/- 0.7886 dB
Conducted emissions(10Mbps)	150KHz-30MHz	+/- 1.3013dB
Conducted emissions(100Mbps)	150KHz-30MHz	+/- 1.3197 dB
Conducted emissions(1000Mbps)	150KHz-30MHz	+/- 1.2987 dB

Radiated Measurement

Measurement	Polarity	Frequency	Uncertainty
Radiated emissions	Horizontal	below 1GHz	+/- 3.8936 dB
	Vertical	below 1GHz	+/- 3.8928 dB
	Horizontal	above 1GHz	+/- 5.18858dB
	Vertical	above 1GHz	+/- 5.18928 dB



4. AC Conducted Emission Measurement

4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.10-2013 Section 6.2. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 6.2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

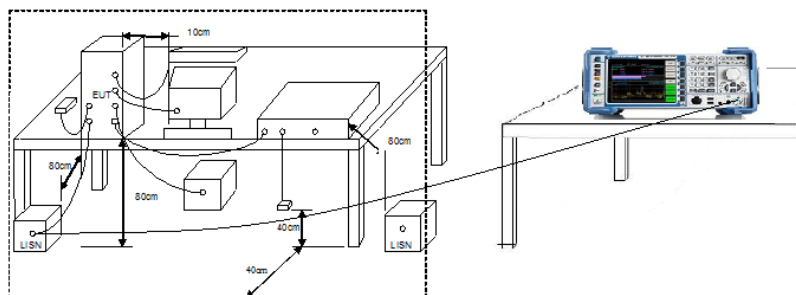
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2 Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

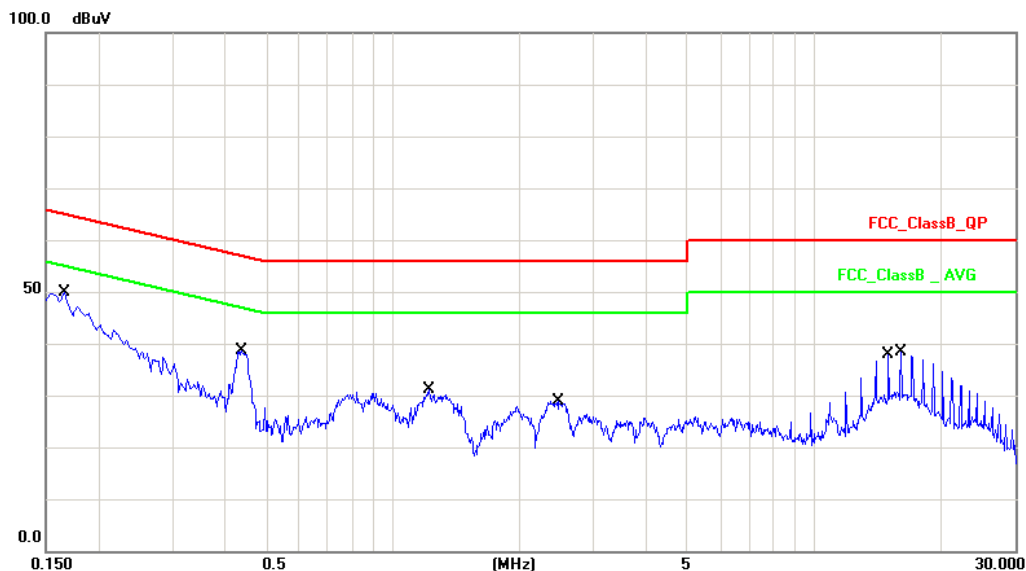
4.3 Typical Test Setup





4.4 Test Result and Data

Test Mode :	Mode 1: Normal Operation with BT on		
AC Power :	AC 120V/60Hz	Phase:	LINE
Temperature :	26°C	Humidity:	60%
Pressure(mbar) :	1002	Date:	2017/09/11

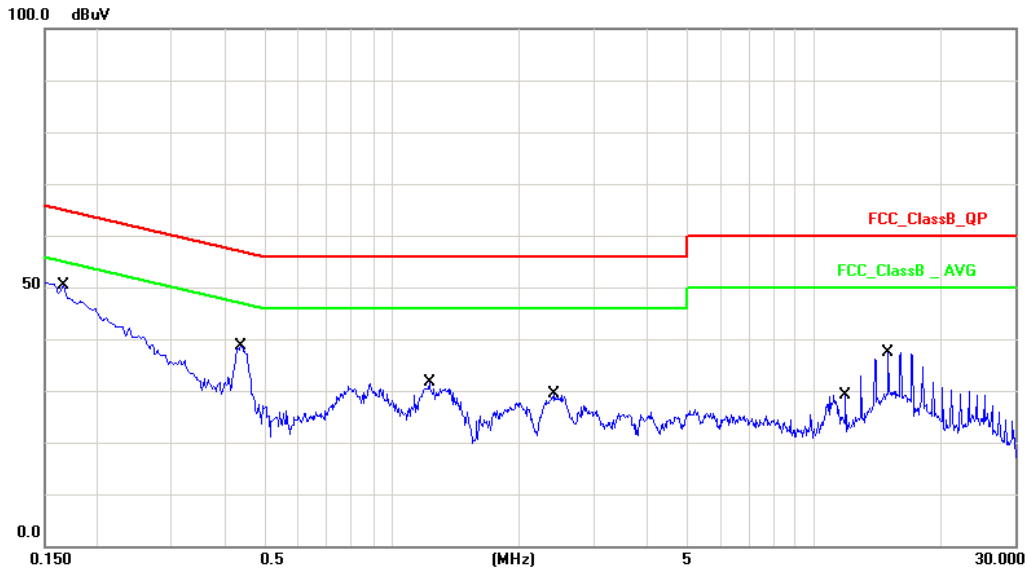


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	10.13	31.19	41.32	65.16	-23.84	QP
2	0.1660	10.13	11.13	21.26	55.16	-33.90	AVG
3	0.4380	10.15	26.07	36.22	57.10	-20.88	QP
4	0.4380	10.15	19.44	29.59	47.10	-17.51	AVG
5	1.2220	10.16	16.98	27.14	56.00	-28.86	QP
6	1.2220	10.16	11.53	21.69	46.00	-24.31	AVG
7	2.4740	10.18	15.14	25.32	56.00	-30.68	QP
8	2.4740	10.18	9.42	19.60	46.00	-26.40	AVG
9	15.0500	10.53	15.27	25.80	60.00	-34.20	QP
10	15.0500	10.53	9.36	19.89	50.00	-30.11	AVG
11	16.0780	10.48	21.71	32.19	60.00	-27.81	QP
12	16.0780	10.48	12.88	23.36	50.00	-26.64	AVG

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Normal Operation with BT on		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Temperature :	26°C	Humidity :	60%
Pressure(mbar) :	1002	Date:	2017/09/11



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	10.13	32.09	42.22	65.15	-22.93	QP
2	0.1660	10.13	10.87	21.00	55.15	-34.15	AVG
3	0.4380	10.15	26.63	36.78	57.10	-20.32	QP
4	0.4380	10.15	20.09	30.24	47.10	-16.86	AVG
5	1.2260	10.18	16.99	27.17	56.00	-28.83	QP
6	1.2260	10.18	11.67	21.85	46.00	-24.15	AVG
7	2.4260	10.19	15.39	25.58	56.00	-30.42	QP
8	2.4260	10.19	9.88	20.07	46.00	-25.93	AVG
9	11.9220	10.36	22.99	33.35	60.00	-26.65	QP
10	11.9220	10.36	16.74	27.10	50.00	-22.90	AVG
11	15.0220	10.53	26.56	37.09	60.00	-22.91	QP
12	15.0220	10.53	23.42	33.95	50.00	-16.05	AVG

Note: Measurement Level = Reading Level + Correct Factor



5. Radiated Emission Measurement

5.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (micro volts/meter)	MEASUREMENT DISTANCE (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the above table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37



5.2 Test Standard

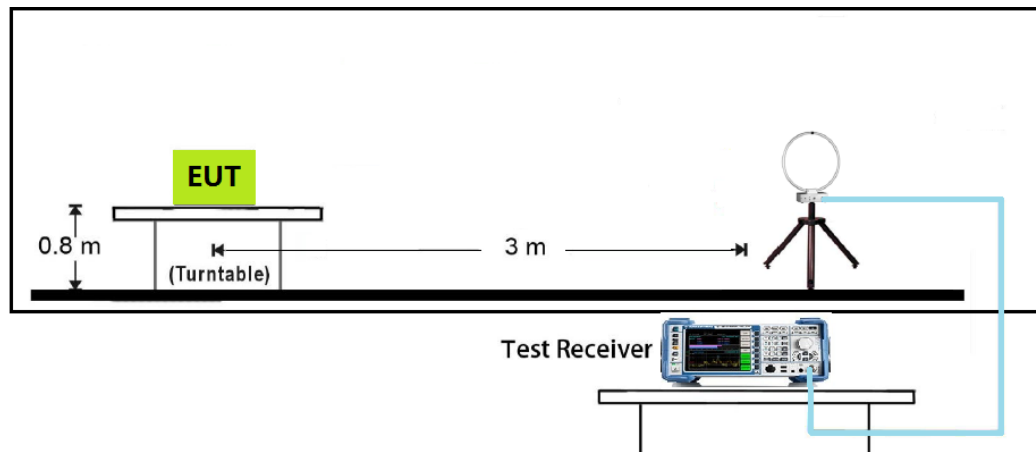
ANSI C63.10-2013-Section 6.10.5

5.3 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter for frequency below 1GHz and 1.5meter for frequency above 1GHz above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

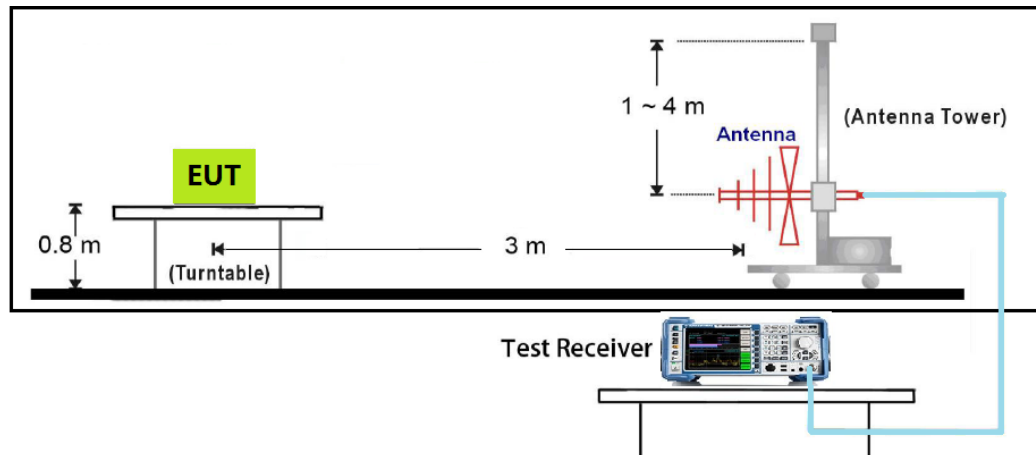
5.4 Typical Test Setup

9kHz~30MHz Test Setup

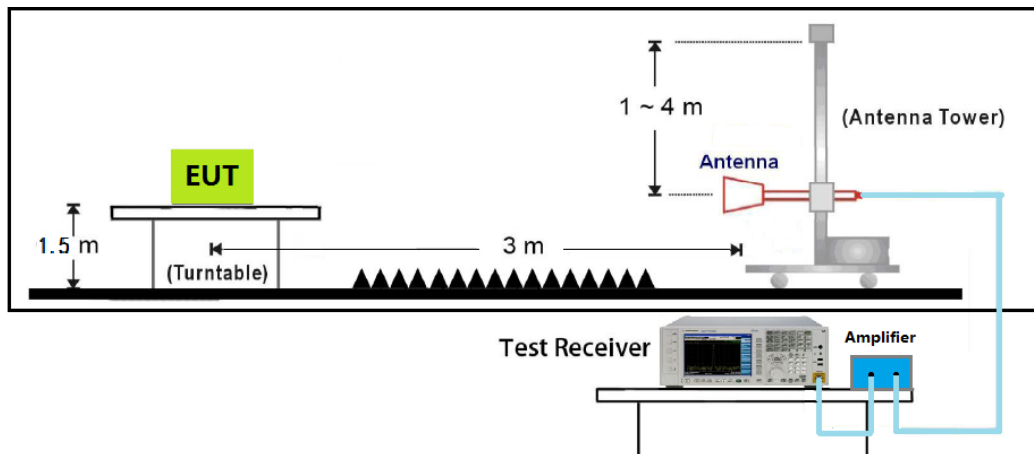




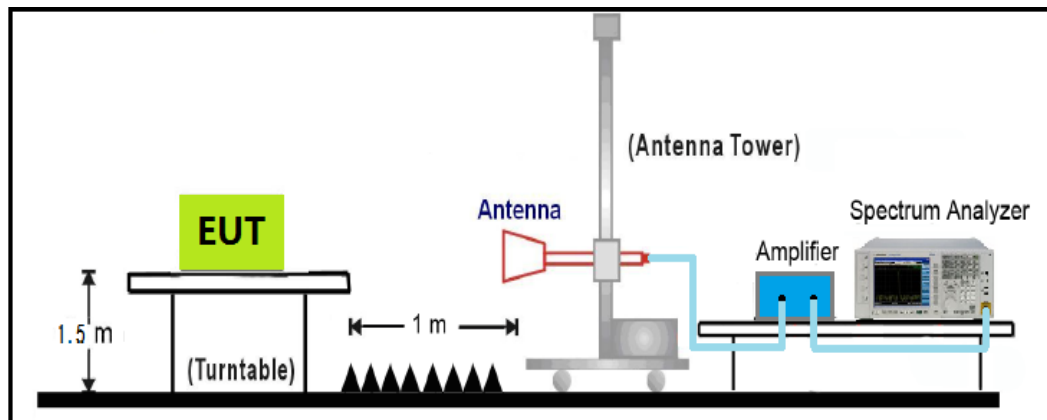
Below 1GHz Test Setup



1GHz~18GHz Test Setup



18GHz~40GHz Test Setup

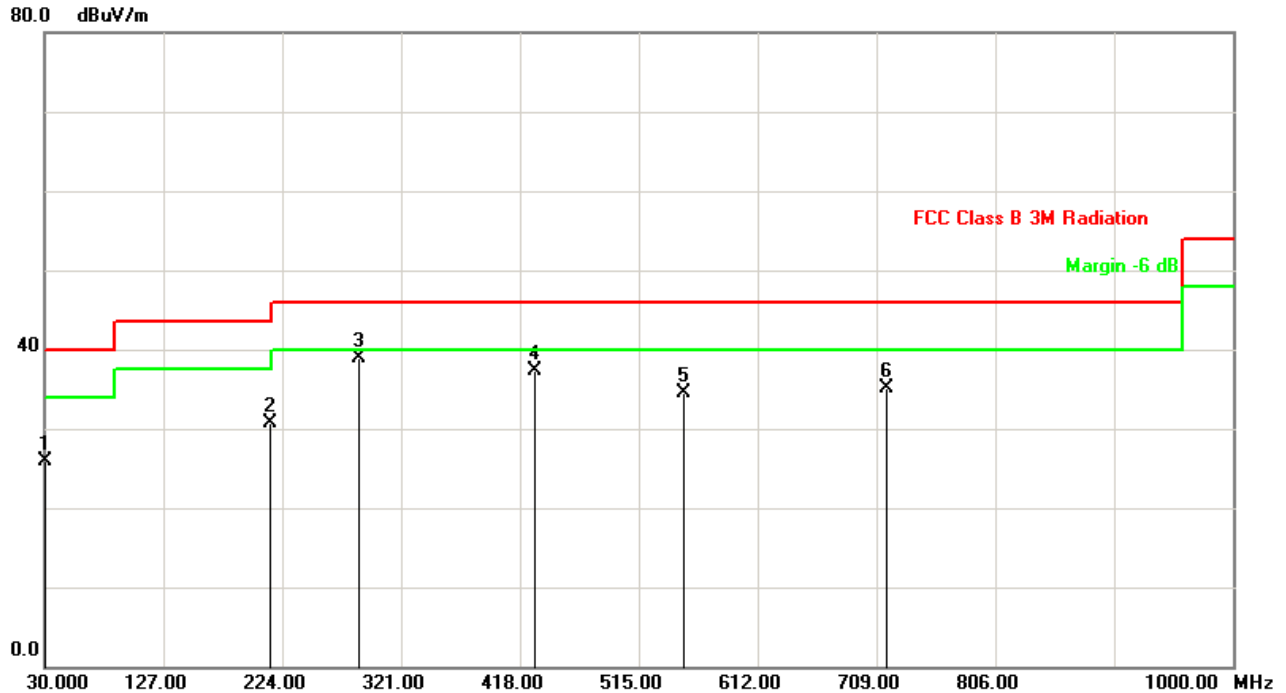




5.5 Test Result and Data

The worst case of Radiated Emission below 1GHz:

Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D (30-1000MHz)	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode1: Transmit at channel 2402MHz by DH5	



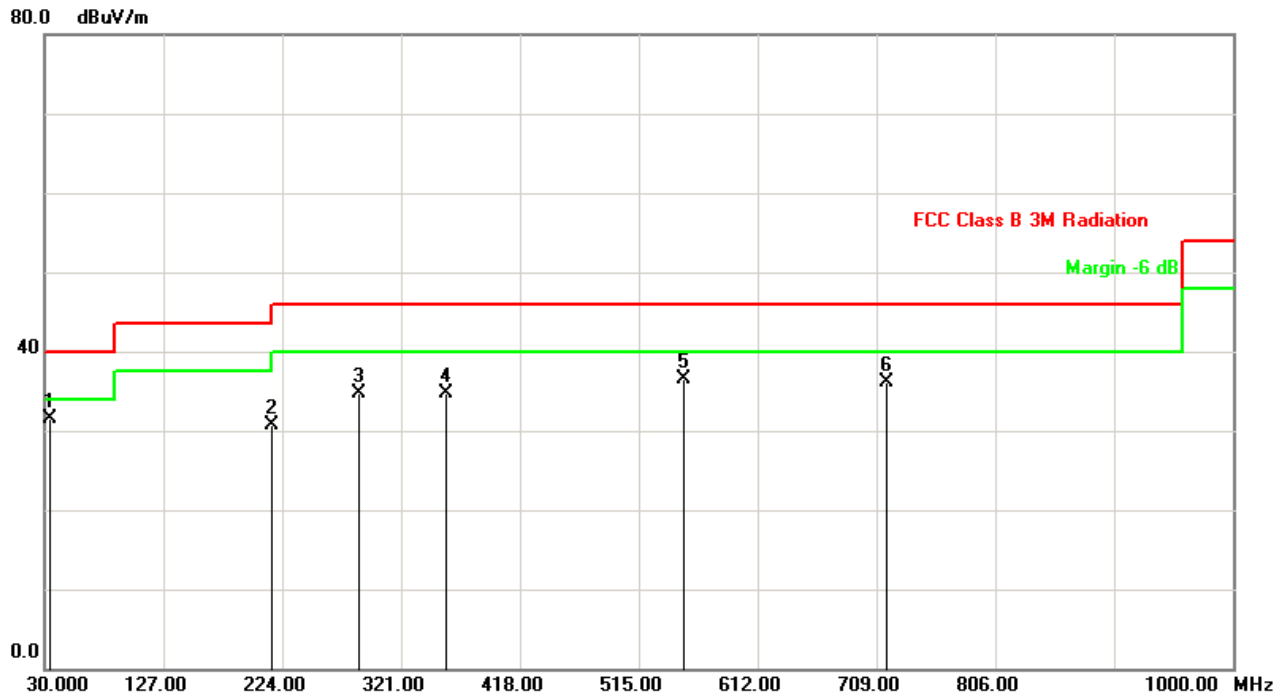
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.0000	-2.48	28.32	25.84	40.00	-14.16	QP
2	214.3000	-12.26	42.88	30.62	43.50	-12.88	QP
3	287.0500	-8.73	47.67	38.94	46.00	-7.06	QP
4	430.6100	-4.41	41.80	37.39	46.00	-8.61	QP
5	551.8600	-3.60	38.15	34.55	46.00	-11.45	QP
6	716.7600	1.34	33.70	35.04	46.00	-10.96	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D (30-1000MHz)	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode1: Transmit at channel 2402MHz by DH5	



