FCC/IC Radio Test Report

FCC ID: VOB-P1453
IC: 7361A-P1453

This report concerns (check one): ■ **Original Grant** □ **Class II Change**

Issued Date	:	Apr. 16, 2012
Project No.	:	1203C236
Equipment	:	3D Vision Pro Embedded Hub
Model Name	:	P1453
Applicant	:	NVIDIA Corporation
Address	:	2701 San Tomas Expressway, Santa Clara , CA, 95050, USA

Tested by:
Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Mar. 28, 2012
Date of Test:
Mar. 28, 2012 ~ Apr. 13, 2012

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

Neutron Engineering Inc.

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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1. CERTIFICATION

Equipment	:	3D Vision Pro Embedded Hub
Brand Name	:	nVIDIA
Model Name	:	P1453
Applicant	:	NVIDIA Corporation
Date of Test	:	Mar. 28, 2012 ~ Apr. 13, 2012
Test Sample	:	Engineering Sample
Standards	:	FCC Part15, Subpart C(15.249)/ ANSI C63.4 : 2009; Canada RSS-210:2010 ; Canada RSS-Gen:2010

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FICP-1-1203C236) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249) Canada RSS-210:2010				
StandardSection		Test Item	Judgment	Remark
FCC	RSS-210/ RSS-Gen			
15.207	RSS-Gen 7.2.2	Conducted Emission	PASS	
15.209	RSS-210 2.7	Radiated Emission	PASS	
15.249	RSS-210 A2.9(a)	Radiated Spurious Emission	PASS	

NOTE:

(1)"N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C01/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town,Dong Guan, China.523792
Neutron's test firm number for FCC 319330
Neutron's test firm number for IC 4428B-1

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U,(dB)	NOTE
DG-C01	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)	NOTE
DG-CB03	CISPR	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>3D Vision Pro Embedded Hub</td></tr>
<tr><td>Brand Name</td><td>nVIDIA</td></tr>
<tr><td>Model Name.</td><td>P1453</td></tr>
<tr><td>OEM Brand/Model Name</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a 3D Vision Pro Embedded Hub.

<table><tr><td>Product Type</td><td>Low Power Communication Device</td></tr><tr><td>Operation Frequency</td><td>2406~2473 MHz</td></tr><tr><td>Modulation Technology</td><td>GFSK</td></tr><tr><td>Data rate</td><td>1Mbps</td></tr><tr><td>Number of Channel</td><td>68CH .Please see Note 2. (Please refer to Page 9).</td></tr><tr><td>Antenna Designation</td><td>PIFA antenna</td></tr><tr><td>Antenna Gain(Peak)</td><td>68CH .Please see Note 3. (Please refer to Page 9).</td></tr><tr><td>Output Power</td><td>96.52 dBuV/m (Peak Max.)
72.12 dBuV/m (AV Max.)</td></tr></table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification. Please refer to the User's Manual.</td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Power Source</td><td>#1: DC Voltage supplied from Notebook USB Port.
#2: DC Voltage supplied from the test fixture modular.</td></tr>
<tr><td>Power Rating</td><td>#1: I/P AC 120V/60Hz
#2: DC 3.3V 140mA</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the User's Manual</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

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

3. Antenna Specification:

Ant.	Brand	Model Name/Part No.	Antenna Type	Connector	Gain (dBi)
1	Perfect	UJ-1015-P4-140	PIFA	U. FL	3.42dBi
2	SmartApproach	SE-ECQR1-001	PIFA	U. FL	1.30dBi
3	Cortec	NB0258-A	PIFA	U. FL	3.84dBi

3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	Normal Link
Mode 2	Low – 2406MHz
Mode 3	Middle – 2440MHz
Mode 4	High -2473MHz

For Conducted Test	
Final Test Mode	Description
Mode 1	Normal Link

For Radiated Test	
Final Test Mode	Description
Mode 2	Low – 2406MHz
Mode 3	Middle – 2440MHz
Mode 4	High-2473MHz

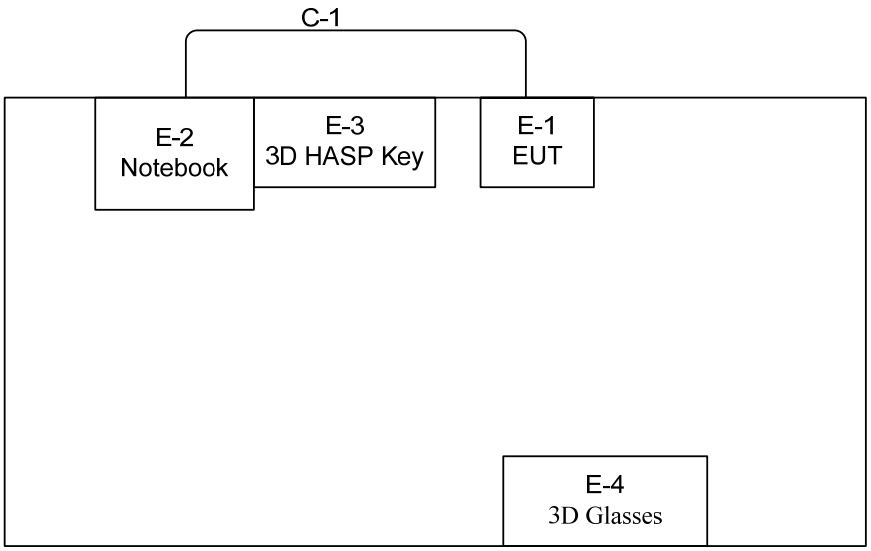
Note:

(1) The measurements are performed at the high, middle, low available channels.

(2) Choose ANT 3 with the highest antenna gain to be tested since the three antennas are the same type.

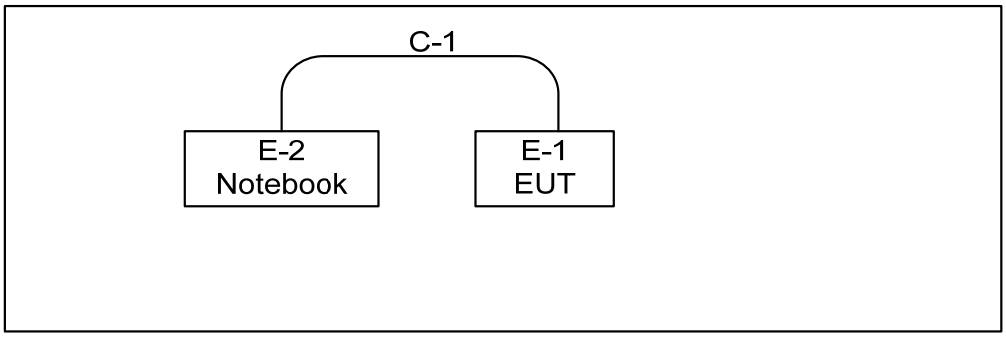
3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted: Normal Link



C-1:USB Cable

Radiated: TX/RX Mode



C-1: USB Cable

3.4 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	3D Vision Pro Embedded Hub	nVIDIA	P1453	VOB-P1453	N/A	EUT
E-2	Notebook	DELL	M6700	N/A	2833374700030	
E-3	3D HASP Key	NVIDIA	KEXKD	N/A	1425406	
E-4	3D GLASSES	NVIDIA	P703	VOB-P703A	0383610104501	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	1.8m	

Note:

(1) For detachable type I/O cable should be specified the length in m in『Length』column.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2SH	00052766	May.26.2012
2	LISN	R&S	ENV216	100526	May.26.2012
3	Test Cable	N/A	RG400 12m	N/A	Mar.17.2013
4	EMI TEST RECEIVER	R&S	ESCI	100895	May.26.2012
5	50Ω Terminator	SHX	TF2-3G-A	08122901	May.26.2012

Remark: “N/A” denotes no model name, serial No. or calibration specified.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

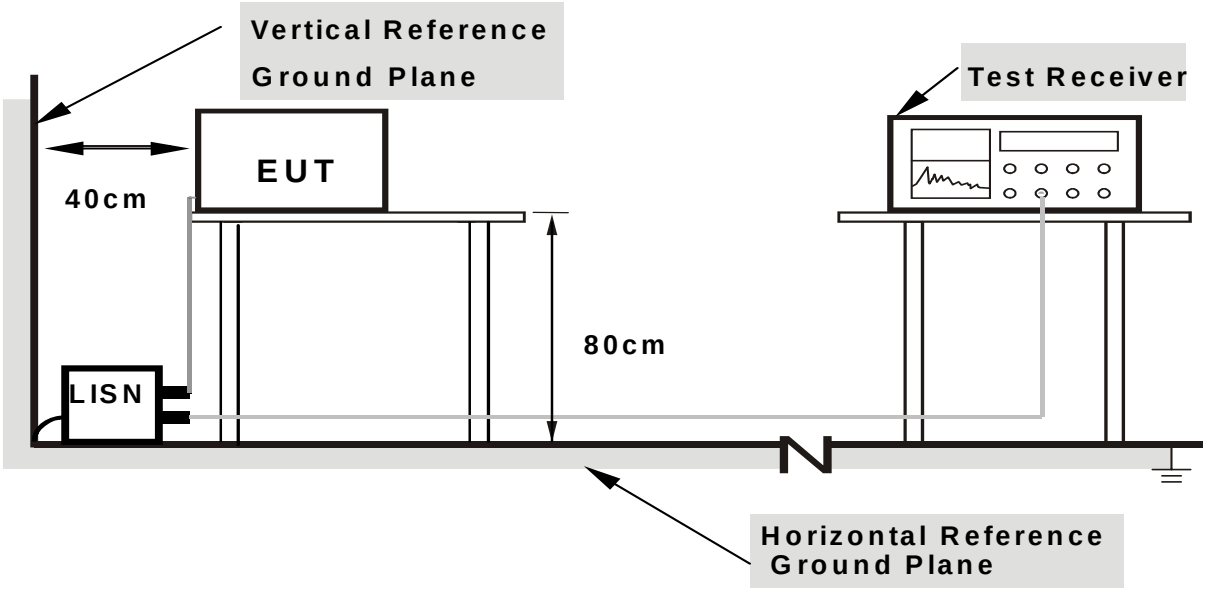
4.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting mode.