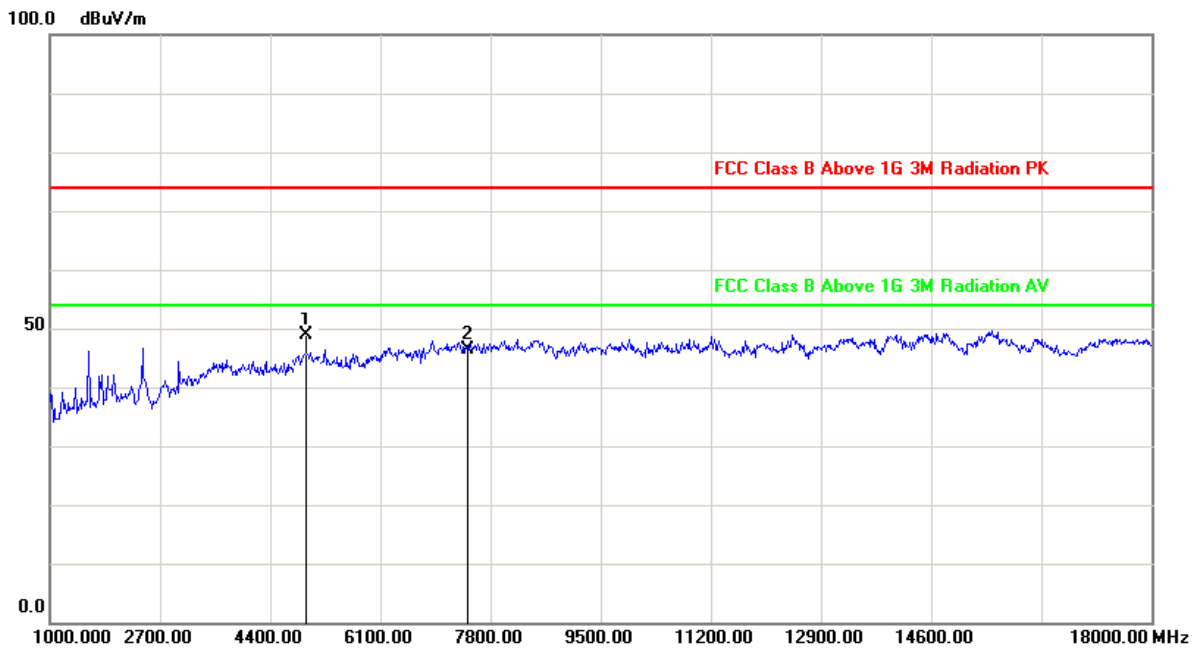
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	34.8500	-4.31	35.74	31.43	40.00	-8.57	QP
2	215.2700	-12.25	43.04	30.79	43.50	-12.71	QP
3	287.0500	-8.73	43.53	34.80	46.00	-11.20	QP
4	357.8599	-6.82	41.62	34.80	46.00	-11.20	QP
5	551.8600	-3.60	40.19	36.59	46.00	-9.41	QP
6	717.7300	1.36	34.68	36.04	46.00	-9.96	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)

**Radiated Emission above 1GHz:**

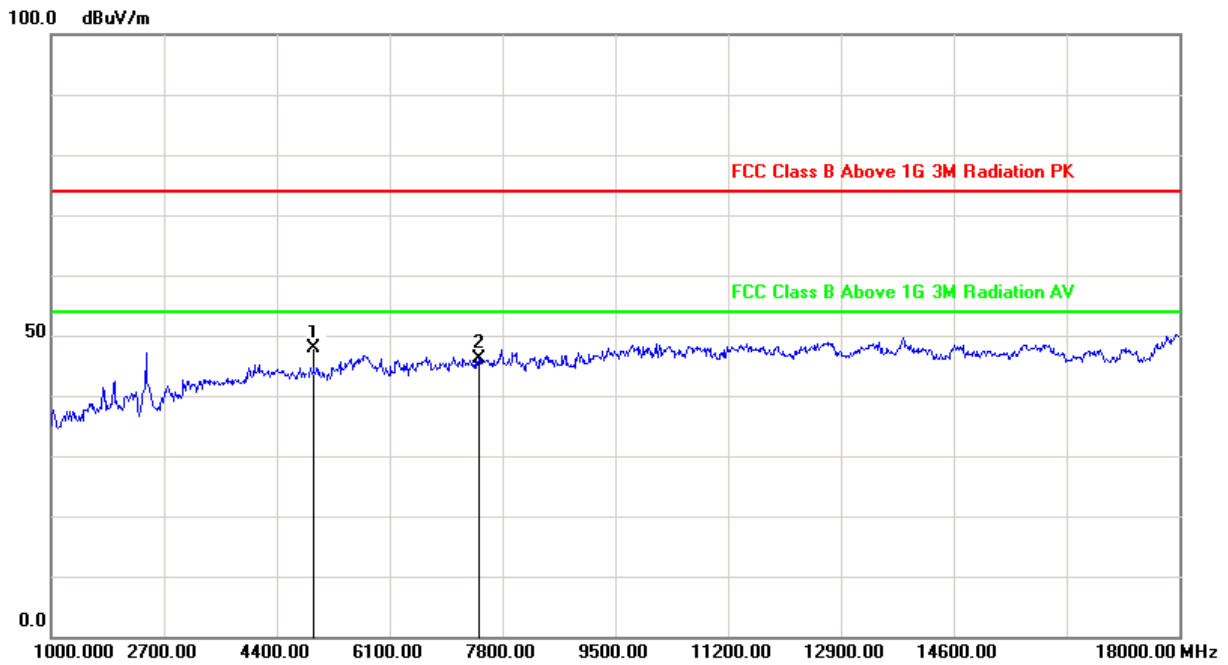
Engineer: Ternence	
Site: AC102	Time: 2017/09/13
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode : Transmits at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.0	47.6	39.3	-6.4	54(note3)	-8.3	PK
2	*	7440.0	43.4	40.5	-10.6	54(note3)	-2.9	PK



Engineer: Ternence	
Site: AC102	Time: 2017/09/13
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode : Transmits at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.0	47.1	38.8	-6.9	54(note3)	-8.3	PK
2	*	7440.0	42.1	39.2	-11.9	54(note3)	-2.9	PK



Mode1: Transmit by DH5

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	4804.0	37.1	-8.4	45.5	54(note3)	-8.5	PK
	H	7206.0	37.9	-3.5	41.4	54(note3)	-12.6	PK
	V	4804.0	37.2	-8.4	45.6	54(note3)	-8.4	PK
	V	7206.0	40.8	-3.5	44.3	54(note3)	-9.7	PK
39	H	4882.0	37.4	-8.3	45.7	54(note3)	-8.3	PK
	H	7323.0	40.4	-3.3	43.7	54(note3)	-10.3	PK
	V	4882.0	37.7	-8.3	46.0	54(note3)	-8.0	PK
	V	7323.0	36.4	-3.3	39.7	54(note3)	-14.3	PK
79	H	4960.0	38.8	-8.3	47.1	54(note3)	-6.9	PK
	H	7440.0	39.2	-2.9	42.1	54(note3)	-11.9	PK
	V	4960.0	39.3	-8.3	47.6	54(note3)	-6.4	PK
	V	7440.0	40.5	-2.9	43.4	54(note3)	-10.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.



Mode2: Transmit by 2DH5

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	4804.0	37.4	-8.4	45.8	54(note3)	-8.2	PK
	H	7206.0	37.3	-3.5	40.8	54(note3)	-13.2	PK
	V	4804.0	36.7	-8.4	45.1	54(note3)	-8.9	PK
	V	7206.0	40.5	-3.5	44.0	54(note3)	-10.0	PK
39	H	4882.0	38.1	-8.3	46.4	54(note3)	-7.6	PK
	H	7323.0	41.2	-3.3	44.5	54(note3)	-9.5	PK
	V	4882.0	37.6	-8.3	45.9	54(note3)	-8.1	PK
	V	7323.0	37.0	-3.3	40.3	54(note3)	-13.7	PK
79	H	4960.0	38.3	-8.3	46.6	54(note3)	-7.4	PK
	H	7440.0	38.8	-2.9	41.7	54(note3)	-12.3	PK
	V	4960.0	39.0	-8.3	47.3	54(note3)	-6.7	PK
	V	7440.0	41.3	-2.9	44.2	54(note3)	-9.8	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.



Mode3: Transmit by 3DH5

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
00	H	4804.0	37.6	-8.4	46.0	54(note3)	-8.0	PK
	H	7206.0	37.4	-3.5	40.9	54(note3)	-13.1	PK
	V	4804.0	36.6	-8.4	45.0	54(note3)	-9.0	PK
	V	7206.0	40.7	-3.5	44.2	54(note3)	-9.8	PK
39	H	4882.0	38.0	-8.3	46.3	54(note3)	-7.7	PK
	H	7323.0	40.9	-3.3	44.2	54(note3)	-9.8	PK
	V	4882.0	37.9	-8.3	46.2	54(note3)	-7.8	PK
	V	7323.0	36.5	-3.3	39.8	54(note3)	-14.2	PK
79	H	4960.0	38.2	-8.3	46.5	54(note3)	-7.5	PK
	H	7440.0	39.7	-2.9	42.6	54(note3)	-11.4	PK
	V	4960.0	38.8	-8.3	47.1	54(note3)	-6.9	PK
	V	7440.0	41.0	-2.9	43.9	54(note3)	-10.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.



6. 20dB Bandwidth Measurement

6.1 Test Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

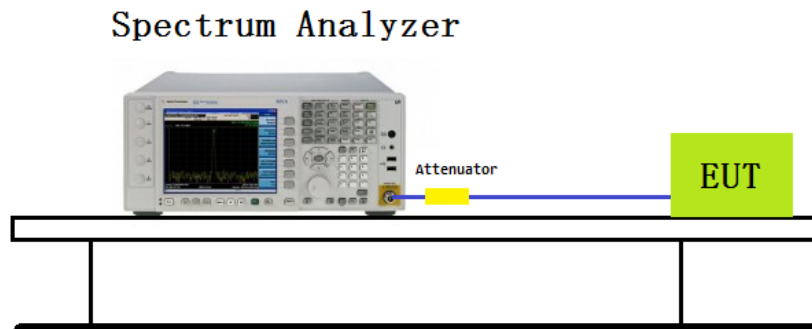
6.2 Test Standard

ANSI C63.10-2013- Section 7.8.7

6.3 Test Setup

1. Set RBW $\geq 1\%$ of the 20dB bandwidth
2. VBW $\geq 3 \times \text{RBW}$
3. Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20dB relative to the maximum level measured in the fundamental emission

6.4 Test Setup Layout



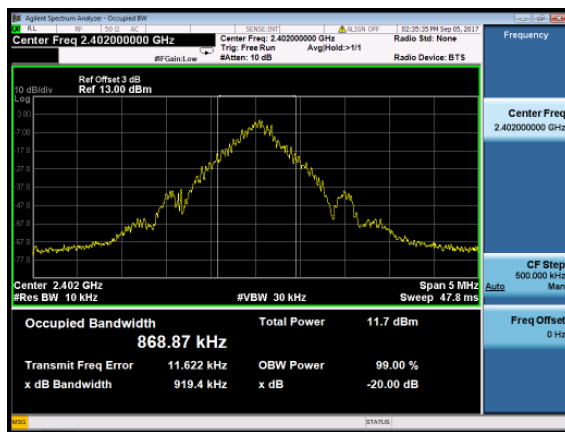


6.5 Test Result and Data

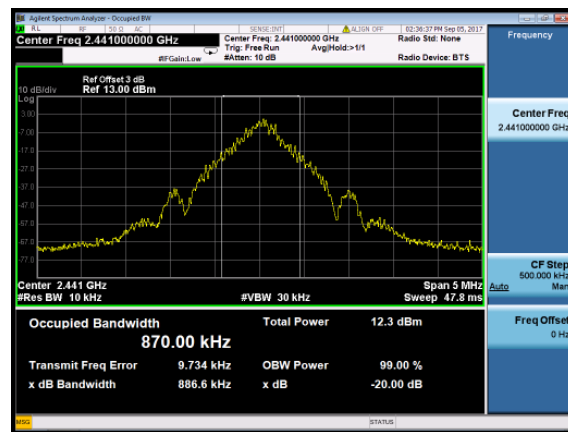
Test Item	Occupied Bandwidth
Test Mode	Mode 1: Transmitter DH5

Channel No.	Frequency(MHz)	20dB Bandwidth(kHz)	99% Bandwidth(kHz)
00	2402	919.4	868.87
39	2441	886.6	870.00
78	2480	886.3	868.63

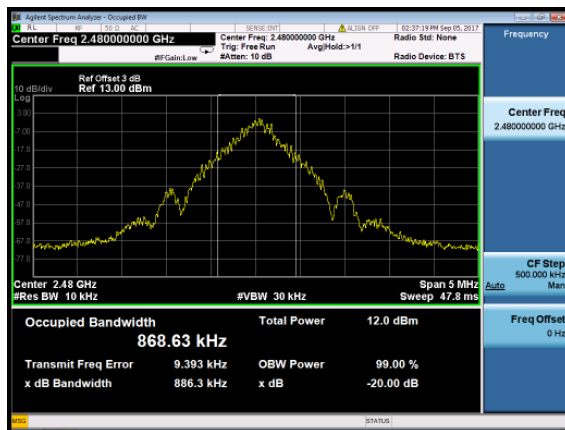
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

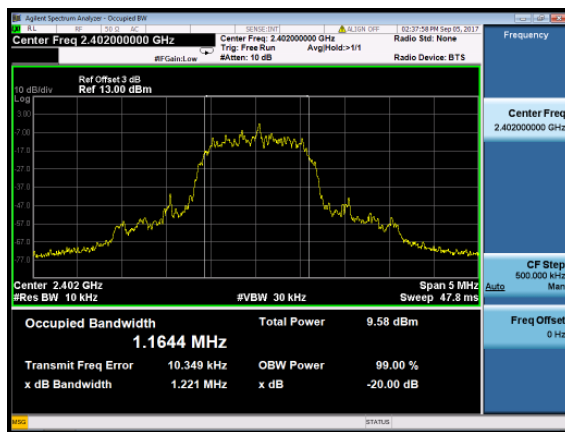




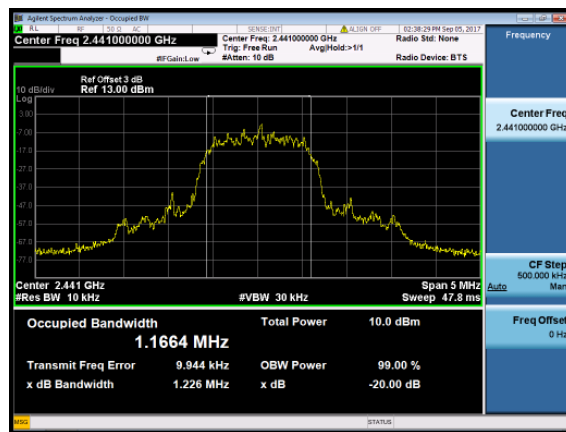
Test Item	Occupied Bandwidth
Test Mode	Mode 2: Transmitter 2DH5

Channel No.	Frequency(MHz)	20dB Bandwidth(kHz)	99% Bandwidth(kHz)
00	2402	1221	1164.4
39	2441	1226	1166.4
78	2480	1203	1164.4

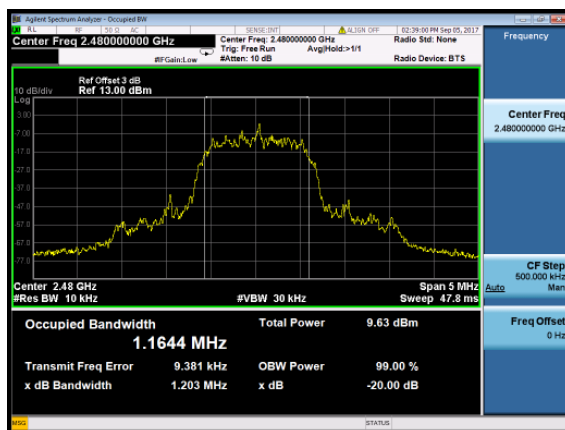
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

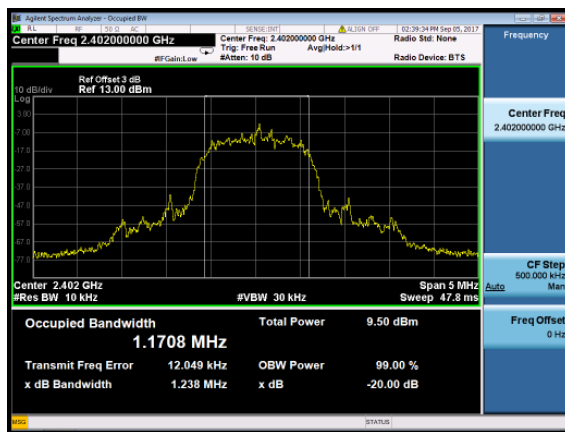




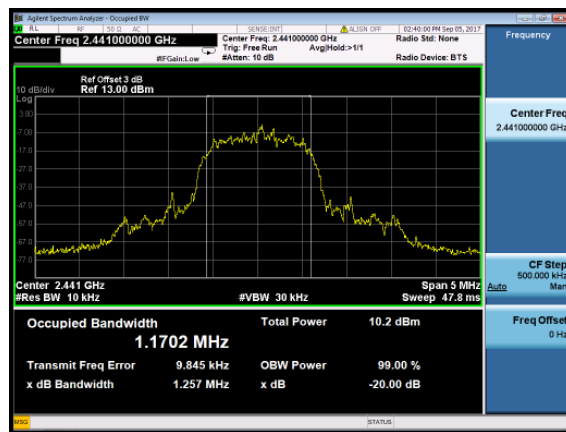
Test Item	Occupied Bandwidth
Test Mode	Mode 3: Transmitter 3DH5

Channel No.	Frequency(MHz)	20dB Bandwidth(kHz)	99% Bandwidth(kHz)
00	2402	1238	1170.8
39	2441	1257	1170.2
78	2480	1237	1165.6

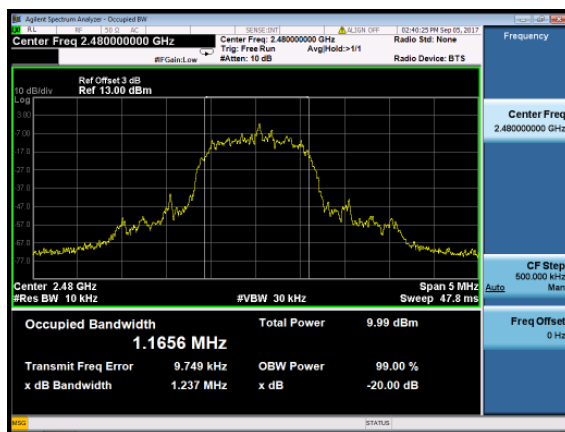
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)





7. Channel Carrier Frequencies Separation Measurement

7.1 Test Limit

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

7.2 Test Standard

ANSI C63.10-2013- Section 7.8.2

7.3 Test Setup

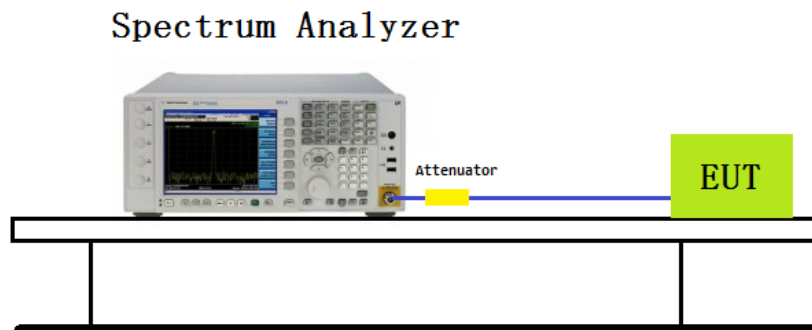
The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: Wide enough to capture the peaks of two adjacent channels.
- b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- c) Video (or average) bandwidth (VBW) $\geq$ RBW
- d) Sweep: Auto
- e) Detector function: Peak
- f) Trace: Max hold
- g) Allow the trace to stabilize

Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

7.4 Test Setup Layout



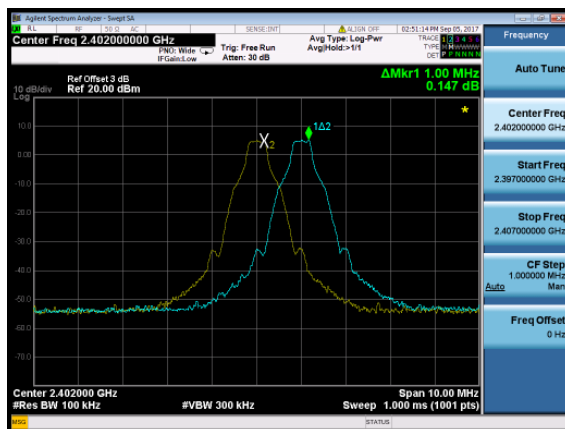


7.5 Test Result and Data

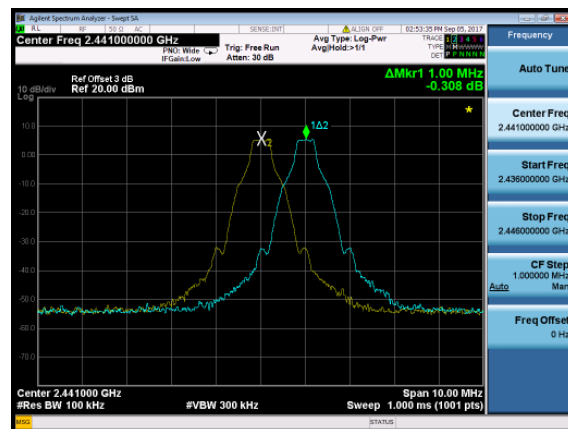
Test Item	:	Channel Carrier Frequency Separation
Test Mode	:	Mode 1: Transmitter DH5

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

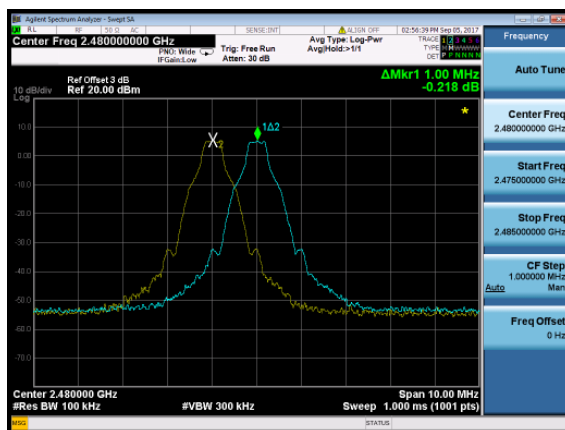
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

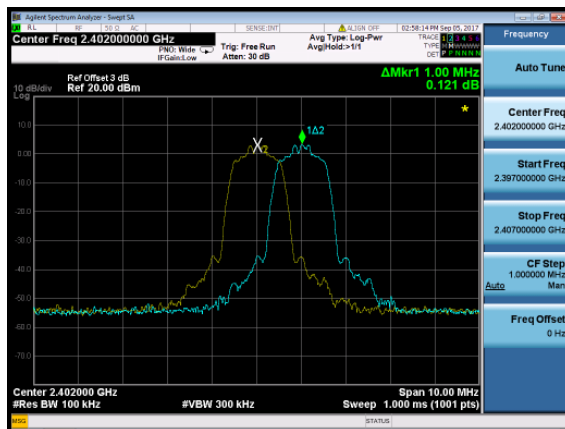




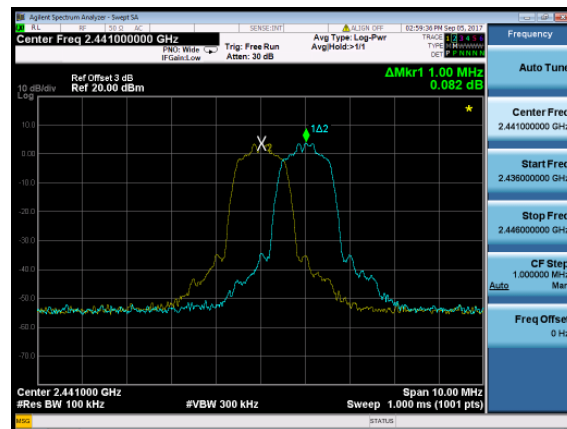
Test Item	:	Carrier Frequency Separation
Test Mode	:	Mode 2: Transmitter 2DH5

Channel No.	Frequency (MHz)	Carrier Frequency Separation(kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

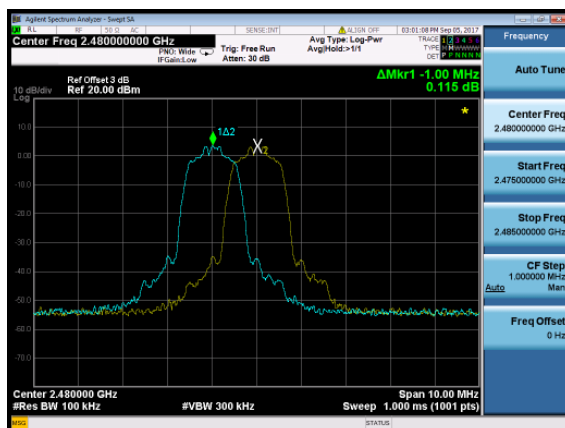
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

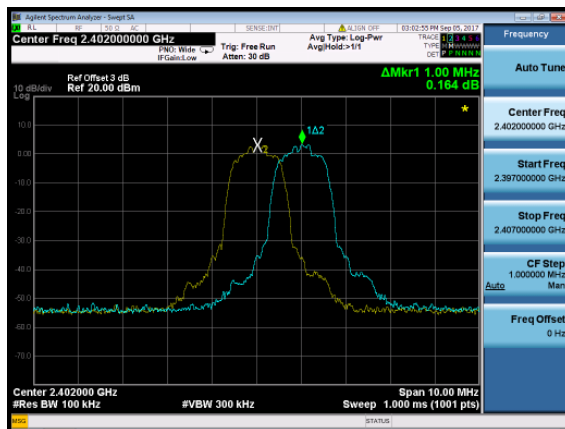




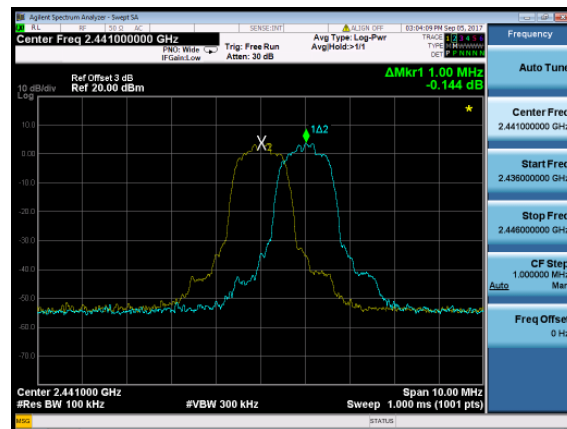
Test Item	:	Carrier Frequency Separation
Test Mode	:	Mode 2: Transmitter 3DH5

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	>25 kHz or 2/3 of 20 dB BW	Pass
39	2441	1000	>25 kHz or 2/3 of 20 dB BW	Pass
78	2480	1000	>25 kHz or 2/3 of 20 dB BW	Pass

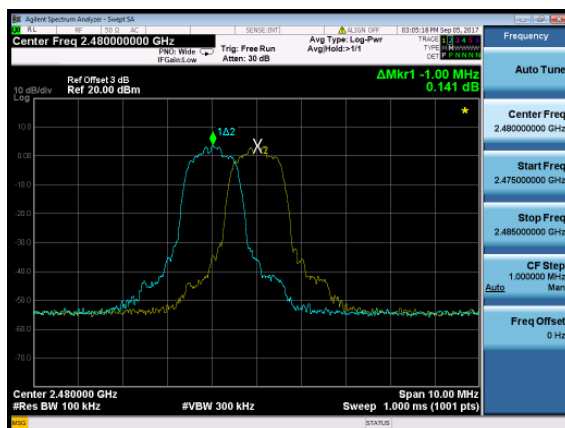
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)





8. Dwell Time Measurement

8.1 Test Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

8.2 Test Standard

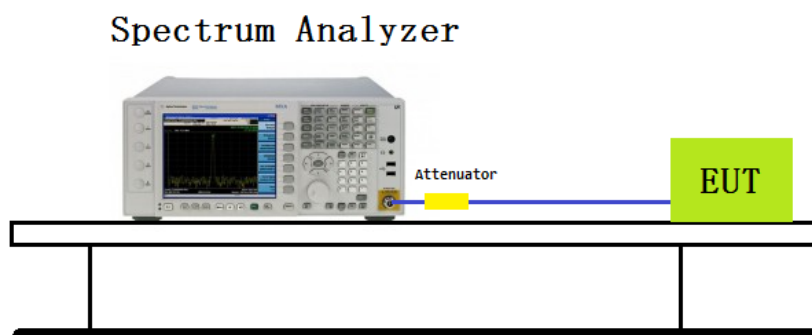
ANSI C63.10-2013- Section 7.8.3

8.3 Test Setup

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: Zero span, centered on a hopping channel.
- b) RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected dwell time per channel.
- c) Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
- d) Detector function: Peak
- e) Trace: Max hold

8.4 Test Setup Layout





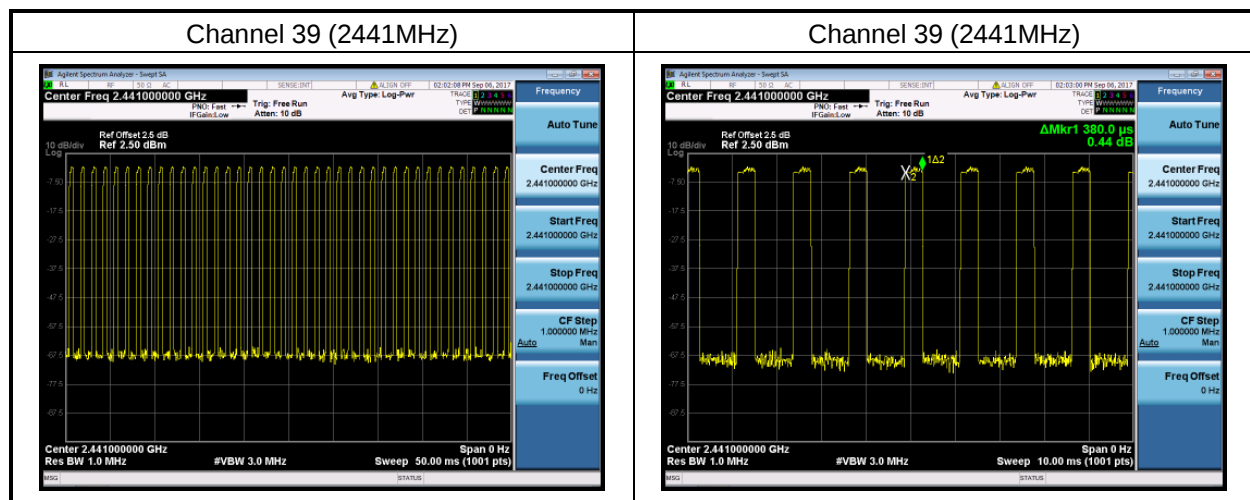
8.5 Test Result and Data

Test Item	:	Time of Occupancy (Dwell Time)
Test Mode	:	Transmitter 3DH1

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	121.6	< 400	Pass

Test Time Period: $0.4 \times 79 = 31.6$ sec, Hopping Times Within 1 sec: $40/50$ msec = 800 hops/sec.

2441 MHz, The Maximum Occupancy Time Within 31.6 sec: $[(0.38 \text{ ms} \times 800)/79] \times 31.6 = 121.6$ msec



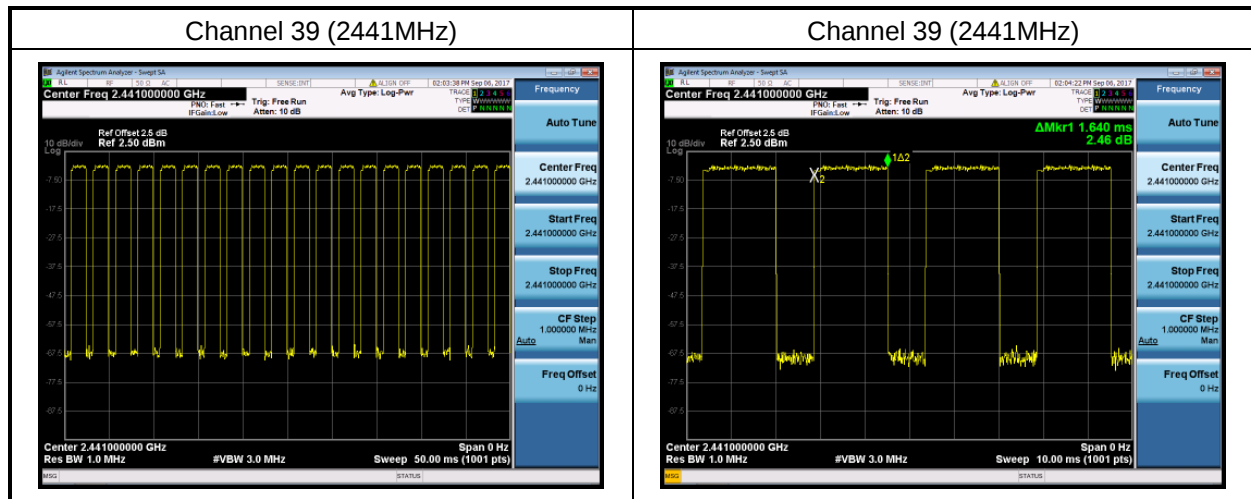


Test Item	:	Time of Occupancy (Dwell Time)
Test Mode	:	Transmitter 3DH3

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	262.4	< 400	Pass

Test Time Period: $0.4 \times 79 = 31.6$ sec, Hopping Times Within 1sec: $20/50$ msec= 400 hops/sec.

2441MHz, The Maximum Occupancy Time Within 31.6sec: $[(1.64\text{ms} \times 400)/79] \times 31.6 = 262.4$ msec



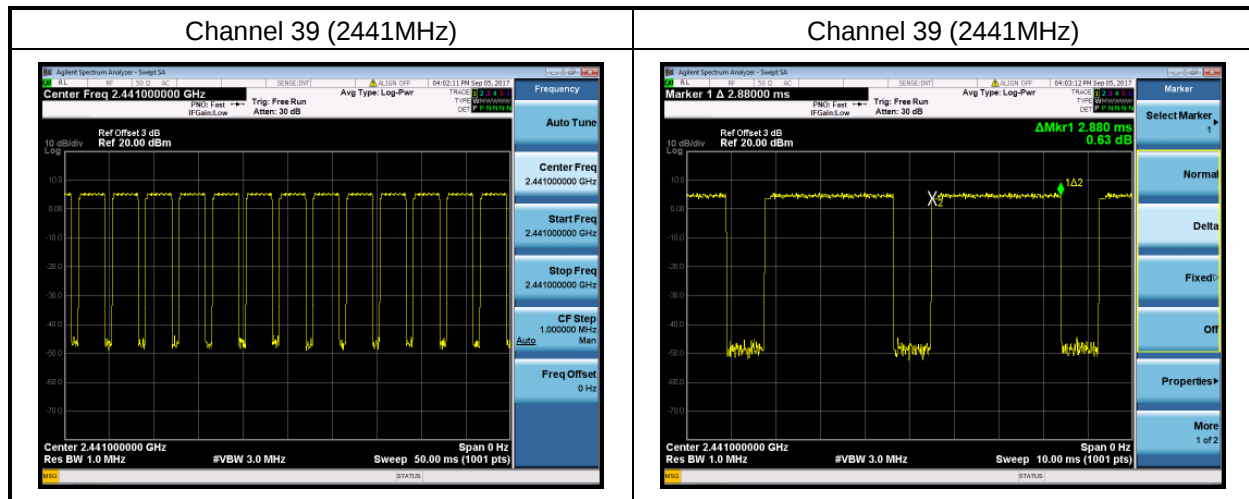


Test Item	:	Time of Occupancy (Dwell Time)
Test Mode	:	Transmitter 3DH5

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	299.52	< 400	Pass

Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$, Hopping Times Within 1sec: $13/50 \text{ msec} = 260 \text{ hops/sec}$.