4.1.7 TEST RESULTS

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	AC 120V/60Hz
Test Mode	Normal Link		

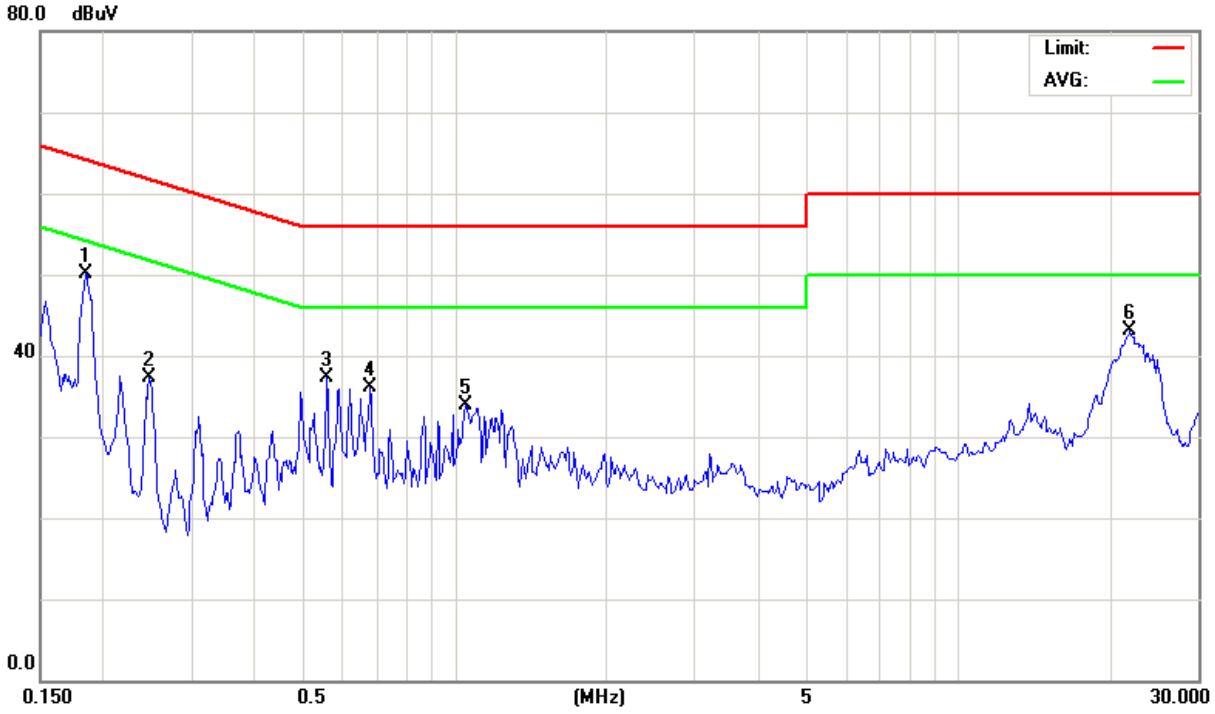
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.18	Line	50.20	*	64.29	54.29	-14.09	(QP)
0.25	Line	37.35	*	61.87	51.87	-24.52	(QP)
0.56	Line	37.32	*	56.00	46.00	-18.68	(QP)
0.68	Line	36.19	*	56.00	46.00	-19.81	(QP)
1.05	Line	33.84	*	56.00	46.00	-22.16	(QP)
21.95	Line	43.14	*	60.00	50.00	-16.86	(QP)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150KHz to 30MHz.

(3) "N/A" denotes test is not applicable in this Test Report.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	AC 120V/60Hz
Test Mode	Normal Link		

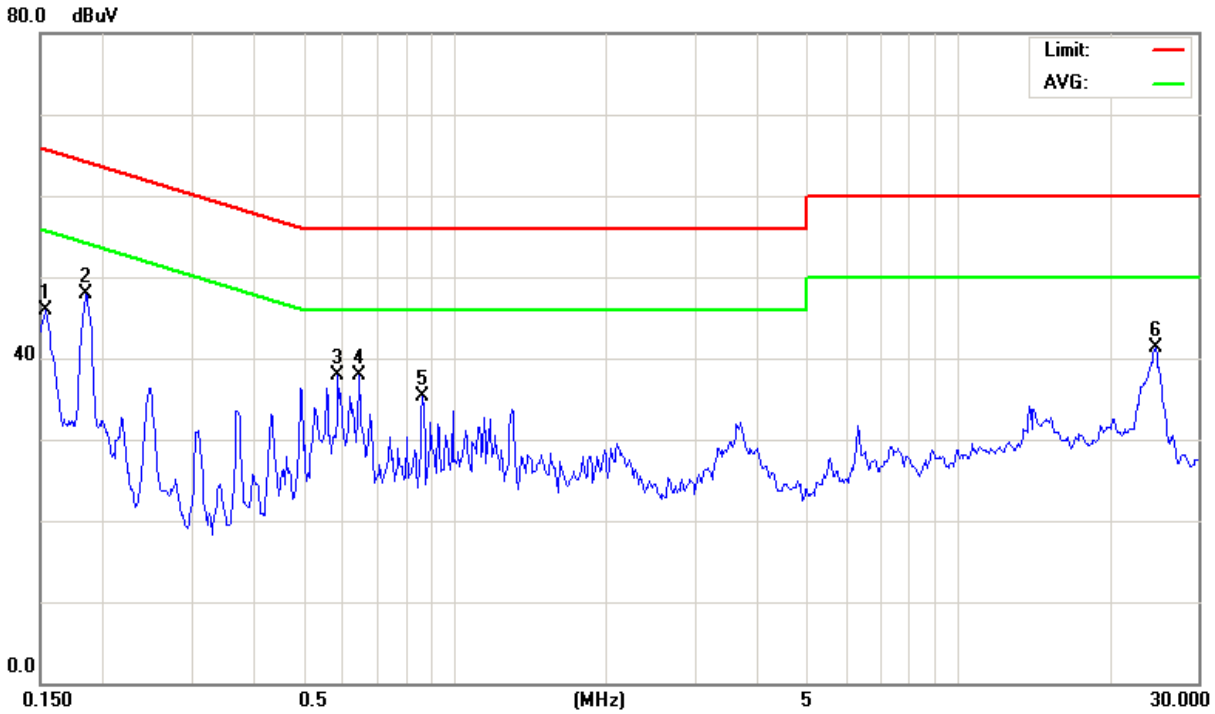
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Neutral	45.99	*	65.82	55.82	-19.83	(QP)
0.18	Neutral	47.95	*	64.29	54.29	-16.34	(QP)
0.59	Neutral	37.95	*	56.00	46.00	-18.05	(QP)
0.64	Neutral	37.93	*	56.00	46.00	-18.07	(QP)
0.86	Neutral	35.21	*	56.00	46.00	-20.79	(QP)
24.66	Neutral	41.32	*	60.00	50.00	-18.68	(QP)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150KHz to 30MHz.

(3) "N/A" denotes test is not applicable in this Test Report.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/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
960~1000	500	3

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 μV/m (94 dBμV/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μV/m (54 dBμV/m) @ 3 m	Above 2483.5

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Horn Antenna	EMCO	3115	9605-4803	May.26.2012
2	Antenna	Schwarbeck	VULB9160	9160-3232	Jun .04.2012
3	Amplifier	HP	8447D	2944A09673	May.26.2012
4	Test Receiver	R&S	ESCI	100382	May.26.2012
5	Test Cable	N/A	C-01_CB03	N/A	Jul.01.2012
6	Antenna	ETS	3115	00075789	May.26.2012
7	Amplifier	Agilent	8449B	3008A02274	May.26.2012
8	Spectrum	Agilent	E4408B	US39240143	Nov.25.2012
9	Test Cable	HUBER+SUHNER	C-45	N/A	May.04.2012
10	Controller	CT	SC100	N/A	N/A
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.26.2012
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct.13.2012

Remark: “N/A” denotes no model name, serial No. or calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, Average=PK-duty cycle

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

DUTY CYCLE: TX 2473MHz (1Mbps)

Dwell time=ON/ON+OFF

ON: 0.5msec

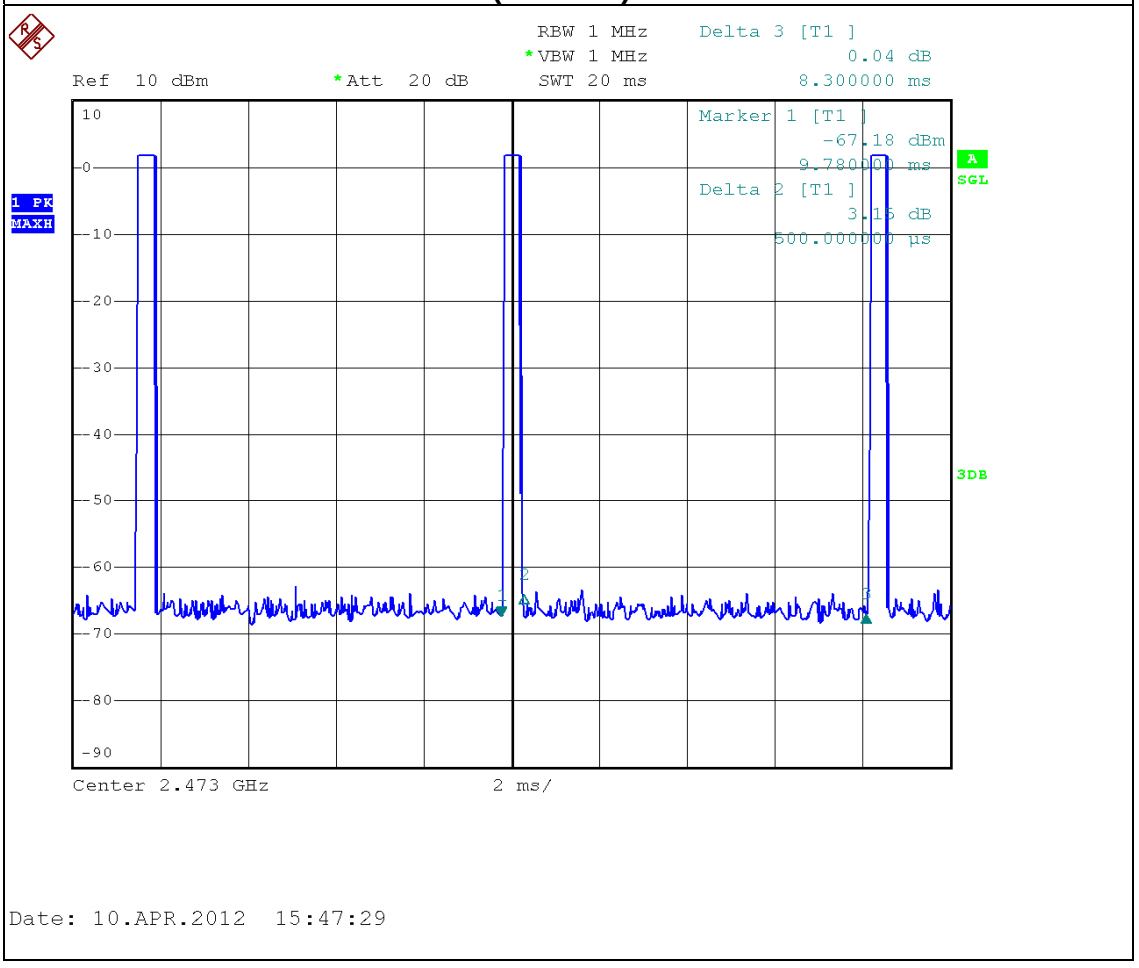
ON+OFF: (total time):8.3 msec

Duty cycle: 6%

AV=PK+20 log(Dwell time)

AV=PK-24.4

Total time(ON+OFF)= 8.3 msec



4.2.3 TEST PROCEDURE

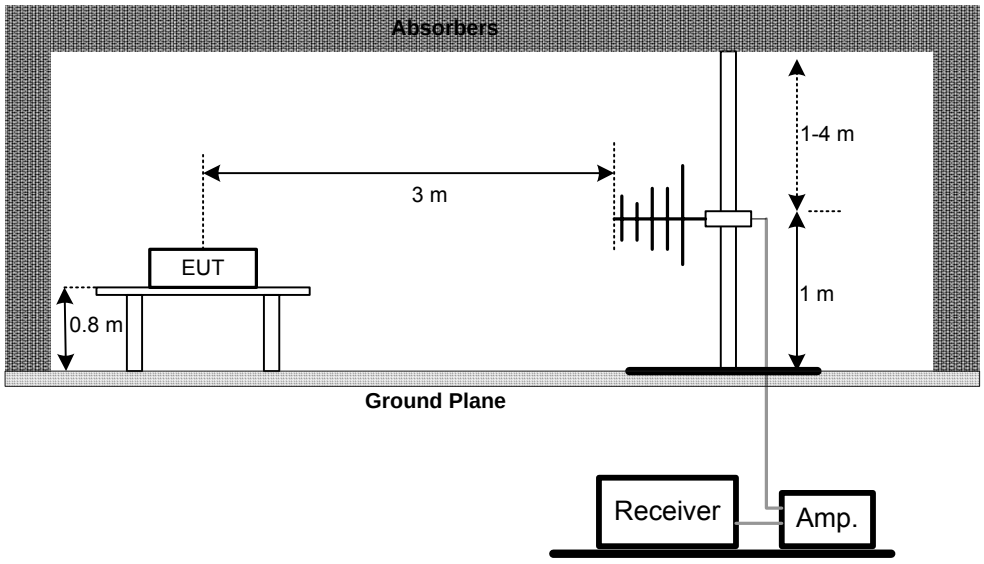
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AV detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

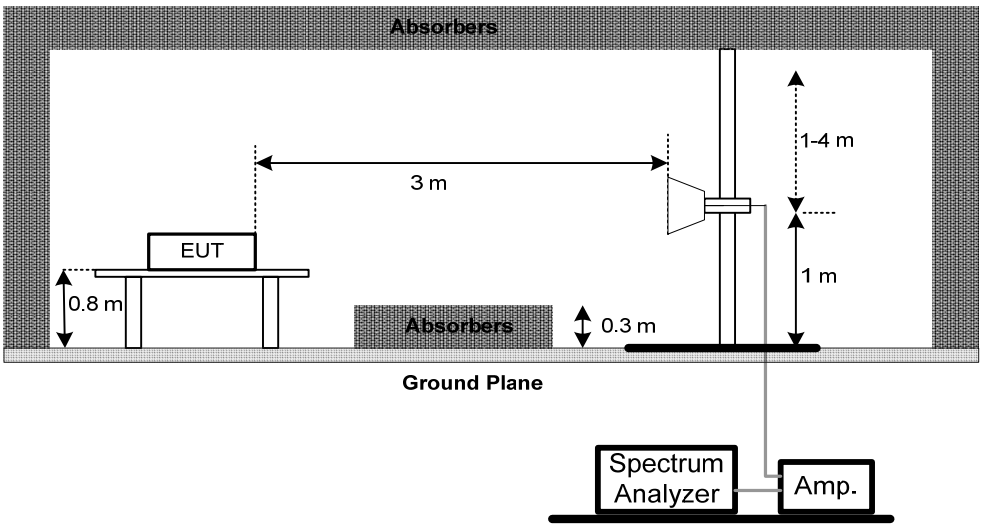
No deviation

4.2.5 TEST SETUP

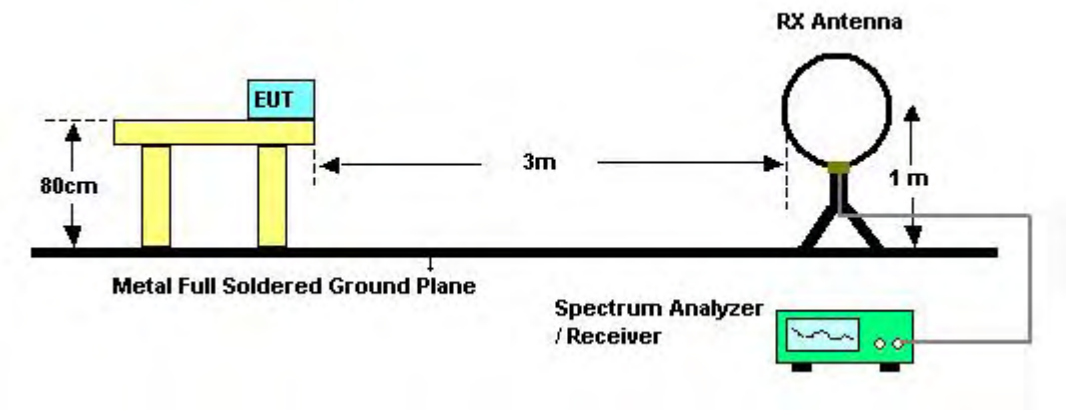
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions below 30MHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS (BELOW 30MHz)

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	26℃	Relative Humidity	55 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2440MHz		

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.01	0°	20.20	24.30	44.50	127.96	-83.46	AV
0.01	0°	22.69	24.30	46.99	147.96	-100.97	PK
0.02	0°	18.24	24.07	42.31	120.15	-77.84	AV
0.02	0°	21.05	24.07	45.12	140.15	-95.03	PK
0.04	0°	18.55	23.19	41.74	116.13	-74.39	AV
0.04	0°	22.52	23.19	45.71	136.13	-90.42	PK
0.07	0°	19.37	22.06	41.43	111.06	-69.63	AV
0.07	0°	24.18	22.06	46.24	131.06	-84.82	PK
0.26	0°	21.40	20.39	41.79	99.44	-57.66	AV
0.26	0°	23.69	20.39	44.08	119.44	-75.37	PK
1.26	0°	24.53	19.57	44.10	65.62	-21.51	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.01	90°	17.24	24.30	41.54	127.84	-86.30	AV
0.01	90°	21.64	24.30	45.94	147.84	-101.90	PK
0.03	90°	15.37	23.94	39.31	119.39	-80.08	AV
0.03	90°	19.58	23.94	43.52	139.39	-95.87	PK
0.03	90°	18.49	23.36	41.85	116.74	-74.90	AV
0.03	90°	22.54	23.36	45.90	136.74	-90.85	PK
0.06	90°	20.68	22.11	42.79	111.38	-68.60	AV
0.06	90°	24.52	22.11	46.63	131.38	-84.76	PK
0.24	90°	21.31	20.43	41.74	100.15	-58.41	AV
0.24	90°	23.68	20.43	44.11	120.15	-76.04	PK
1.25	90°	23.76	19.57	43.33	65.64	-22.31	QP

Remark：

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
(2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB);.
(3) Limit line = specific limits (dBuV) + distance extrapolation factor..

4.2.8 TEST RESULTS (BETWEEN 30 – 1000 MHz)

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2406MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
68.80	V	49.65	-18.17	31.48	40.00	- 8.52	
153.68	V	48.55	-17.58	30.97	43.50	- 12.53	
330.70	V	44.91	-11.32	33.59	46.00	- 12.41	
565.93	V	39.44	-5.10	34.34	46.00	- 11.66	
728.40	V	38.98	-2.83	36.15	46.00	- 9.85	
810.85	V	38.48	-1.66	36.82	46.00	- 9.18	