2441MHz, The Maximum Occupancy Time Within 31.6sec: $[(2.9 \text{ ms} \times 260)/79] \times 31.6 = 299.52 \text{ msec}$





9. Number of Hopping Channels Measurement

9.1 Test Limit

Frequency hopping systems in the 2400 ~ 2483.5 MHz band shall use at least 15 channels.

9.2 Test Standard

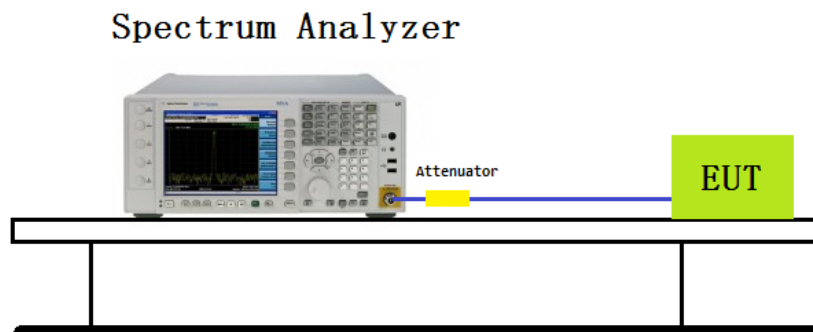
ANSI C63.10-2013- Section 7.8.3

9.3 Test Setup

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- c) VBW $\geq$ RBW
- d) Sweep: Auto
- e) Detector function: Peak
- f) Trace: Max hold
- g) Allow the trace to stabilize

9.4 Test Setup Layout



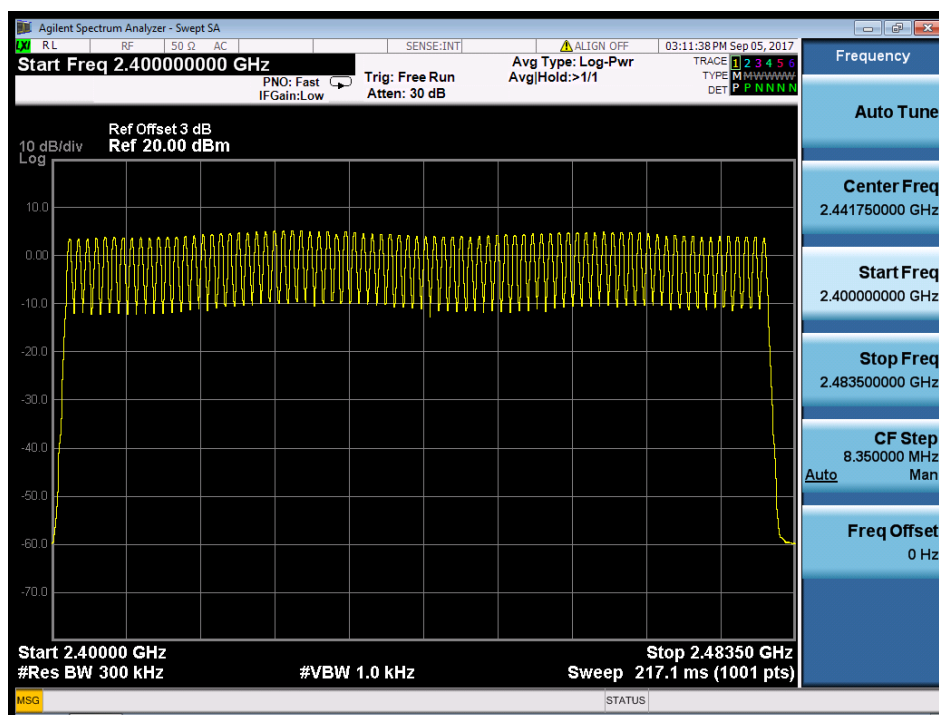


9.5 Test Result and Data

Test Item	:	Number of Hopping Frequencies
Test Mode	:	Mode 1: Transmitter DH5

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

2402 - 2480 MHz

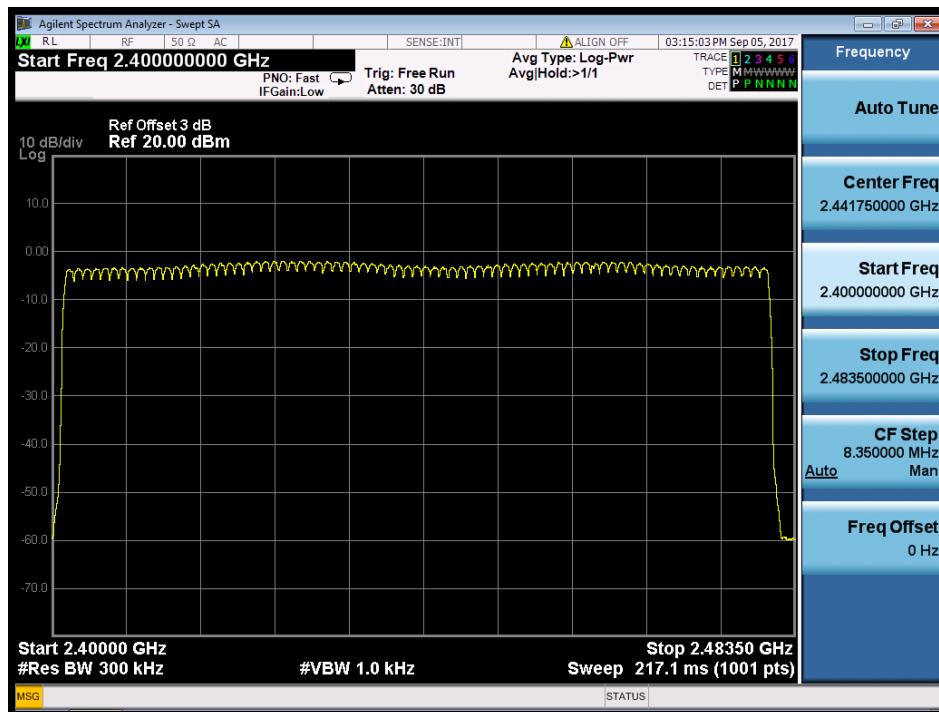




Test Item	:	Number of Hopping Frequencies
Test Mode	:	Mode 2: Transmitter 2DH5

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

2402 - 2480 MHz

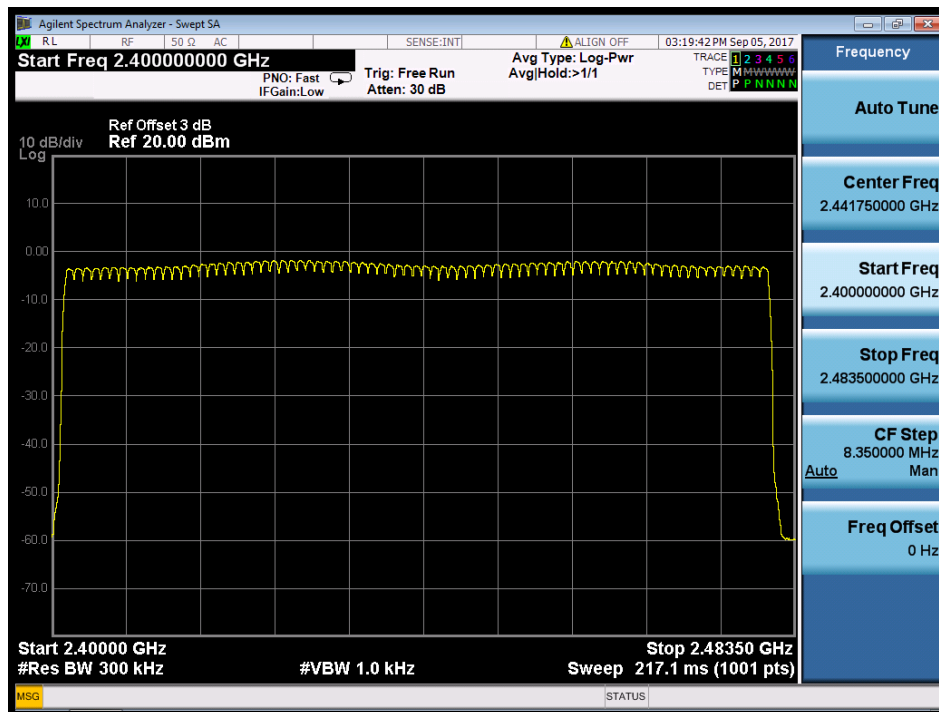




Test Item	:	Number of Hopping Frequencies
Test Mode	:	Mode 3: Transmitter 3DH5

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

2402 - 2480 MHz





10. Peak Output Power Measurement

10.1 Test Limit

The Maximum Peak Output Power Measurement is 125mW (20.97dBm).

10.2 Test Standard

ANSI C63.10-2013- Section 7.8.5

10.3 Test Setup

Spectrum analyzer method

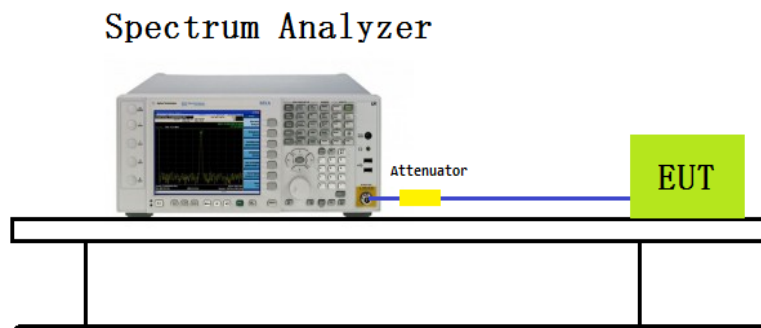
a) Use the following spectrum analyzer settings:

- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
 - 2) RBW > 20 dB bandwidth of the emission being measured.
 - 3) VBW $\geq$ RBW.
 - 4) Sweep: Auto.
 - 5) Detector function: Peak.
 - 6) Trace: Max hold.
- b) Allow trace to stabilize.
- c) Use the marker-to-peak function to set the marker to the peak of the emission.
- d) The indicated level is the peak output power, after any corrections for external attenuators and cables.
- e) A plot of the test results and setup description shall be included in the test report

Peak power meter method

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

10.4 Test Setup Layout





10.5 Test Result and Data

Test Item	:	Peak Output Power
Test Mode	:	Mode 1: Transmitter DH5

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	6.07	20.97	Pass
39	2441	6.39	20.97	Pass
78	2480	5.62	20.97	Pass

Test Item	:	Peak Output Power
Test Mode	:	Mode 2: Transmitter 2DH5

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	6.13	20.97	Pass
39	2441	6.45	20.97	Pass
78	2480	5.69	20.97	Pass

Test Item	:	Peak Output Power
Test Mode	:	Mode 3: Transmitter 3DH5

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	6.51	20.97	Pass
39	2441	6.85	20.97	Pass
78	2480	6.03	20.97	Pass



11. Conducted Spurious Emissions Measurement

11.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) of FCC part 15 is not required.



11.2 Test Procedure

According to ANSI C63.10: 2013.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW $\geq$ RBW

Sweep = auto

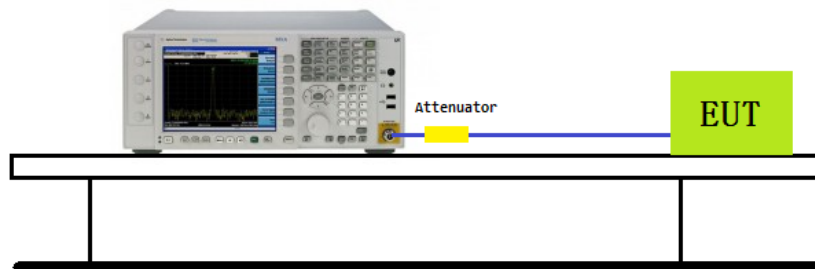
Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

11.3 Test Setup

Spectrum Analyzer

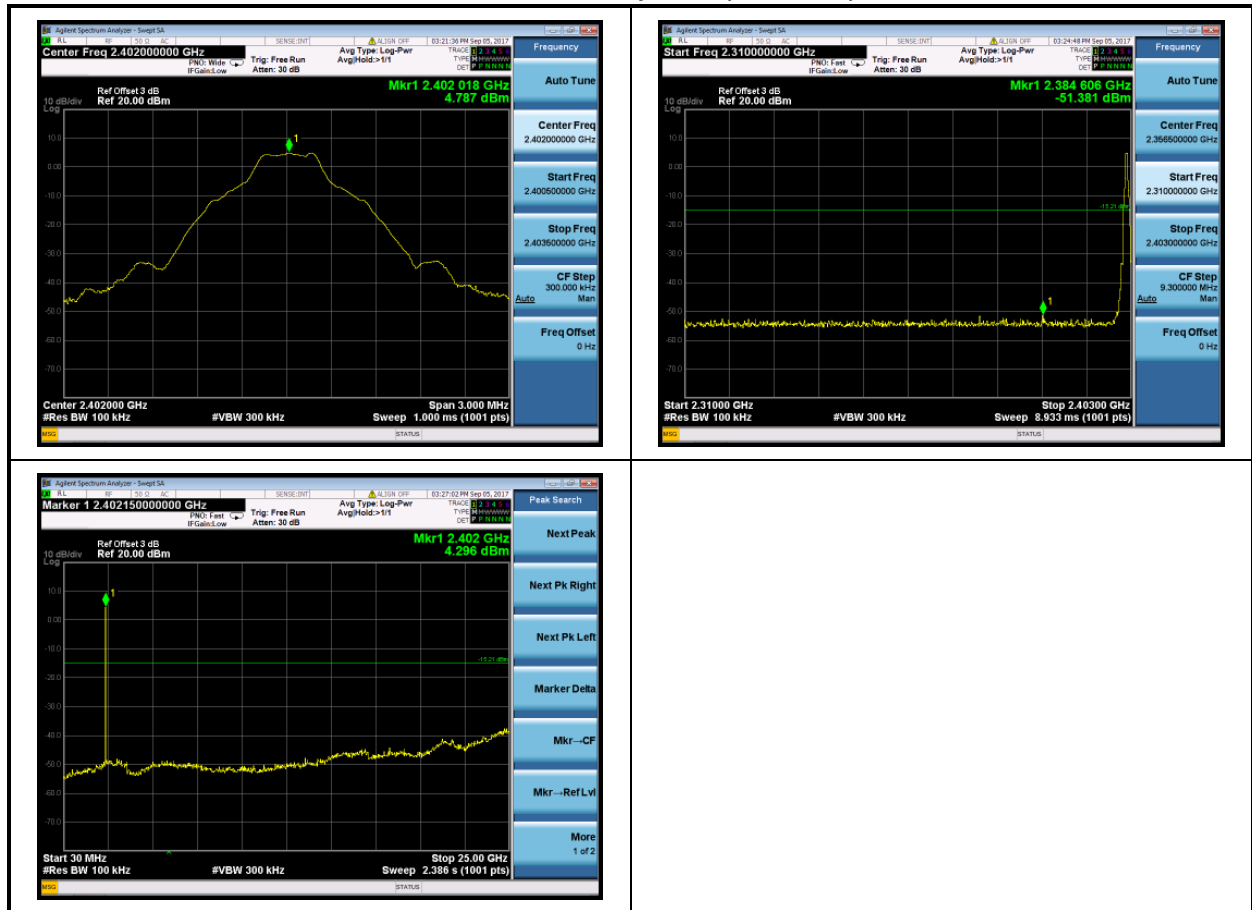




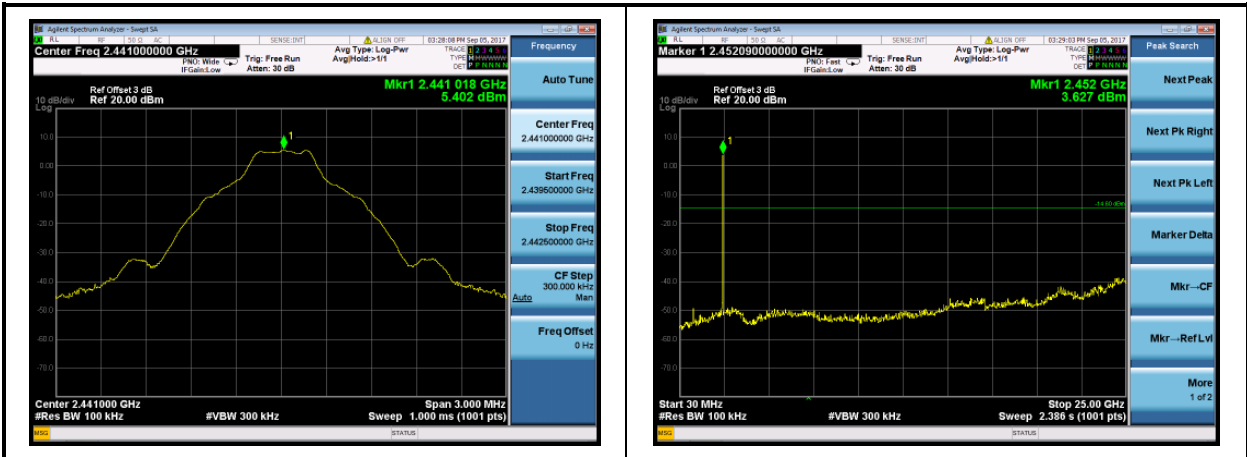
11.4 Test Result

Test Item	:	Conducted Spurious Emissions
Test Mode	:	Mode 1: Transmitter DH5

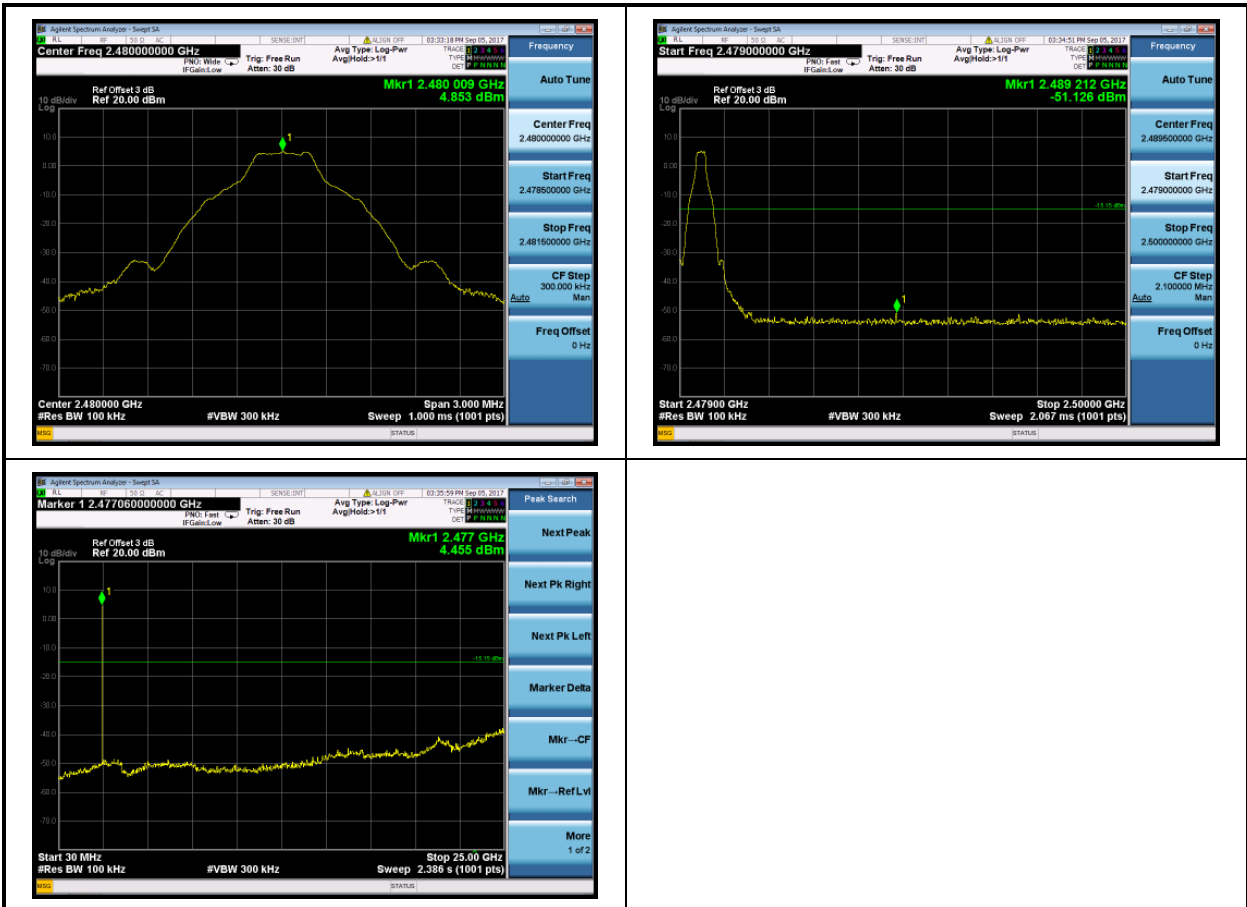
Mode 1: Transmit by DH5 (2402MHz)



Mode 1: Transmit by DH5 (2441MHz)



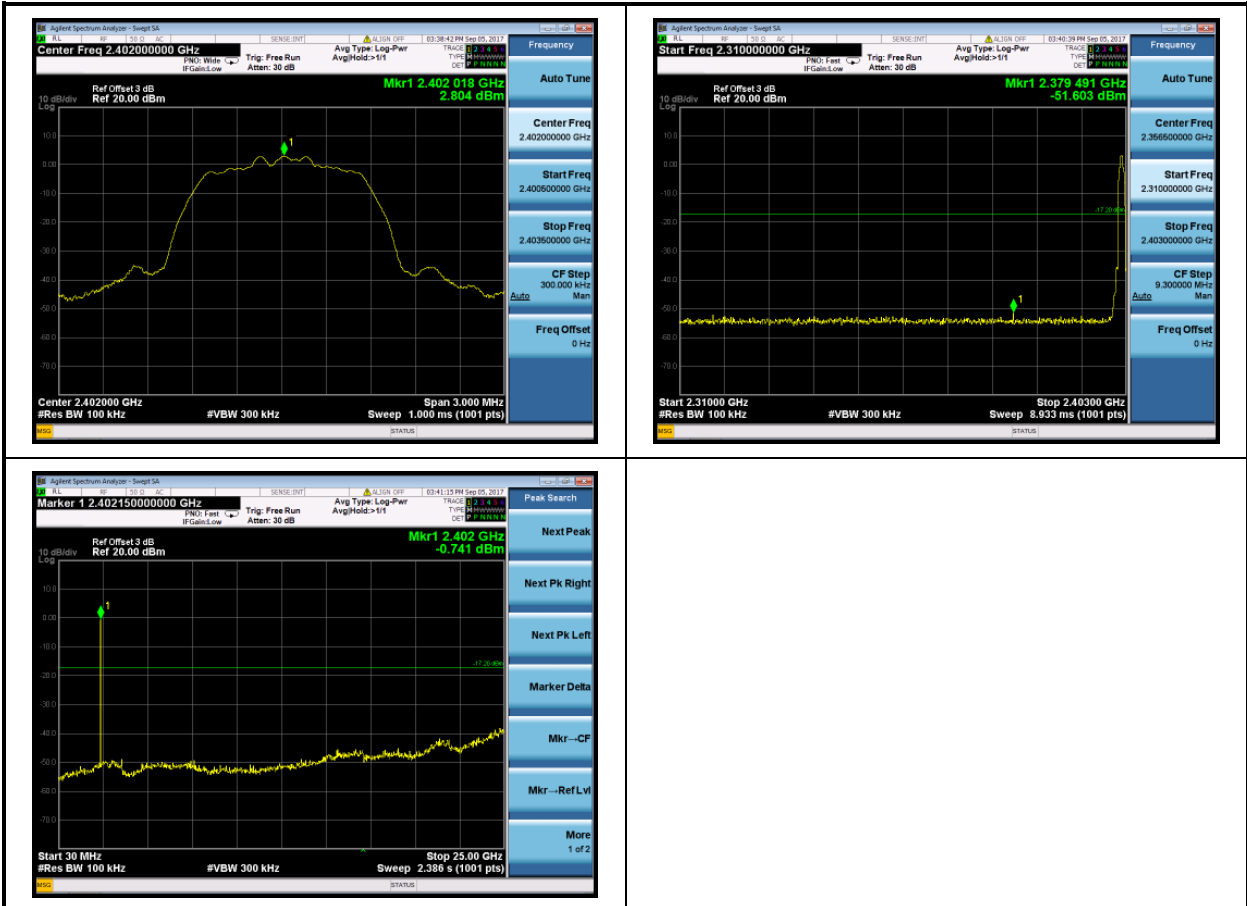
Mode 1: Transmit by DH5 (2480MHz)





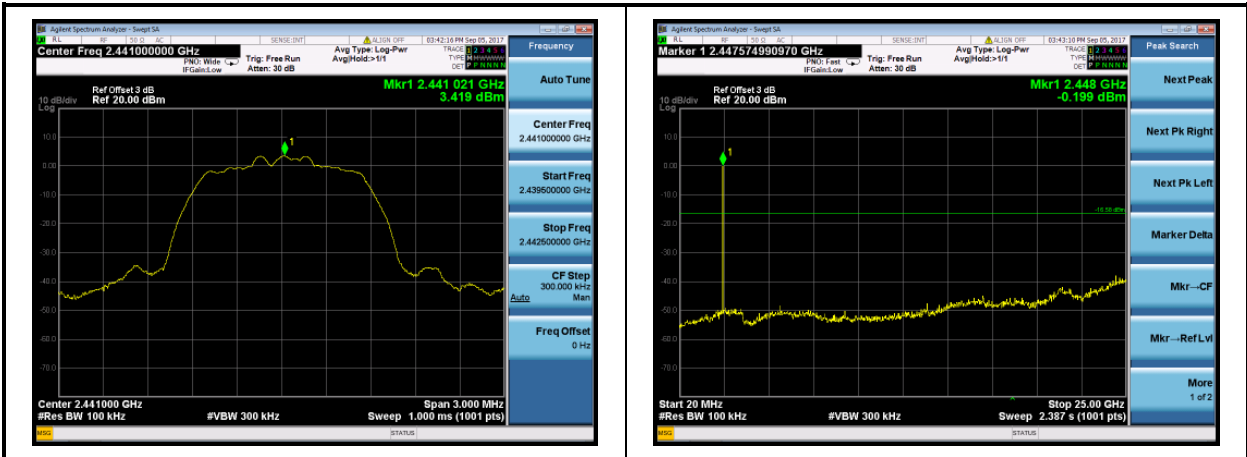
Test Item	: Conducted Spurious Emissions
Test Mode	: Mode 2: Transmitter 2DH5

Mode 2: Transmit by 2DH5 (2402MHz)

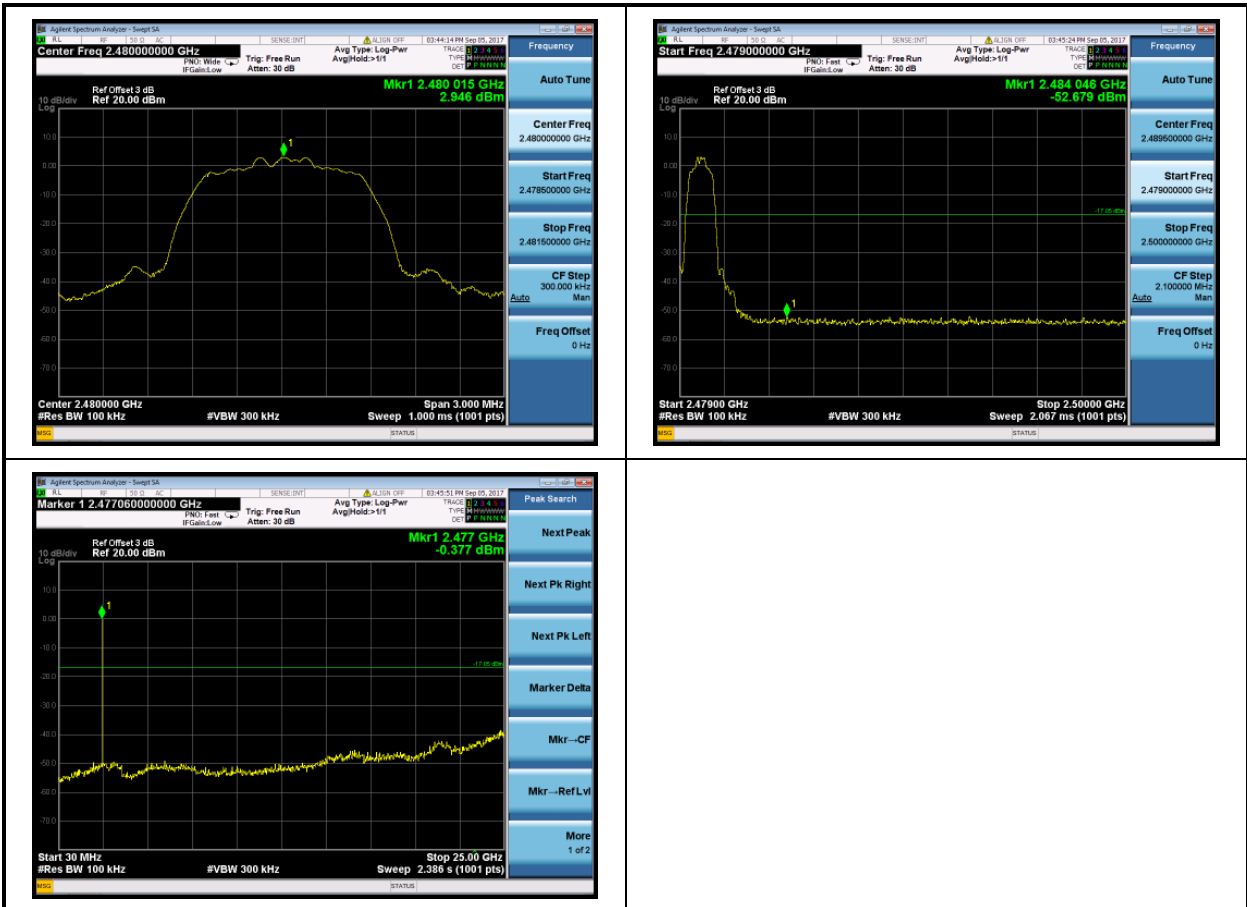




Mode 2: Transmit by 2DH5 (2441MHz)



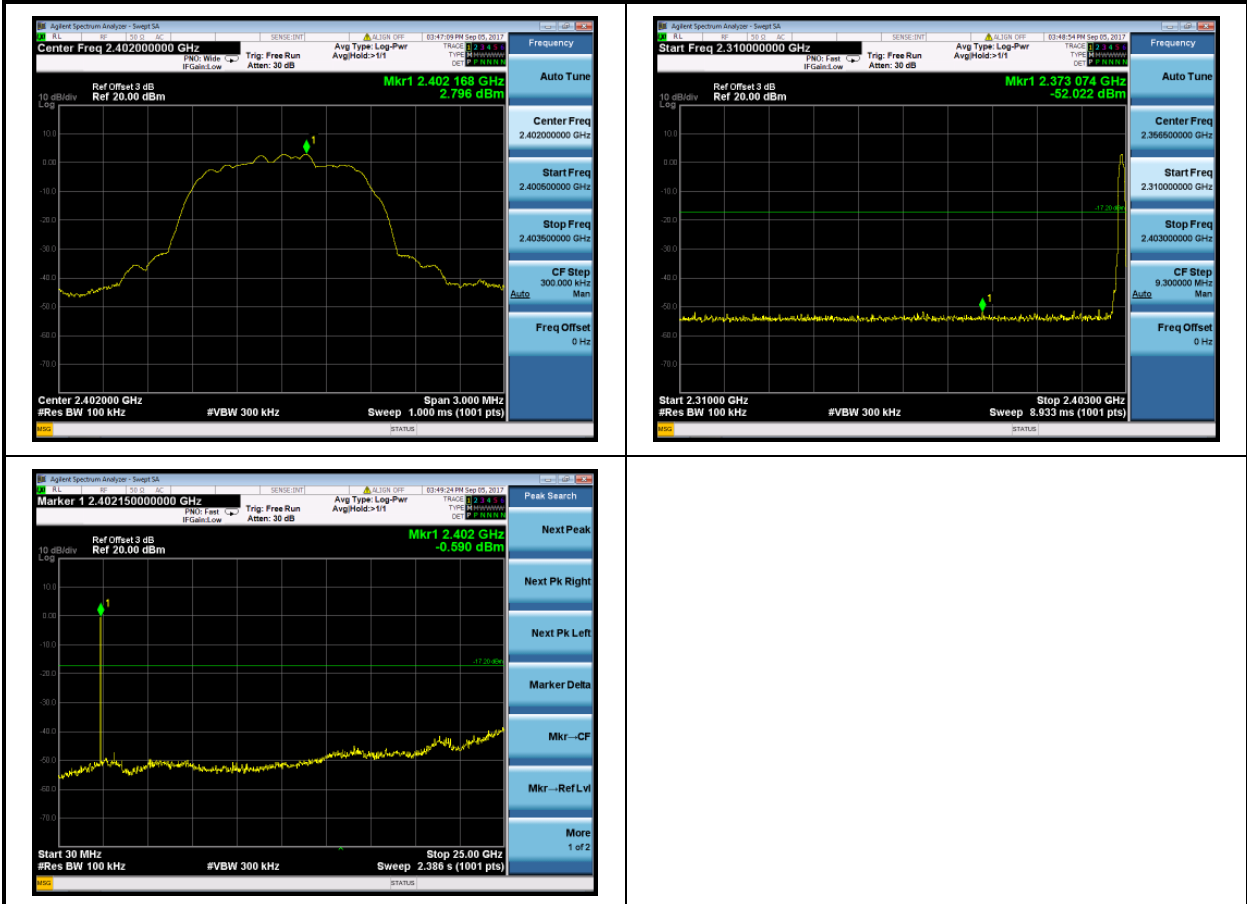
Mode 2: Transmit by 2DH5 (2480MHz)





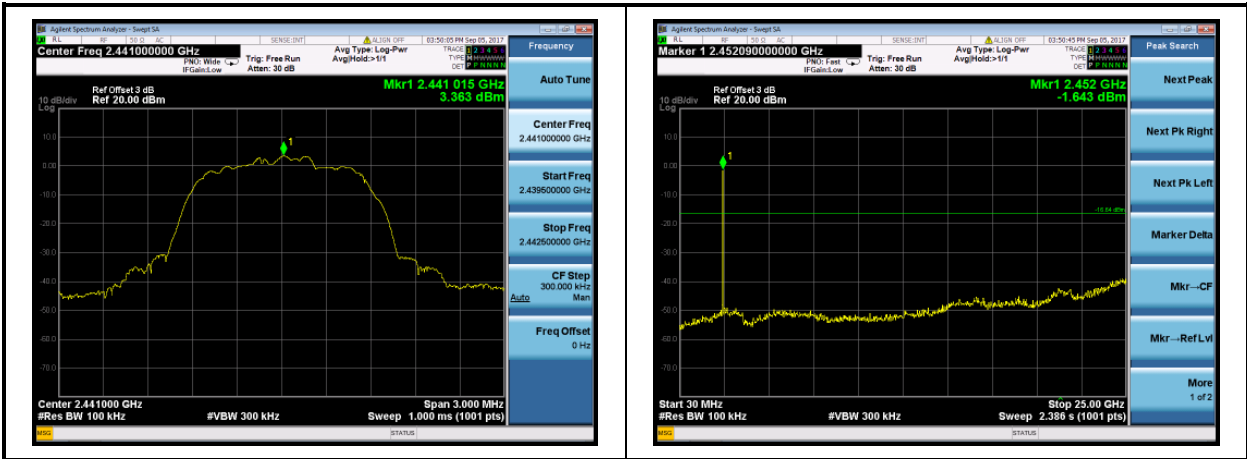
Test Item	:	Conducted Spurious Emissions
Test Mode	:	Mode 3: Transmitter 3DH5

Mode 3: Transmit by 3DH5 (2402MHz)