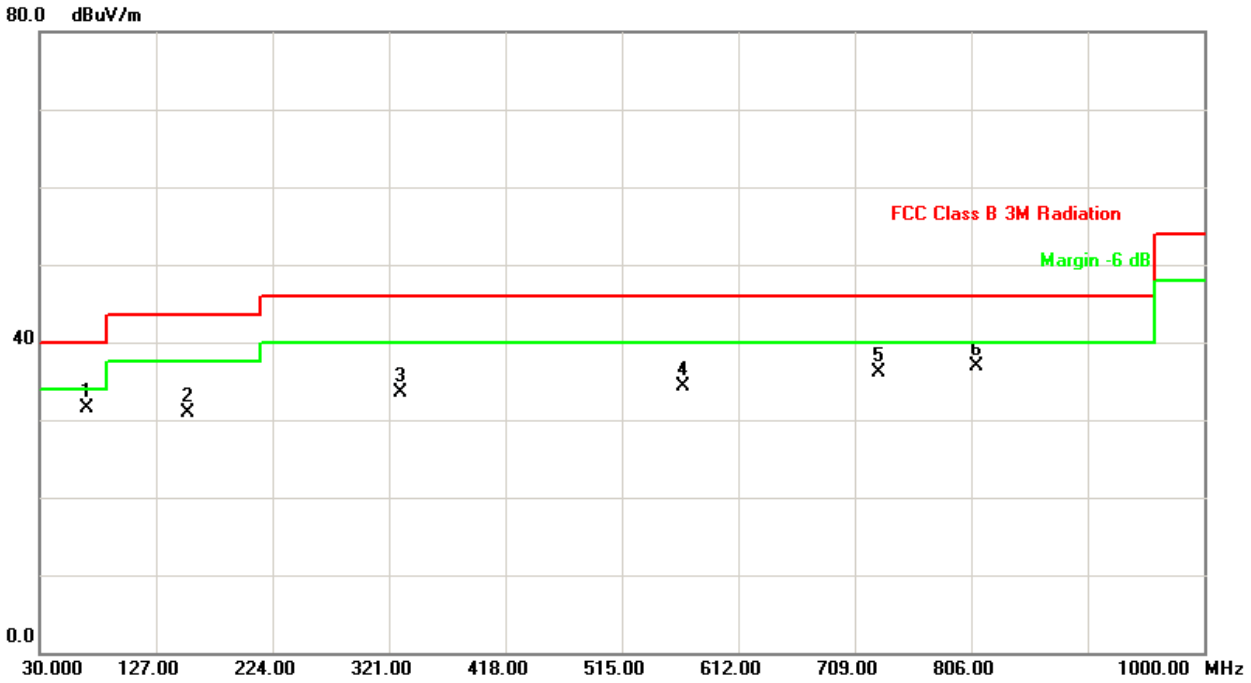
Remark：

(1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2406MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
68.80	H	45.24	-18.17	27.07	40.00	- 12.93	
190.05	H	44.06	-16.73	27.33	43.50	- 16.17	
226.43	H	48.05	-15.69	32.36	46.00	- 13.64	
330.70	H	48.32	-11.32	37.00	46.00	- 9.00	
565.93	H	35.37	-5.10	30.27	46.00	- 15.73	
808.43	H	35.53	-1.71	33.82	46.00	- 12.18	

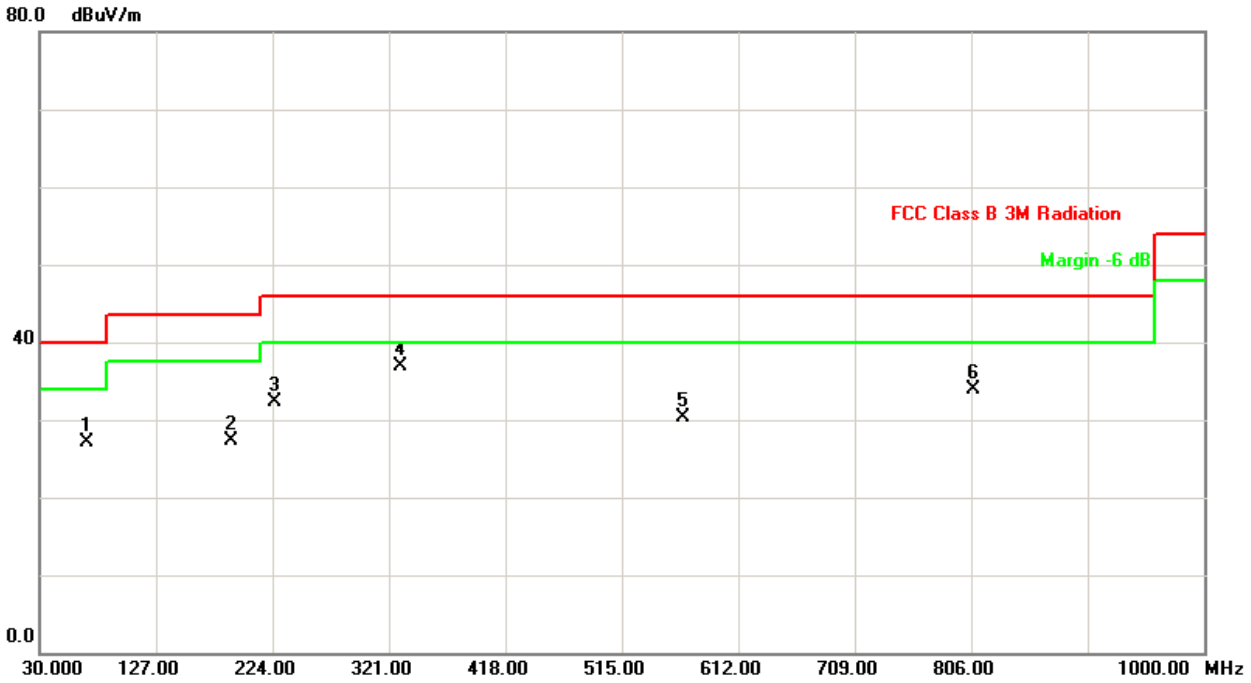
Remark：

(1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2440MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
78.50	V	45.79	-18.99	26.80	40.00	- 13.20	
153.68	V	47.40	-17.58	29.82	43.50	- 13.68	
325.85	V	44.02	-11.43	32.59	46.00	- 13.41	
403.45	V	38.29	-8.96	29.33	46.00	- 16.67	
498.03	V	35.20	-7.39	27.81	46.00	- 18.19	
728.40	V	37.12	-2.83	34.29	46.00	- 11.71	

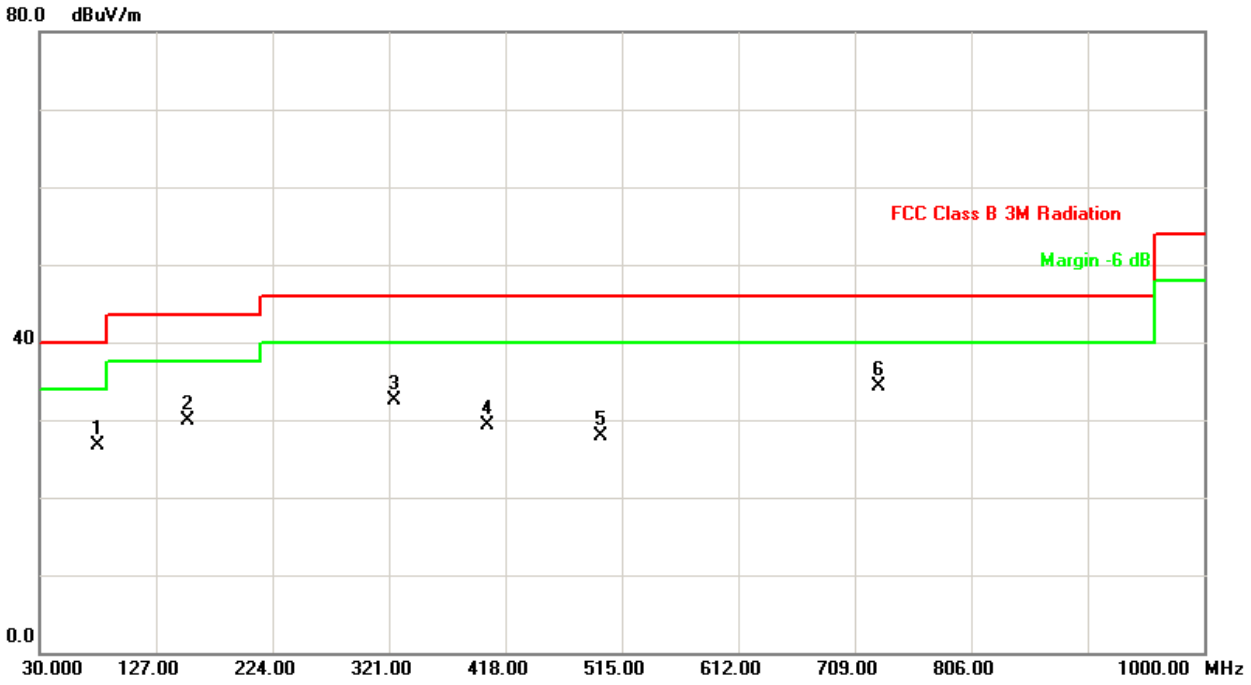
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2440MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
78.50	H	40.03	-18.99	21.04	40.00	- 18.96	
136.70	H	38.07	-17.86	20.21	43.50	- 23.29	
214.30	H	40.82	-16.11	24.71	43.50	- 18.79	
318.58	H	36.41	-11.61	24.80	46.00	- 21.20	
568.35	H	33.76	-5.04	28.72	46.00	- 17.28	
670.20	H	33.75	-3.28	30.47	46.00	- 15.53	

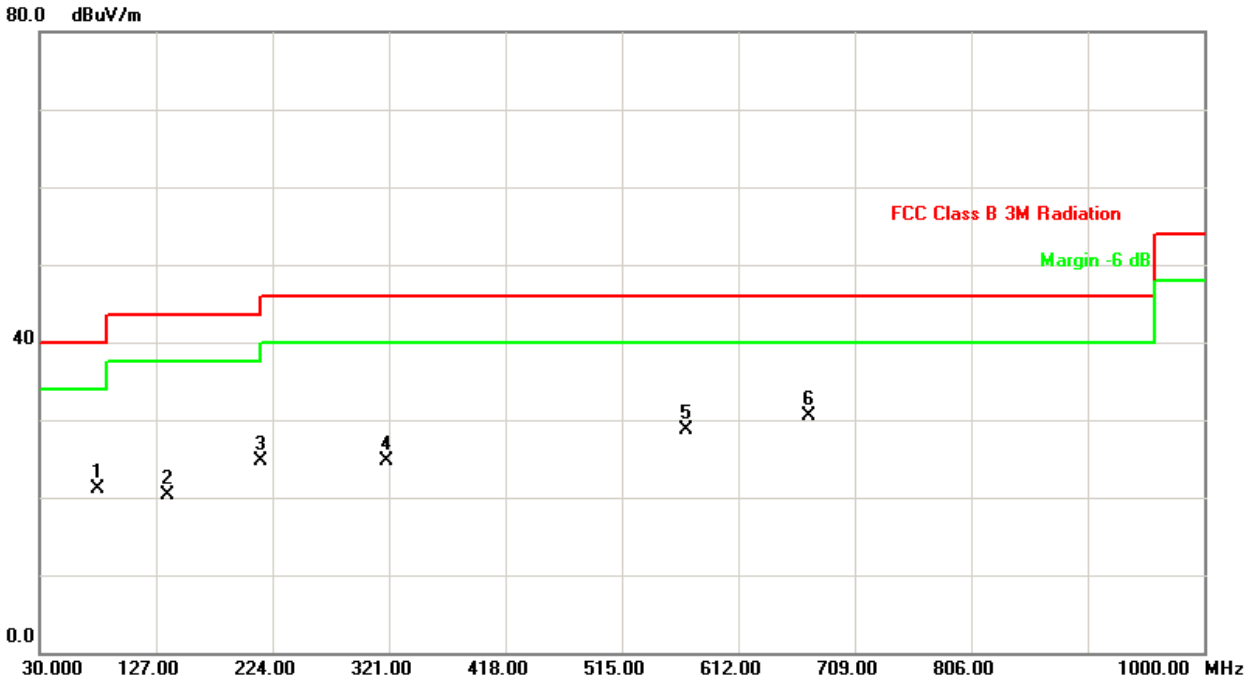
Remark：

(1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2473MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
71.23	V	49.66	-18.46	31.20	40.00	- 8.80	
136.70	V	45.72	-17.86	27.86	43.50	- 15.64	
197.33	V	45.51	-16.62	28.89	43.50	- 14.61	
301.60	V	39.83	-12.03	27.80	46.00	- 18.20	
565.93	V	36.17	-5.10	31.07	46.00	- 14.93	
740.53	V	32.61	-2.67	29.94	46.00	- 16.06	

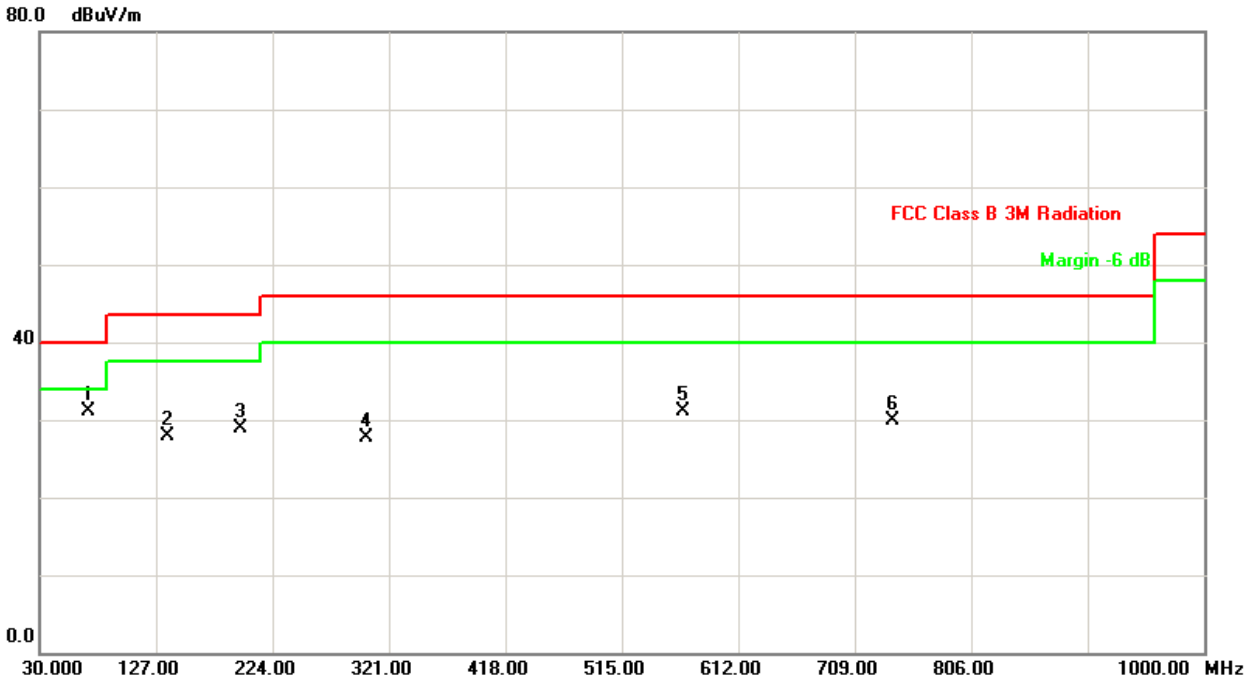
Remark：

(1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX Mode 2473MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
71.23	H	39.88	-18.46	21.42	40.00	- 18.58	
190.05	H	39.83	-16.73	23.10	43.50	- 20.40	
333.13	H	43.85	-11.26	32.59	46.00	- 13.41	
403.45	H	37.44	-8.96	28.48	46.00	- 17.52	
595.03	H	33.27	-4.39	28.88	46.00	- 17.12	
667.78	H	33.41	-3.28	30.13	46.00	- 15.87	

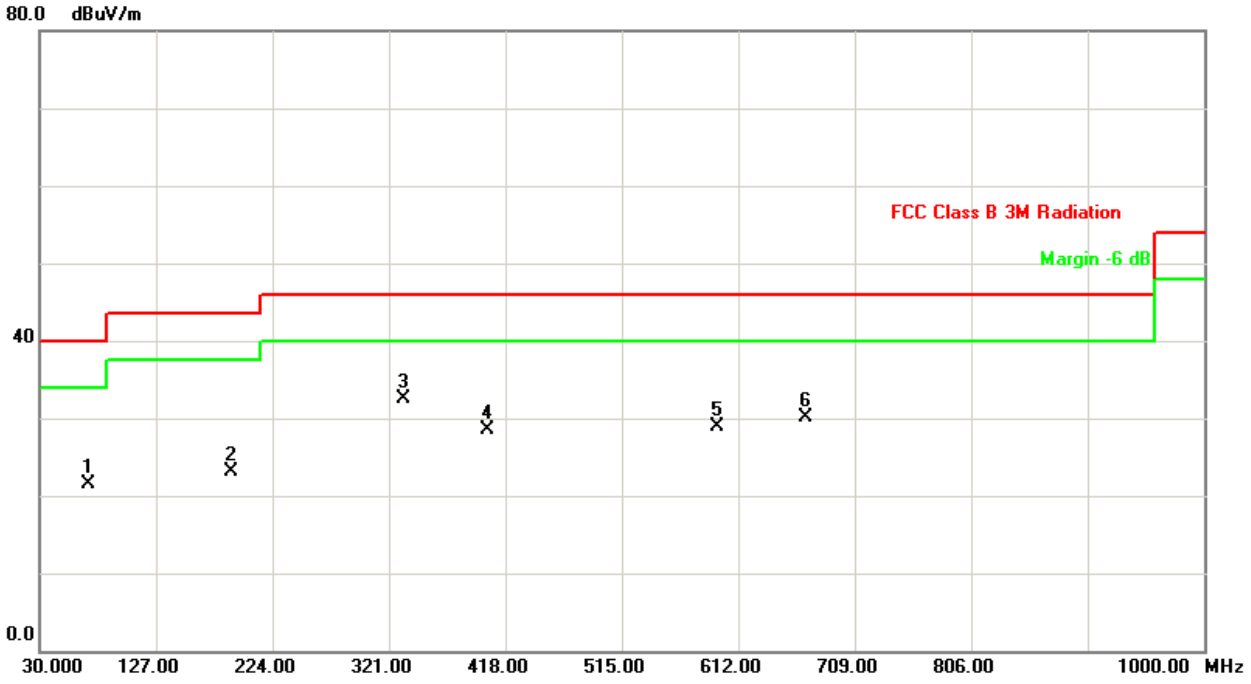
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX Mode 2406MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
71.23	V	45.29	-18.46	26.83	40.00	- 13.17	
156.10	V	48.51	-17.61	30.90	43.50	- 12.60	
323.43	V	47.63	-11.49	36.14	46.00	- 9.86	
403.45	V	41.62	-8.96	32.66	46.00	- 13.34	
568.35	V	36.89	-5.04	31.85	46.00	- 14.15	
725.98	V	38.29	-2.85	35.44	46.00	- 10.56	

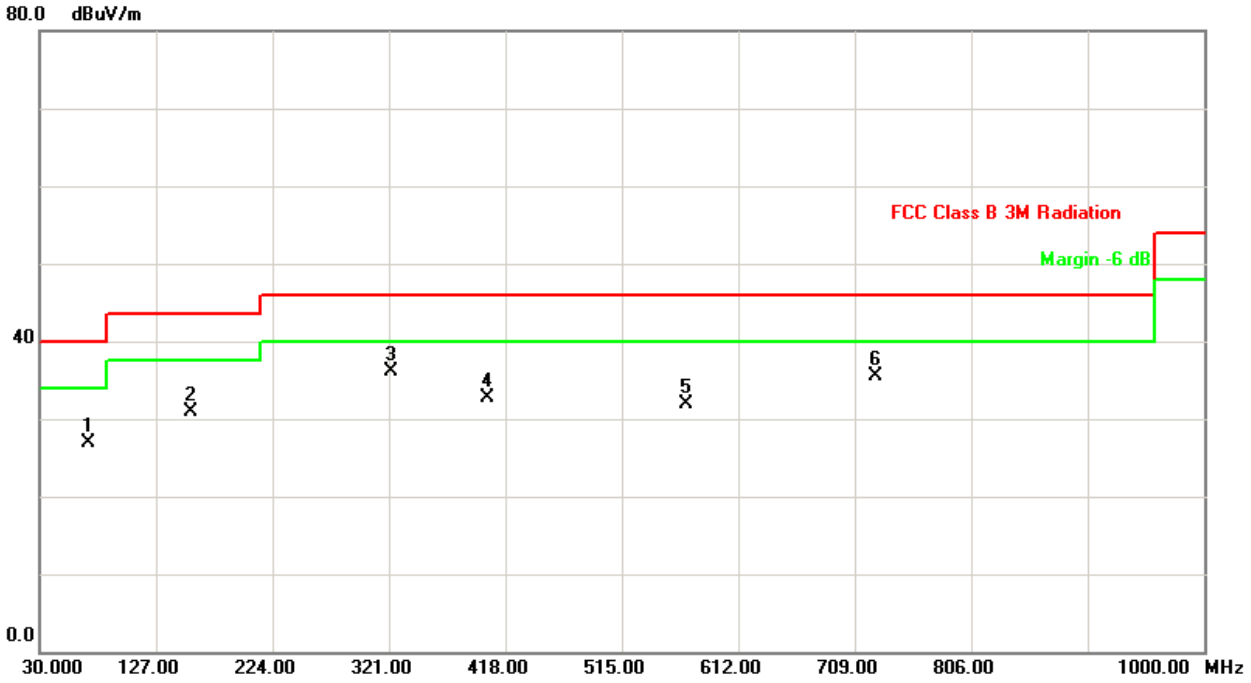
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25 ℃	Relative Humidity	58 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX Mode 2406MHz		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
71.23	H	44.56	-18.46	26.10	40.00	- 13.90	
202.18	H	47.76	-16.51	31.25	43.50	- 12.25	
325.85	H	50.68	-11.43	39.25	46.00	- 6.75	
405.88	H	40.34	-8.92	31.42	46.00	- 14.58	
565.93	H	34.76	-5.10	29.66	46.00	- 16.34	
728.40	H	37.32	-2.83	34.49	46.00	- 11.51	