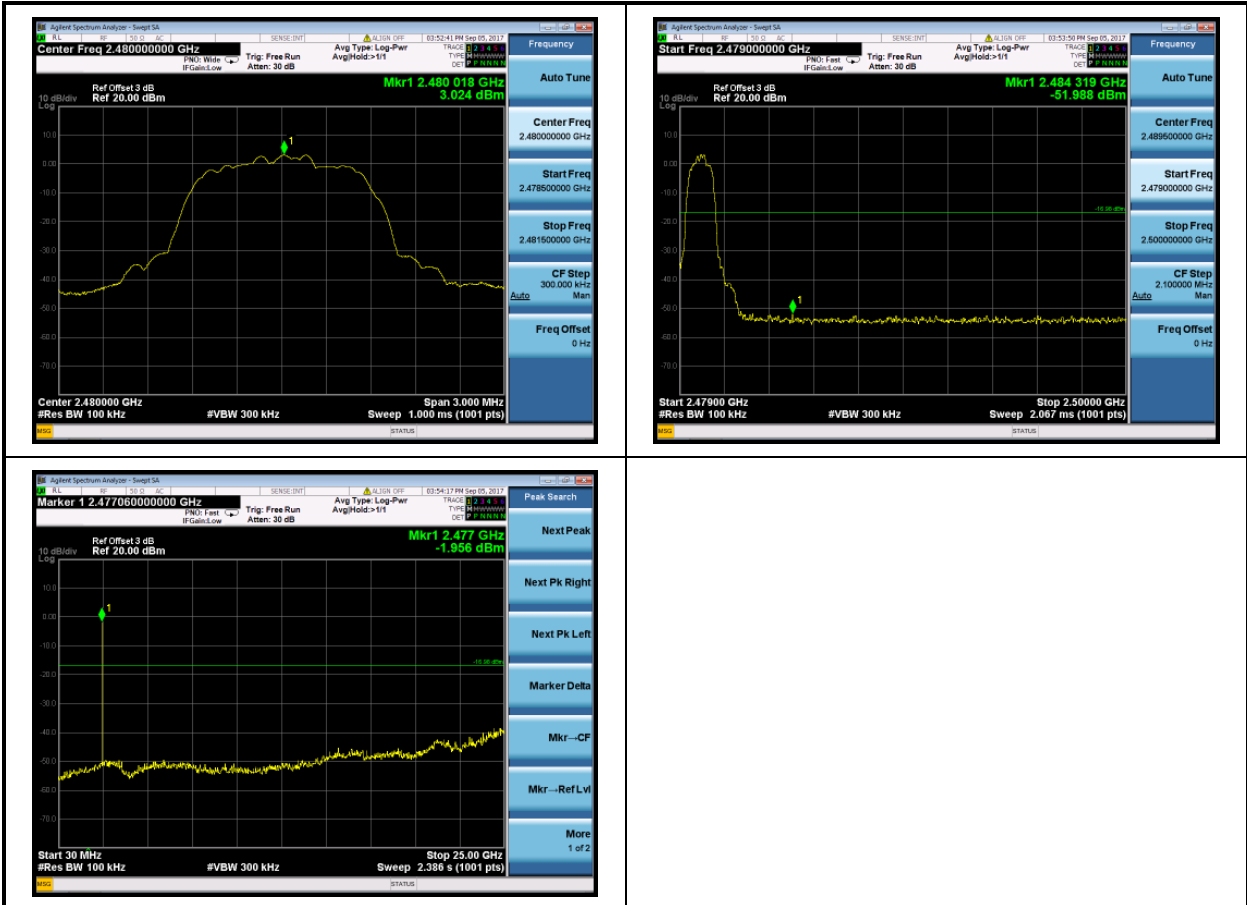




Mode 3: Transmit by 3DH5 (2441MHz)



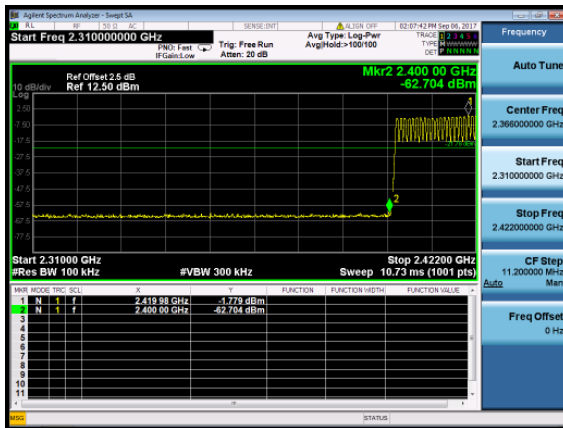
Mode 3: Transmit by 3DH5 (2480MHz)



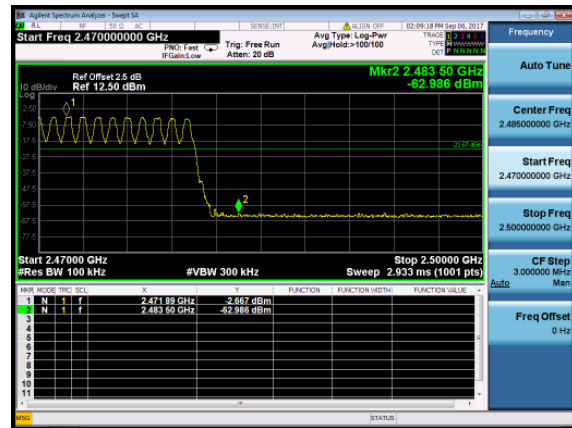


Mode 1: Transmitter at DH5 by Hopping Mode

Low Frequency

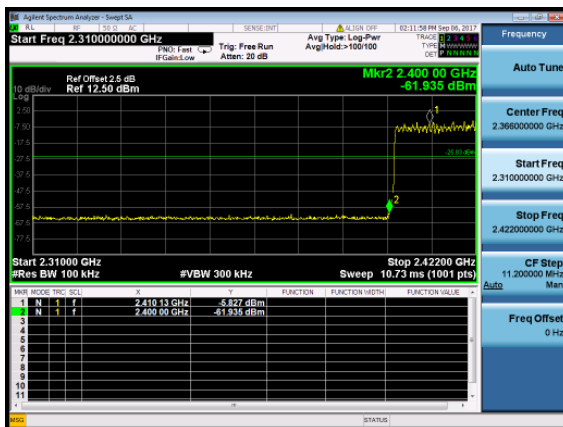


High Frequency

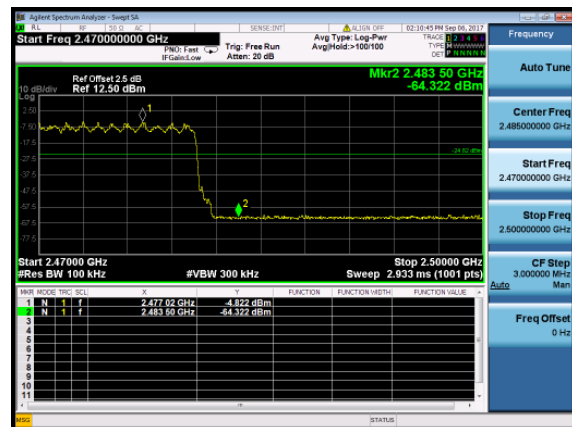


Mode 2: Transmitter at 2DH5 by Hopping Mode

Low Frequency



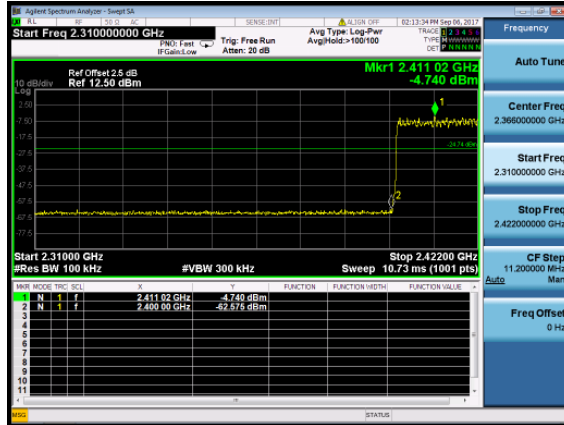
High Frequency



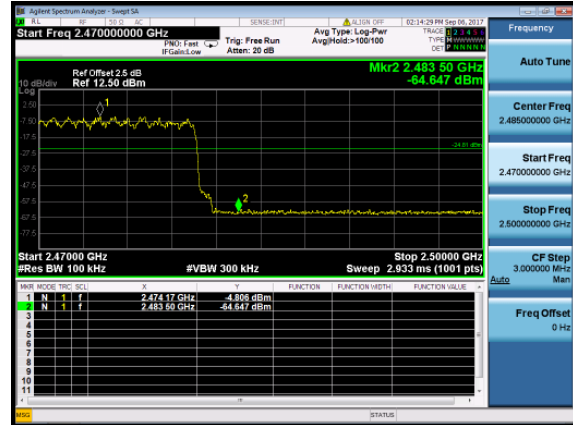


Mode 3: Transmitter at 3DH5 by Hopping Mode

Low Frequency



High Frequency





12. Radiated Emission Band Edge Measurement

12.1 Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) of FCC part 15.

12.2 Test Procedure

According to ANSI C63.10: 2013.

This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205 of FCC part 15. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

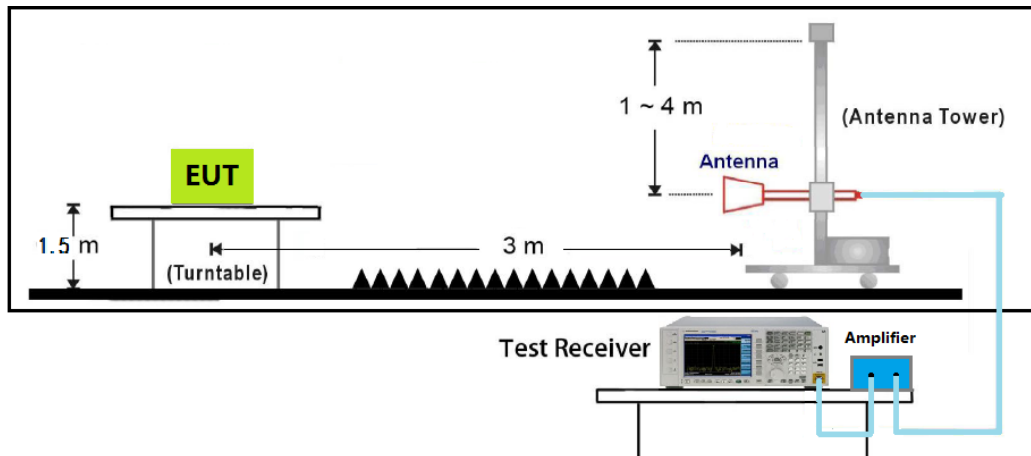
Follow the guidelines in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b) of FCC part 15.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209 of FCC Part 15. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit of FCC part 15.

If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative "marker-delta" method may be employed.



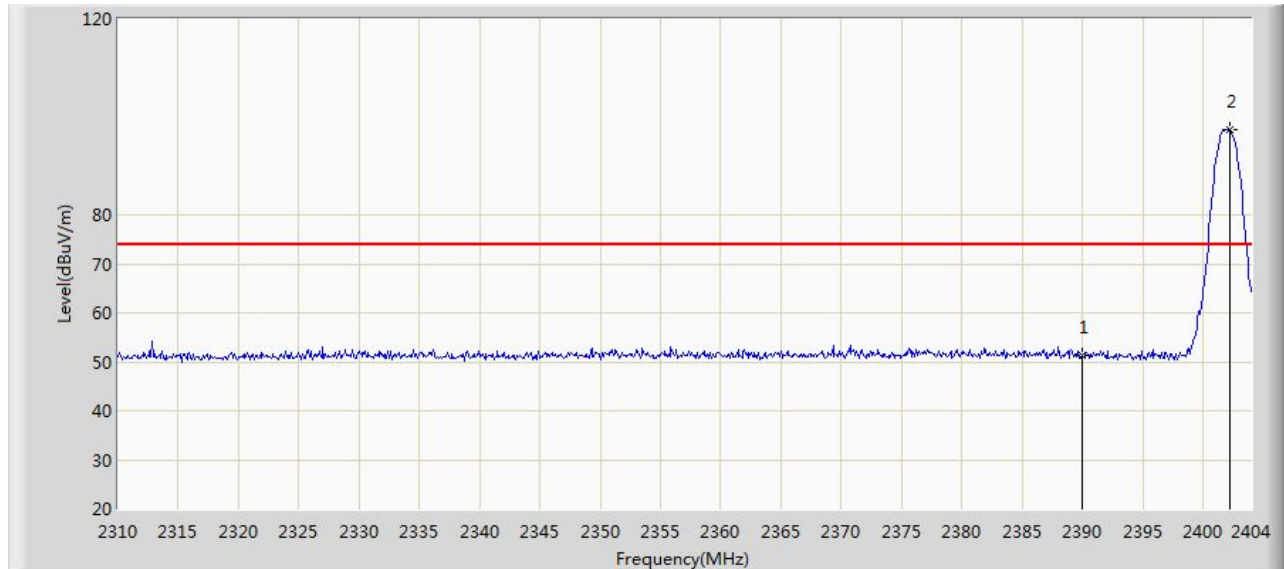
12.3 Test Setup





12.4 Test Result

Site: AC102	Time: 2017/09/09 - 14:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit DH5 at 2402MHz	



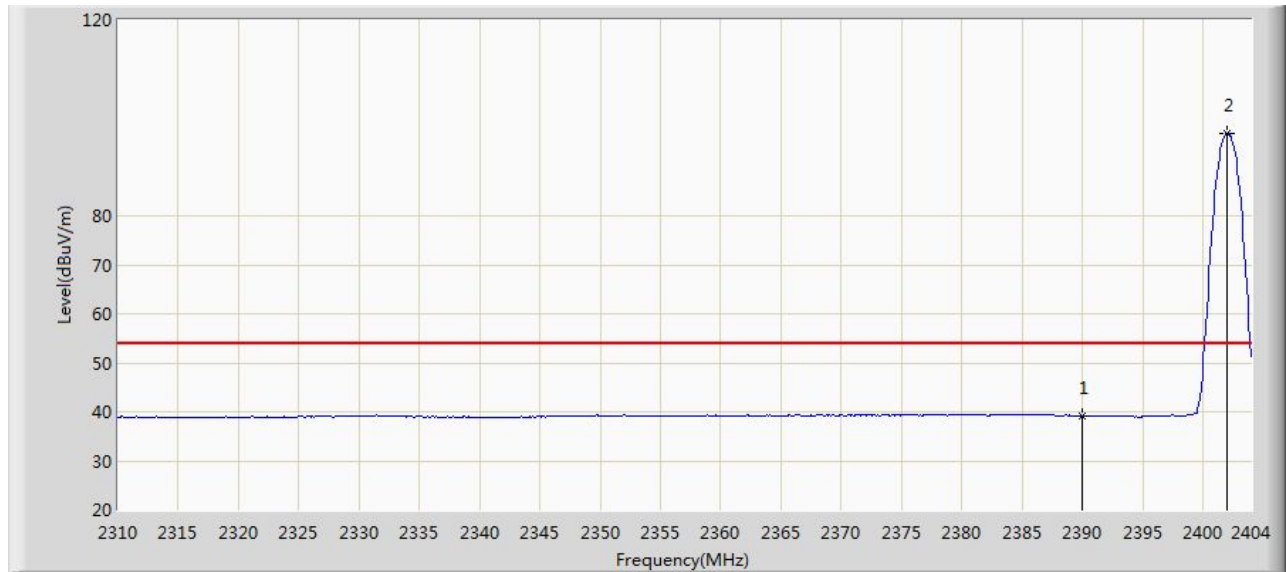
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.294	53.535	-22.706	74.000	-2.241	PK
2	*	2402.214	97.275	99.471	N/A	N/A	-2.196	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode: Transmit DH5 at 2402MHz	



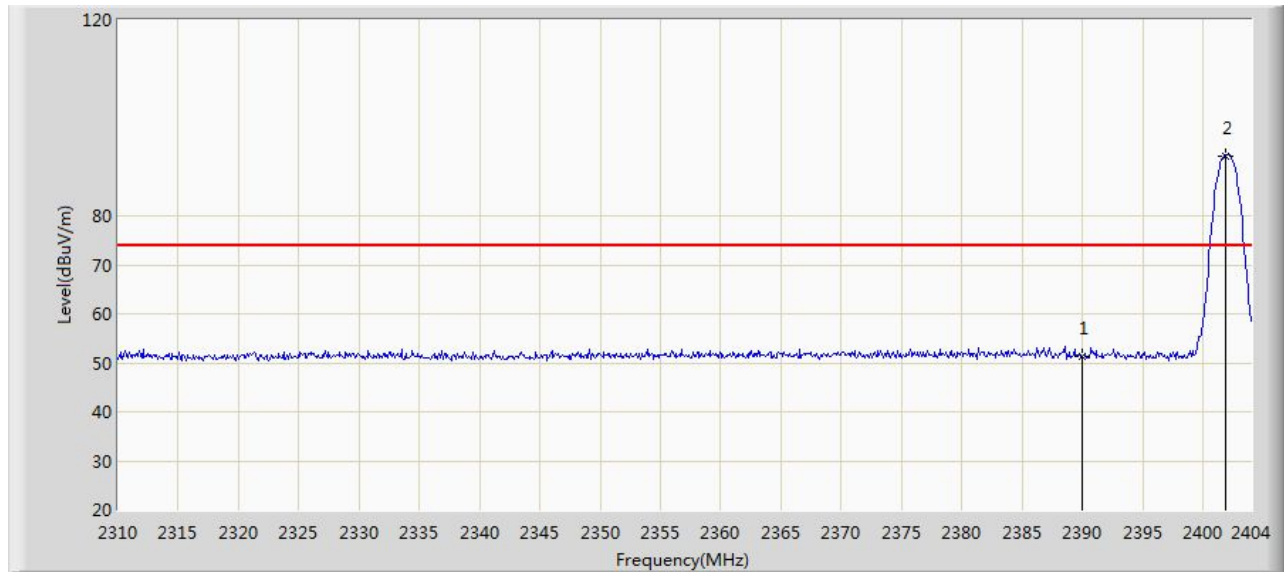
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.142	41.383	-14.858	54.000	-2.241	AV
2	*	2402.026	96.899	99.095	N/A	N/A	-2.196	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit DH5 at 2402MHz	



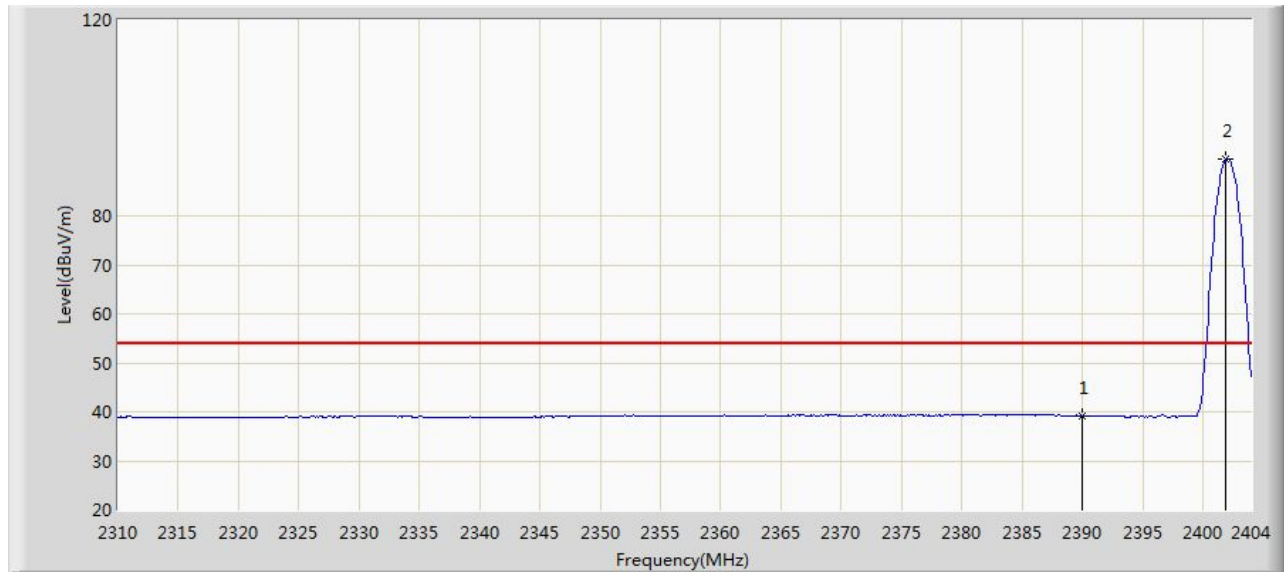
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.252	53.493	-22.748	74.000	-2.241	PK
2	*	2401.932	92.318	94.515	N/A	N/A	-2.197	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit DH5 at 2402MHz	



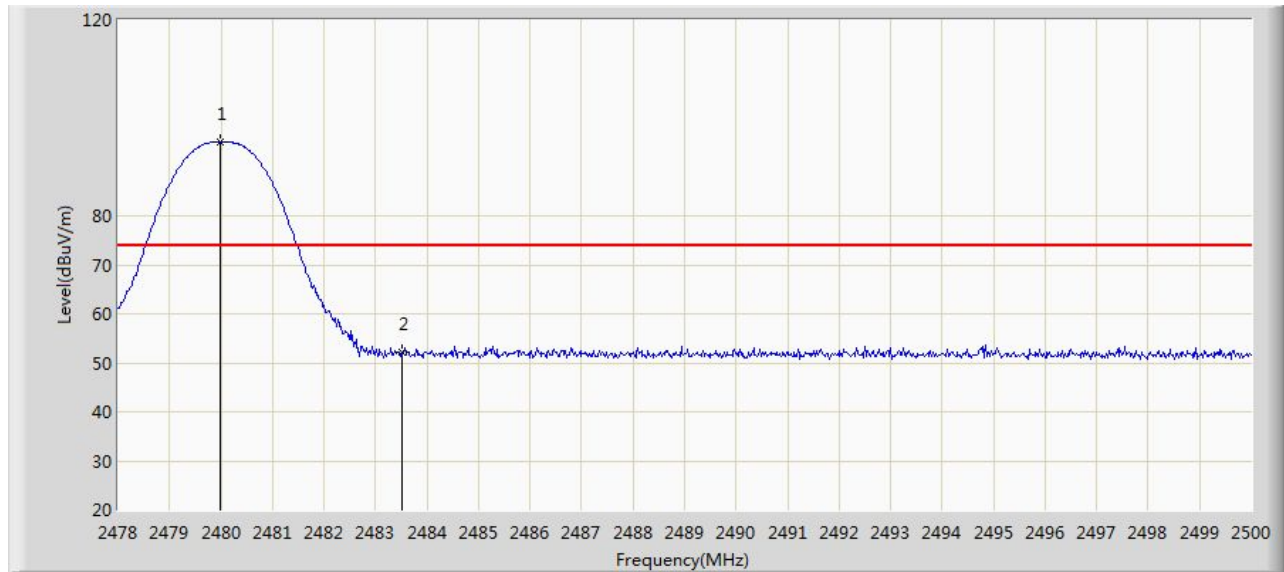
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.087	41.328	-14.913	54.000	-2.241	AV
2	*	2401.932	91.461	93.658	N/A	N/A	-2.197	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode: Transmit DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	95.057	96.962	N/A	N/A	-1.905	PK
2		2483.500	52.068	53.960	-21.932	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	94.587	96.492	N/A	N/A	-1.905	AV
2		2483.500	39.806	41.698	-14.194	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode: Transmit DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	98.941	100.846	N/A	N/A	-1.905	PK
2		2483.500	52.322	54.214	-21.678	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:52
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode: Transmit DH5 at 2480MHz	



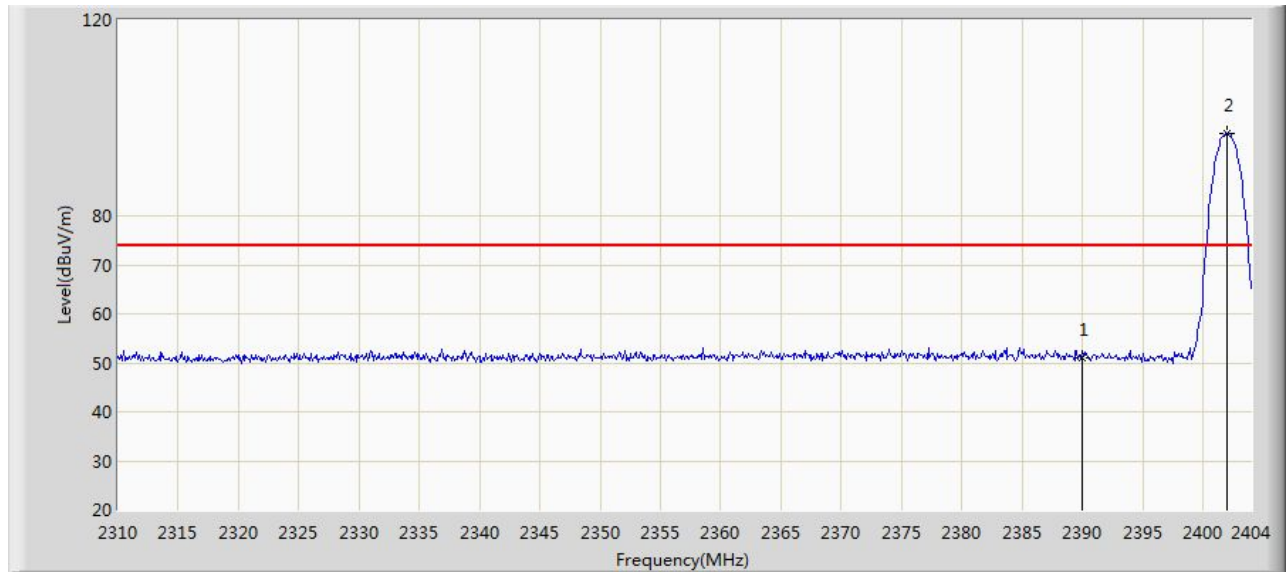
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	98.438	100.343	N/A	N/A	-1.905	AV
2		2483.500	40.126	42.018	-13.874	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2402MHz	



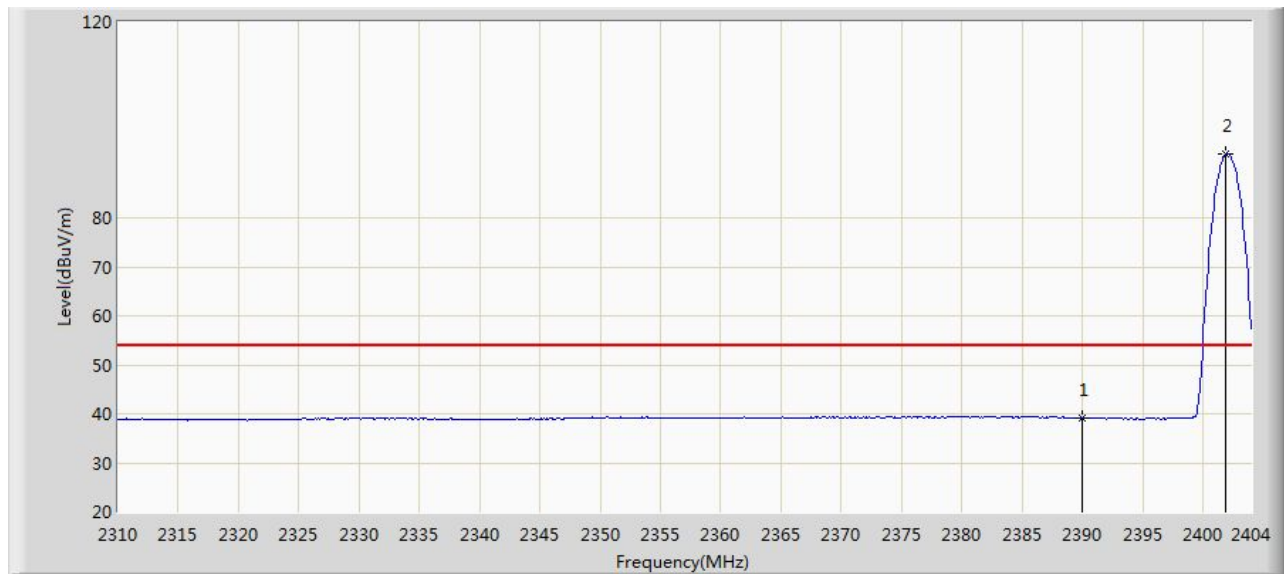
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.124	53.365	-22.876	74.000	-2.241	PK
2	*	2402.026	96.692	98.888	N/A	N/A	-2.196	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2402MHz	



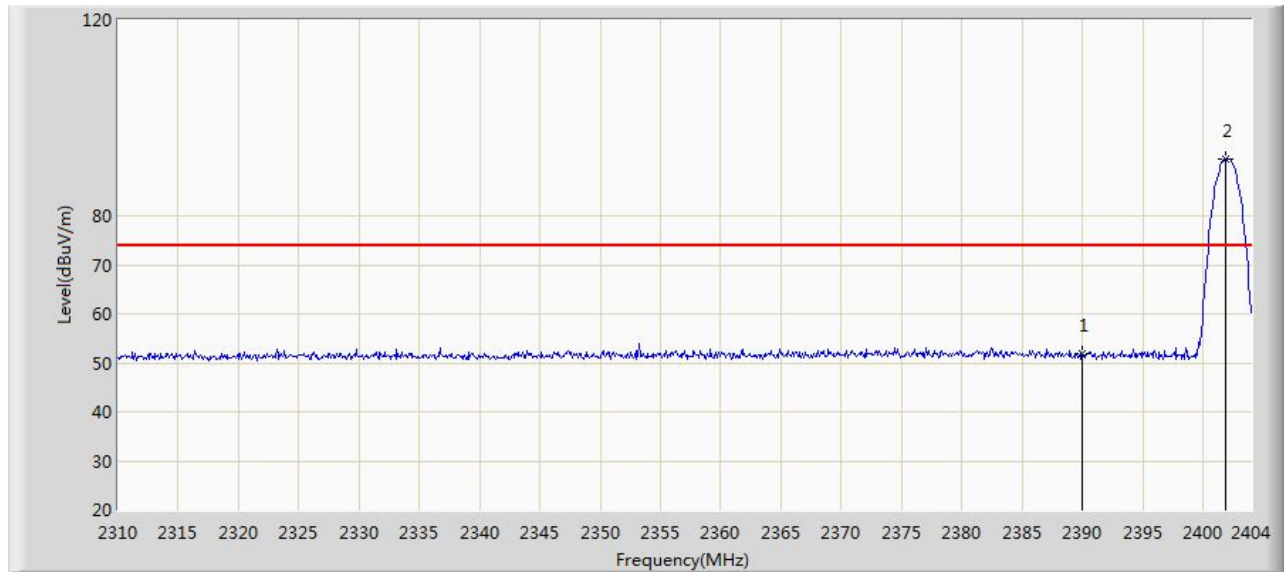
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.082	41.323	-14.918	54.000	-2.241	AV
2	*	2401.932	92.970	95.167	N/A	N/A	-2.197	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2402MHz	



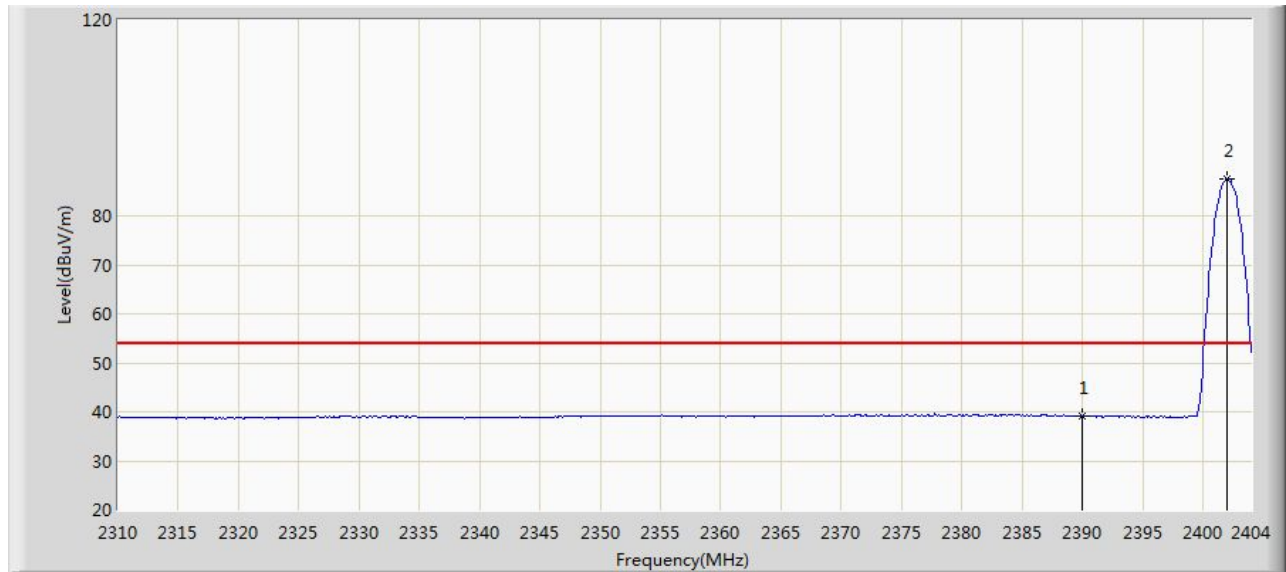
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.935	54.176	-22.065	74.000	-2.241	PK
2	*	2401.932	91.674	93.871	N/A	N/A	-2.197	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2402MHz	



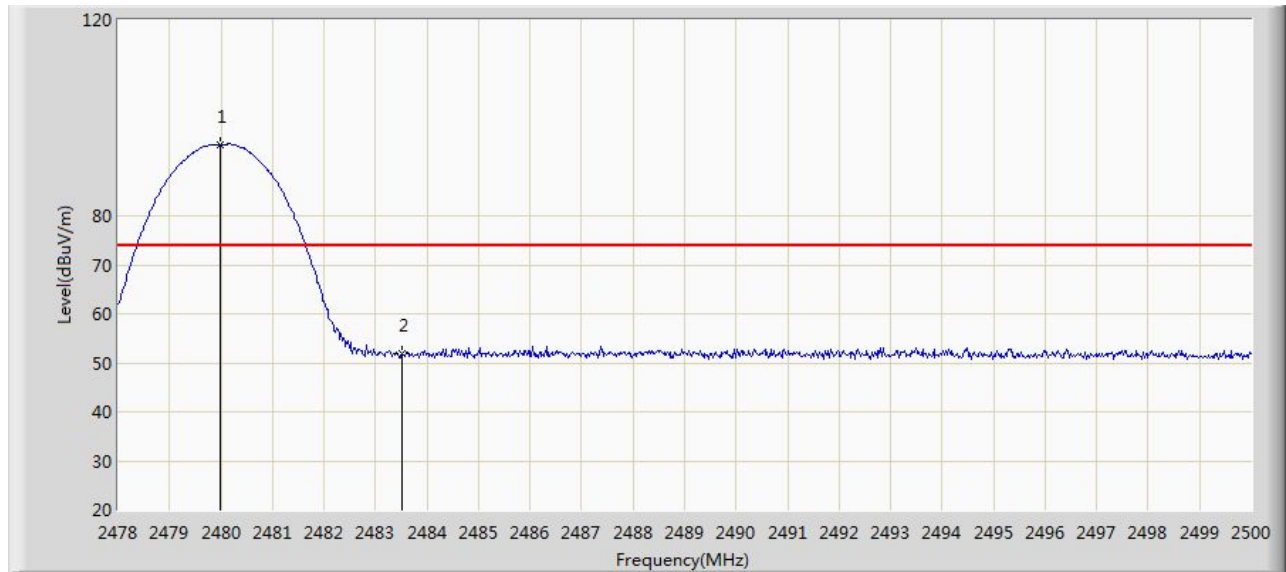
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.157	41.398	-14.843	54.000	-2.241	AV
2	*	2402.026	87.649	89.845	N/A	N/A	-2.196	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	94.436	96.341	N/A	N/A	-1.905	PK
2		2483.500	51.871	53.763	-22.129	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2480MHz	



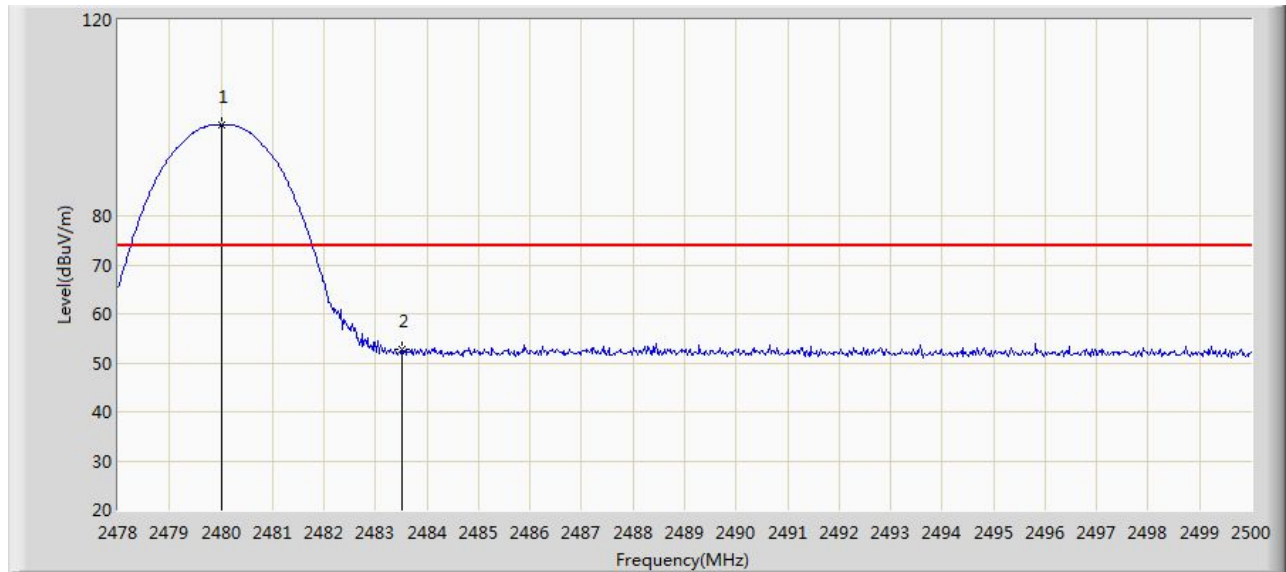
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.024	90.882	92.787	N/A	N/A	-1.905	AV
2		2483.500	39.767	41.659	-14.233	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.024	98.518	100.423	N/A	N/A	-1.905	PK
2		2483.500	52.683	54.575	-21.317	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 2DH5 at 2480MHz	