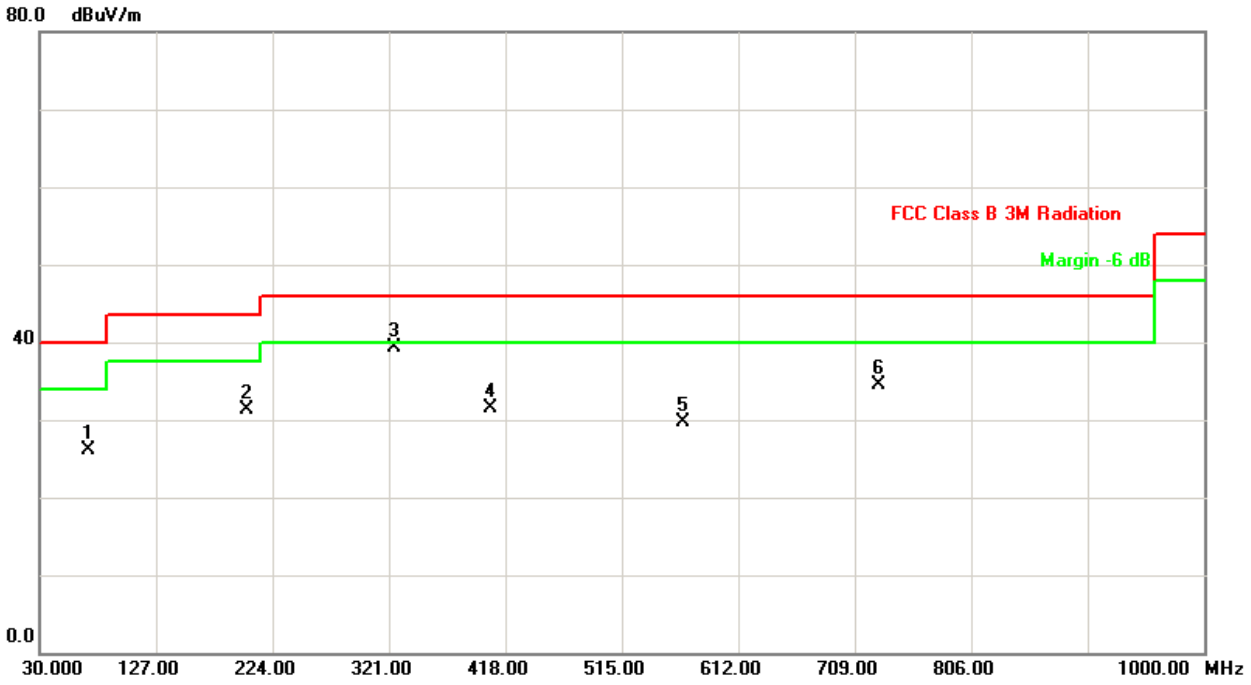
Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

(4) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



4.2.9 TEST RESULTS (ABOVE 1000 MHz)

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2406MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	24.67	0.27	31.91	56.58	32.18	74.00	54.00	X/E
2405.88	**V**	**63.60**	**39.20**	**31.90**	**95.50**	**71.10**	**114.00**	**94.00**	**X/F**
4811.58	V	41.76	17.36	5.24	47.00	22.60	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

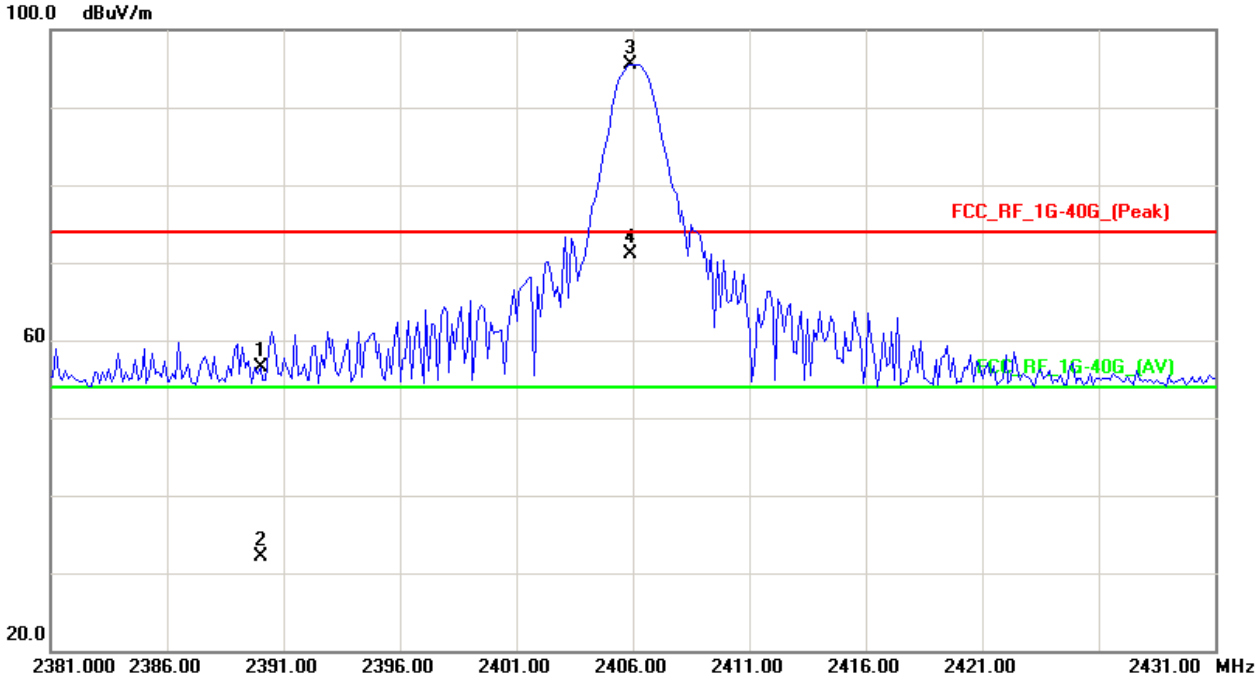
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

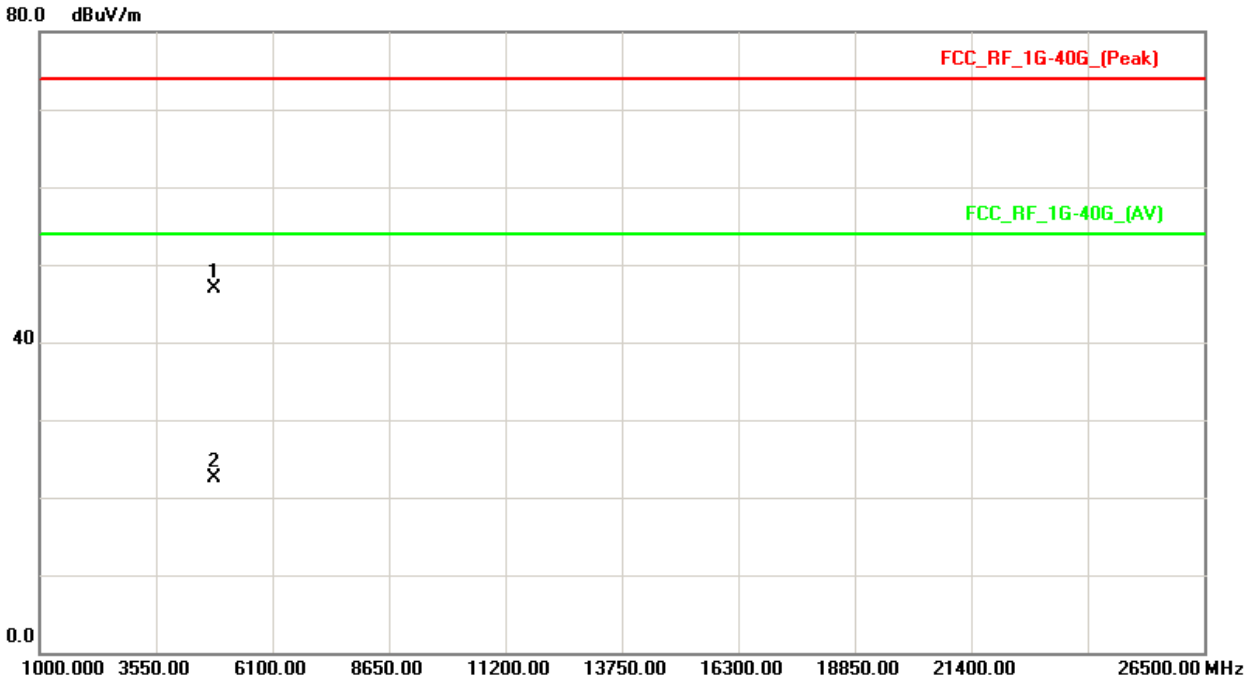
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2406MHz (Above 1000 MHz, Vertical)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2406MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	24.63	0.23	31.91	56.54	32.14	74.00	54.00	X/E
2406.00	**H**	**64.62**	**40.22**	**31.90**	**96.52**	**72.12**	**114.00**	**94.00**	**X/F**
4812.02	H	43.68	19.26	5.24	48.92	24.50	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

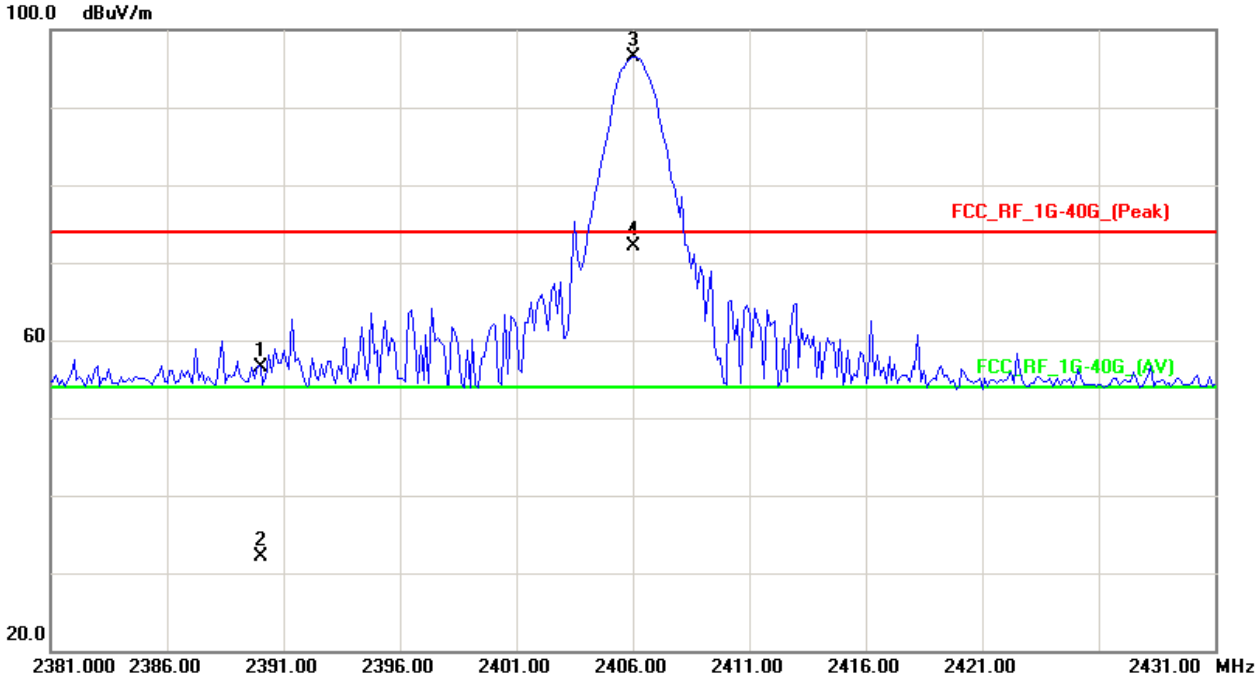
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

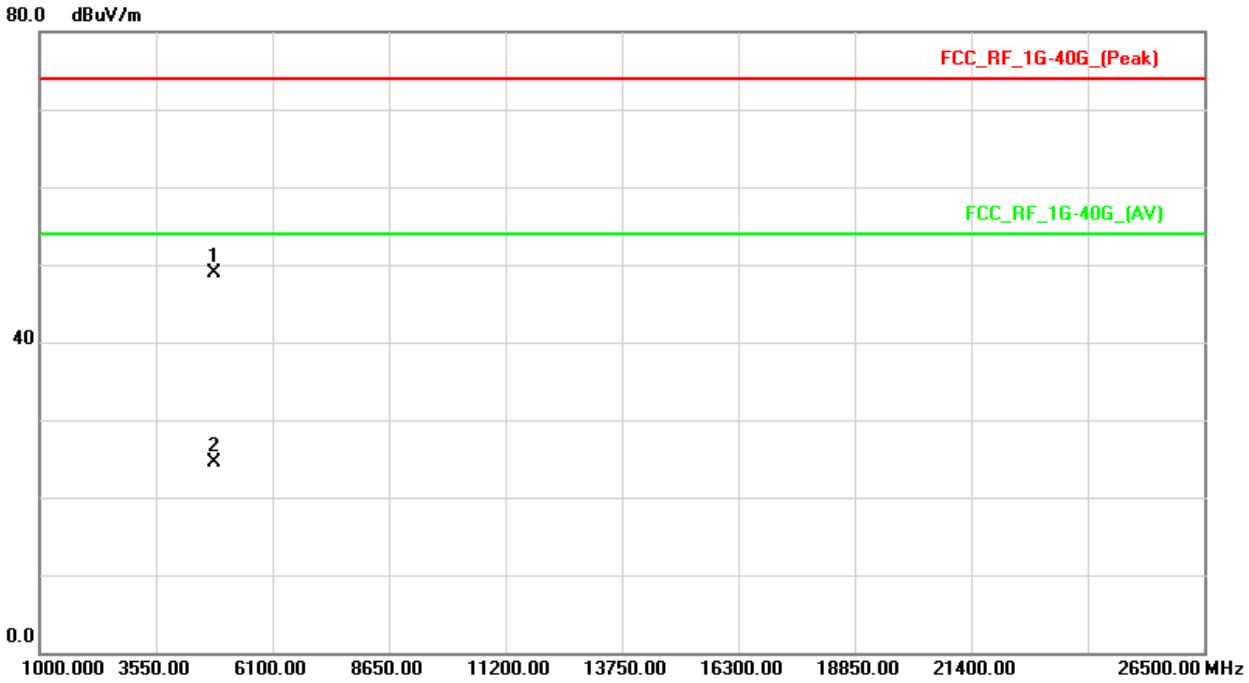
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2406MHz (Above 1000 MHz, Horizontal)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2440MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2440.13	**V**	**63.09**	**38.69**	**31.85**	**94.94**	**70.54**	**114.00**	**94.00**	**X/F**
4879.52	V	41.96	17.29	5.49	47.45	22.78	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

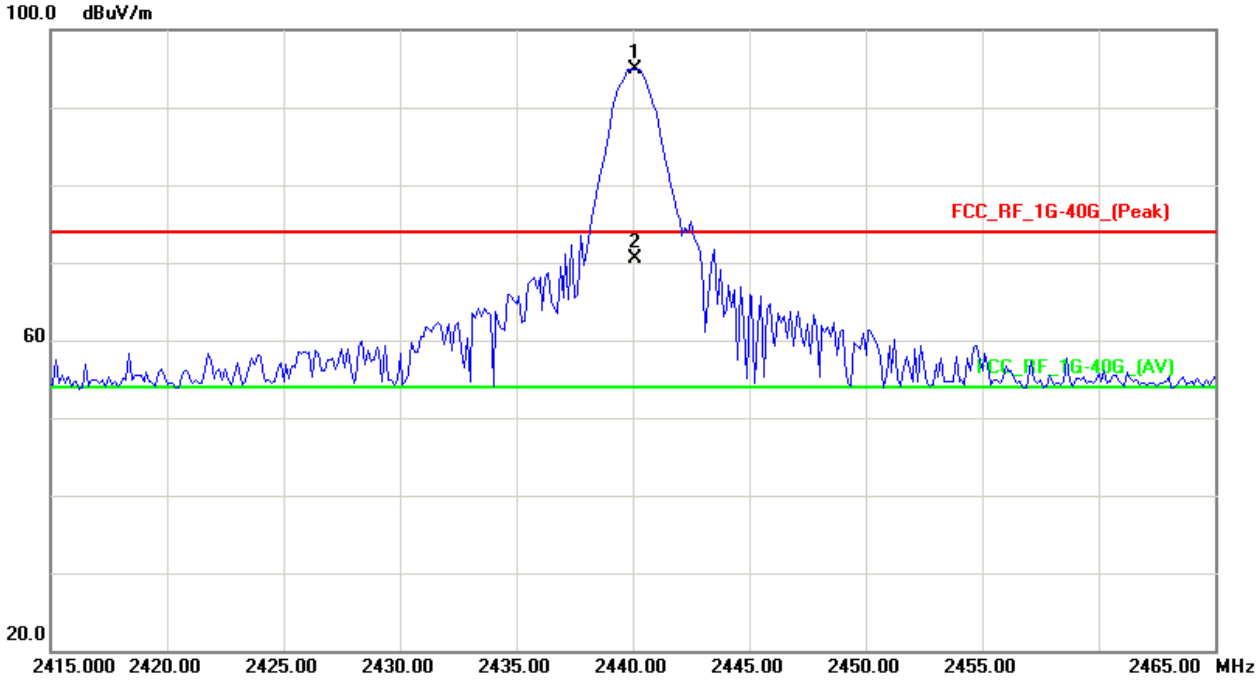
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

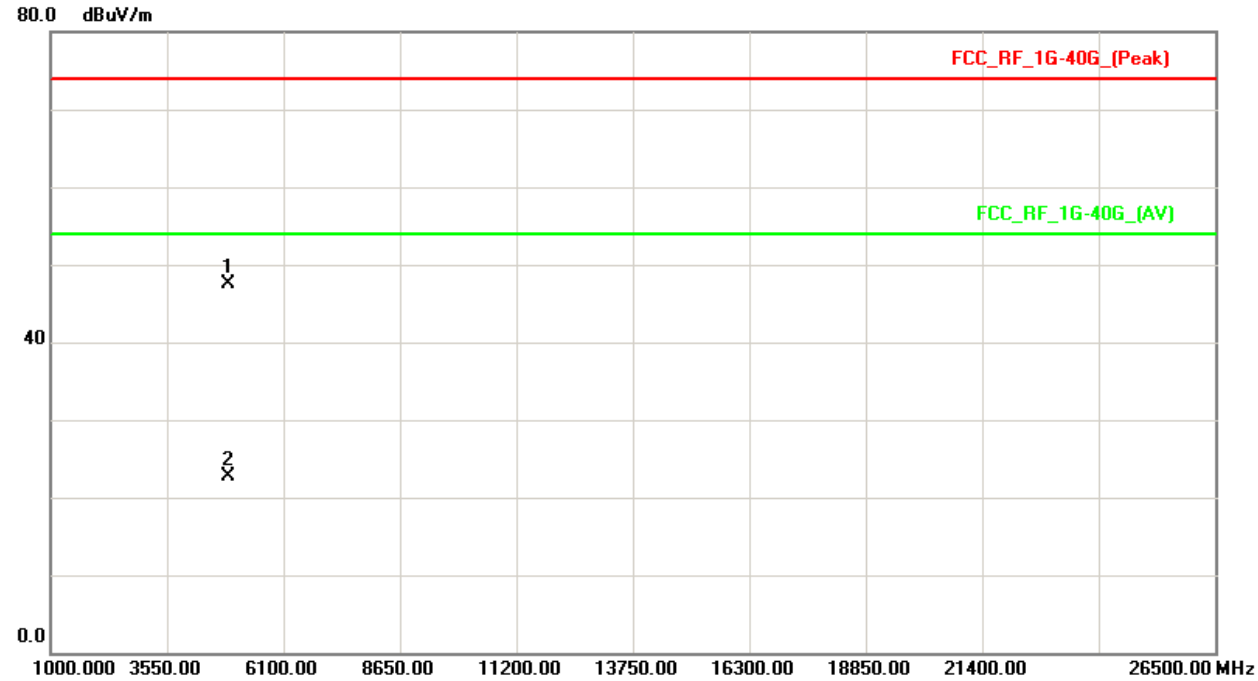
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2440 MHz (Above 1000 MHz, Vertical)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2440MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2440.00	**H**	**57.88**	**33.48**	**31.85**	**89.73**	**65.33**	**114.00**	**94.00**	**X/F**
4880.98	H	42.09	17.69	5.49	47.58	23.18	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