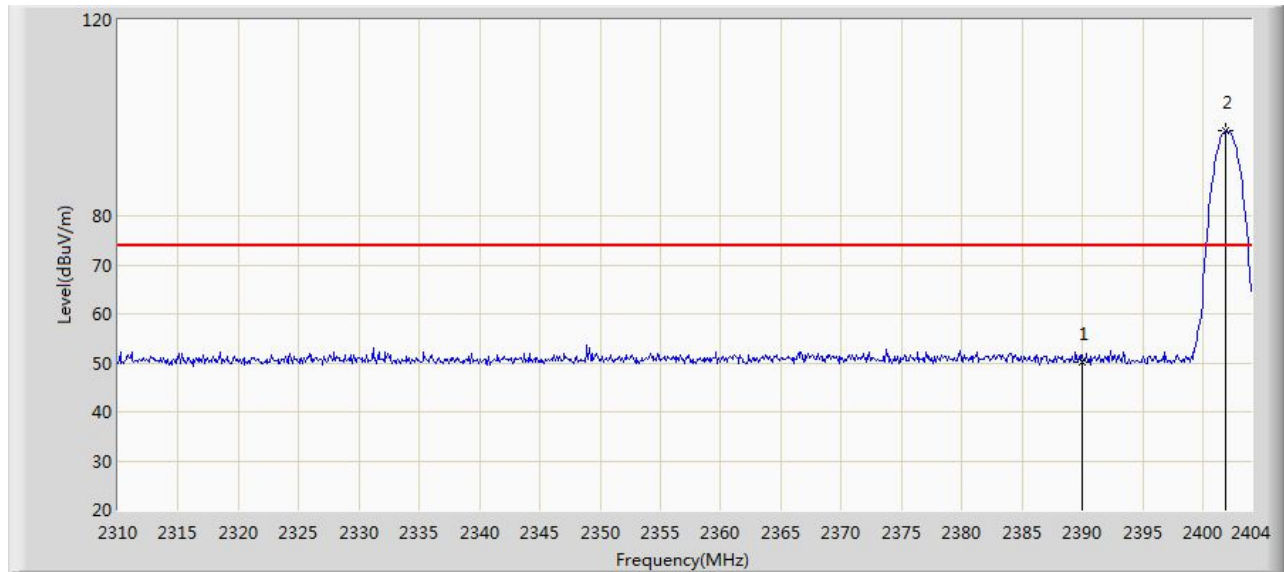
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	94.837	96.742	N/A	N/A	-1.905	AV
2		2483.500	40.046	41.938	-13.954	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 14:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2402MHz	



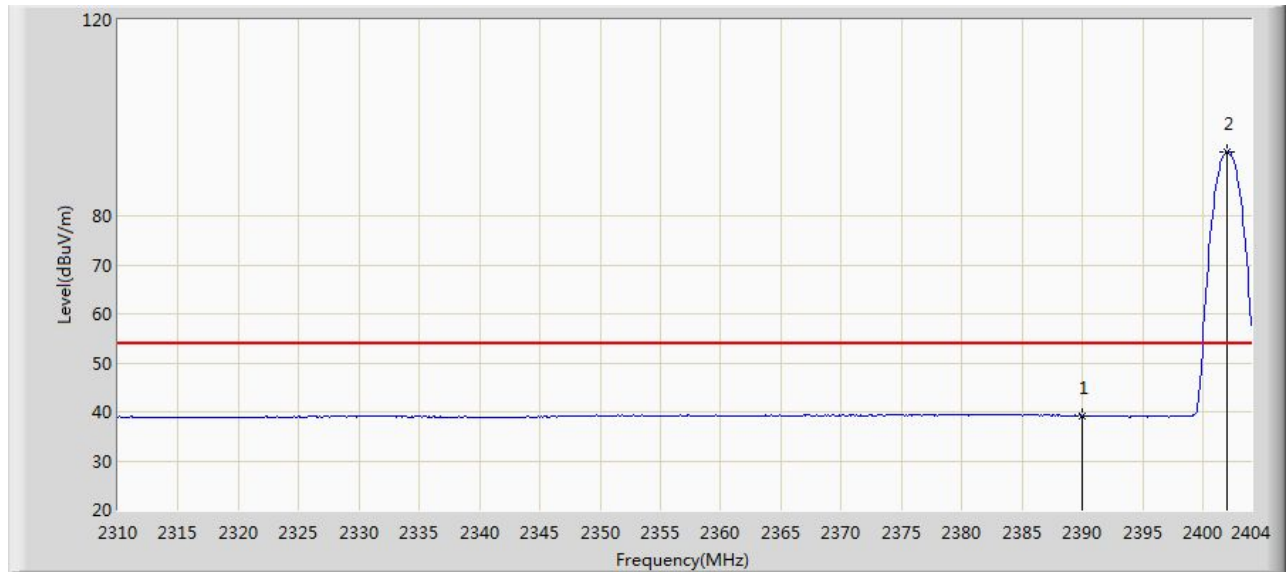
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.176	52.417	-23.824	74.000	-2.241	PK
2	*	2401.932	97.254	99.451	N/A	N/A	-2.197	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2402MHz	



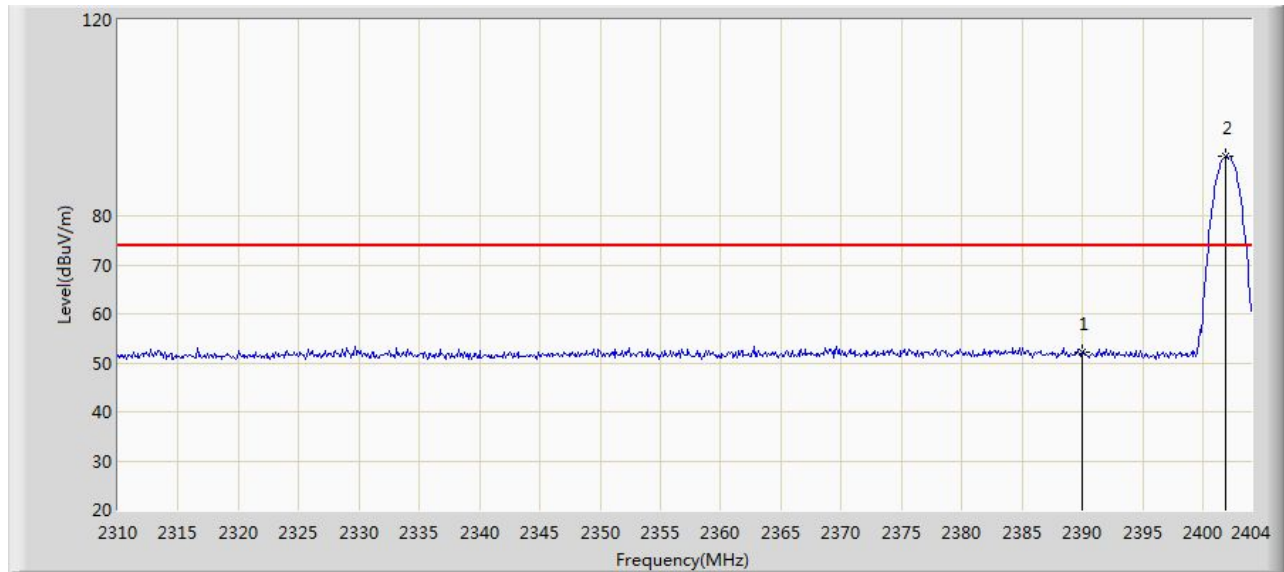
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.224	41.465	-14.776	54.000	-2.241	AV
2	*	2402.026	93.122	95.318	N/A	N/A	-2.196	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2402MHz	



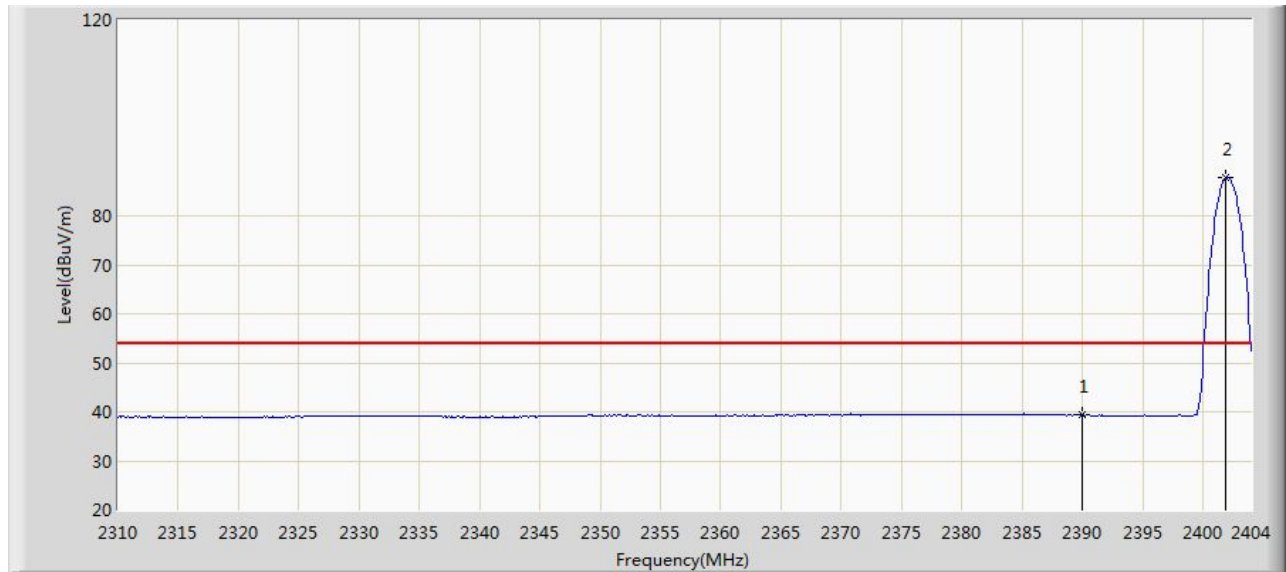
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.253	54.494	-21.747	74.000	-2.241	PK
2	*	2401.932	92.278	94.475	N/A	N/A	-2.197	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2402MHz	



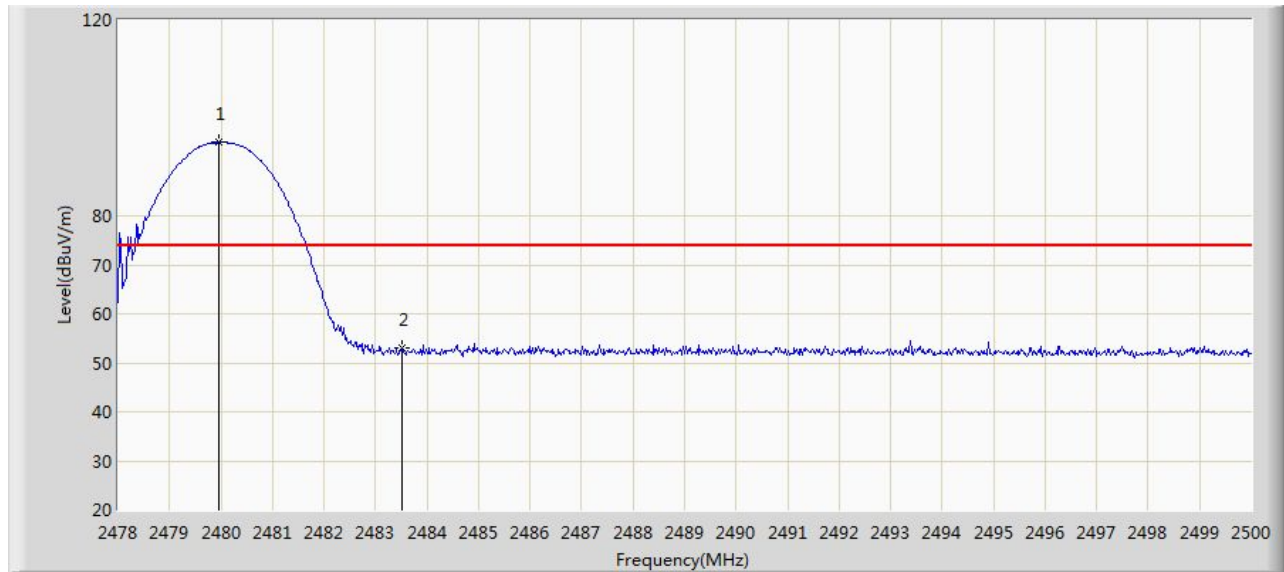
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.338	41.579	-14.662	54.000	-2.241	AV
2	*	2401.932	87.701	89.898	N/A	N/A	-2.197	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.958	95.038	96.943	N/A	N/A	-1.905	PK
2		2483.500	53.038	54.930	-20.962	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2480MHz	



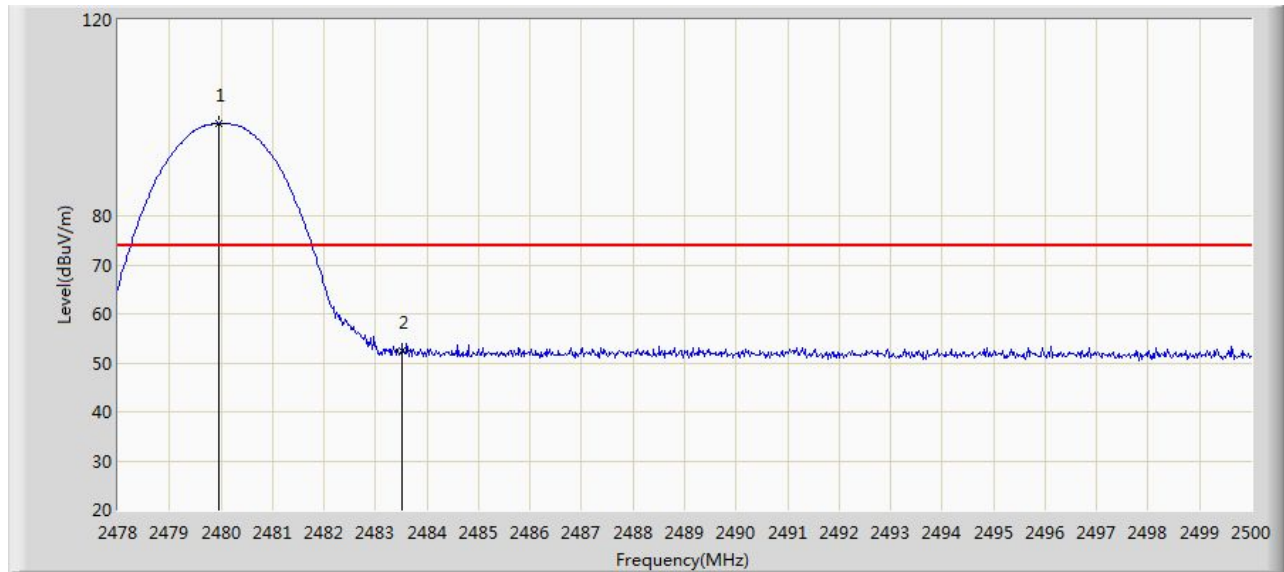
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	90.870	92.775	N/A	N/A	-1.905	AV
2		2483.500	39.900	41.792	-14.100	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2480MHz	



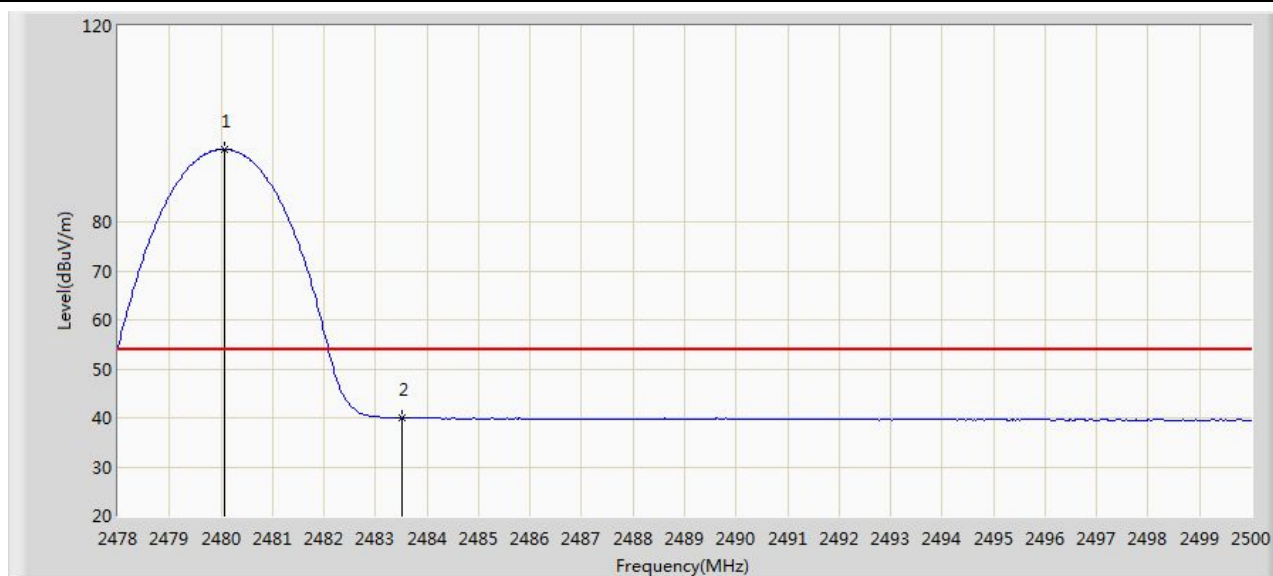
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.958	98.951	100.856	N/A	N/A	-1.905	PK
2		2483.500	52.326	54.218	-21.674	74.000	-1.892	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC102	Time: 2017/09/09 - 15:07
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Touch All in one Computer	Power: AC 120V/60Hz
Note: Mode:Transmit 3DH5 at 2480MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	94.815	96.720	N/A	N/A	-1.905	AV
2		2483.500	39.975	41.867	-14.025	54.000	-1.892	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

The End