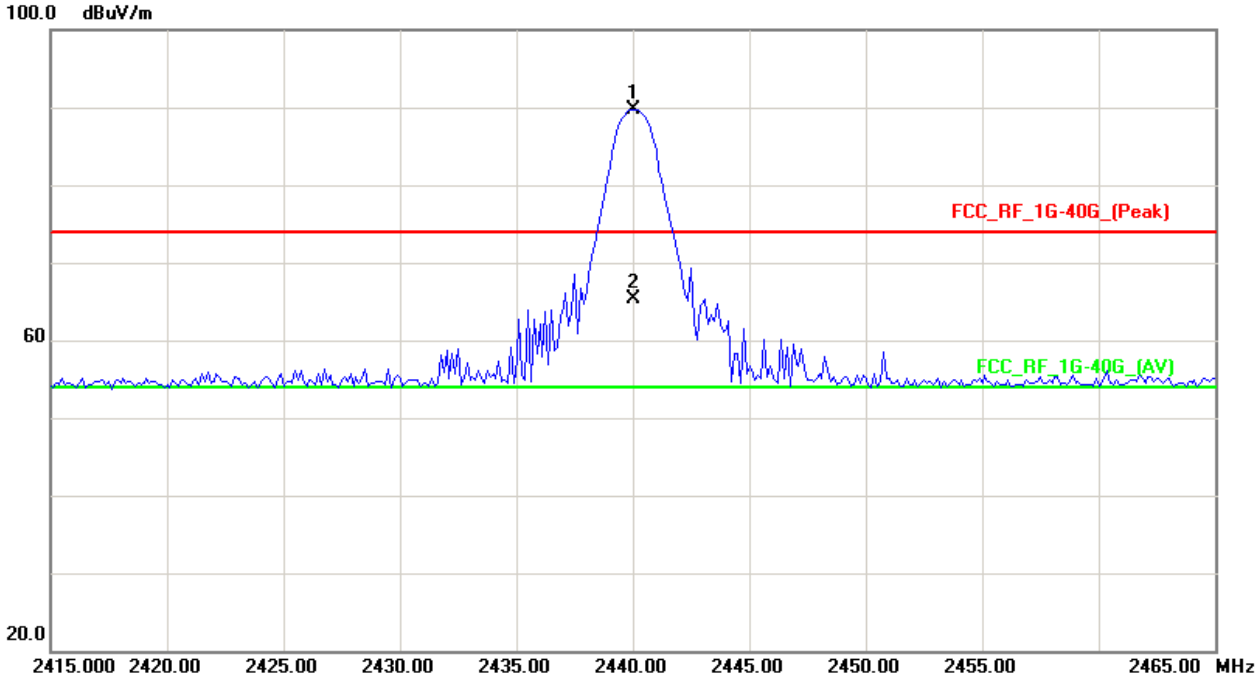
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

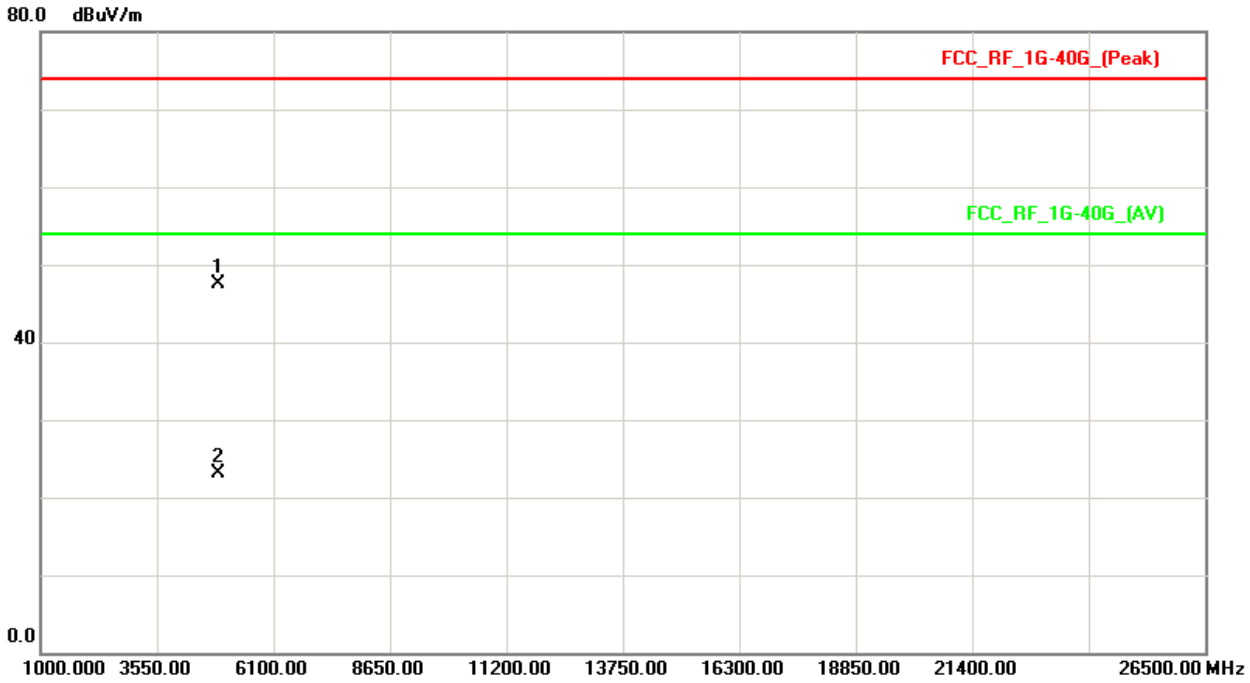
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2440MHz (Above 1000 MHz, Horizontal)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2473MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2472.88	**V**	**62.07**	**37.67**	**31.81**	**93.88**	**69.48**	**114.00**	**94.00**	**X/F**
2483.50	V	23.57	-0.83	31.80	55.37	30.97	74.00	54.00	X/E
4945.35	V	41.46	17.06	5.74	47.20	22.80	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

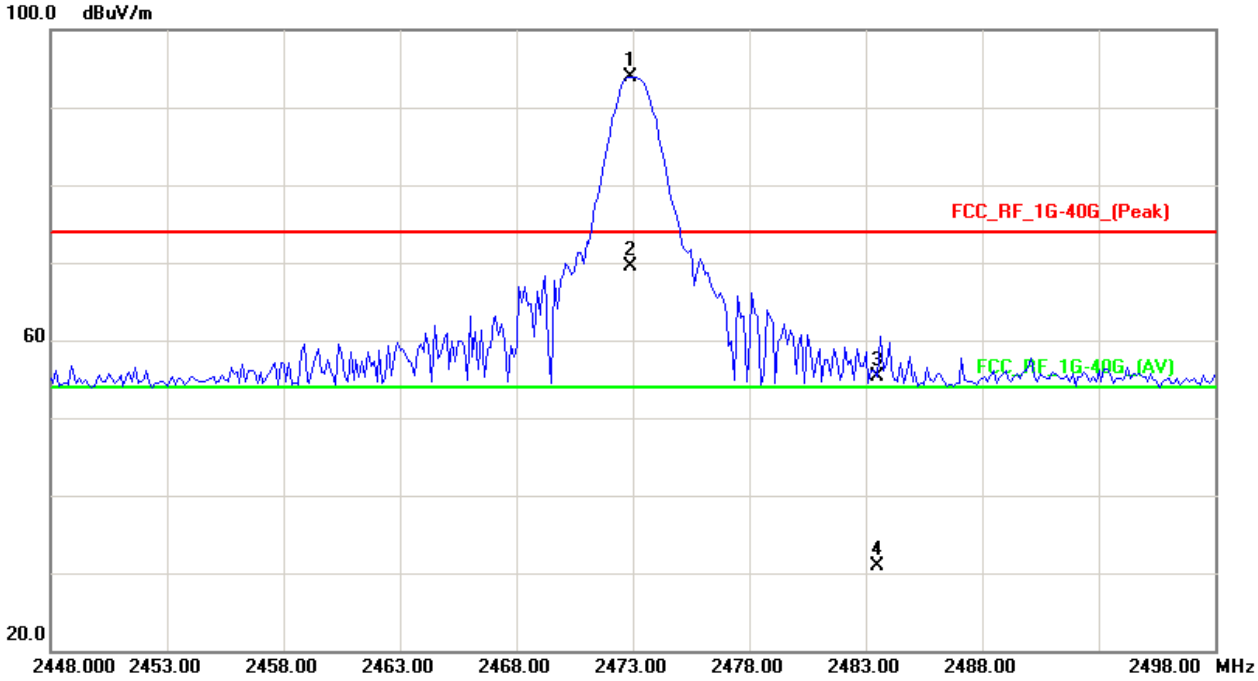
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

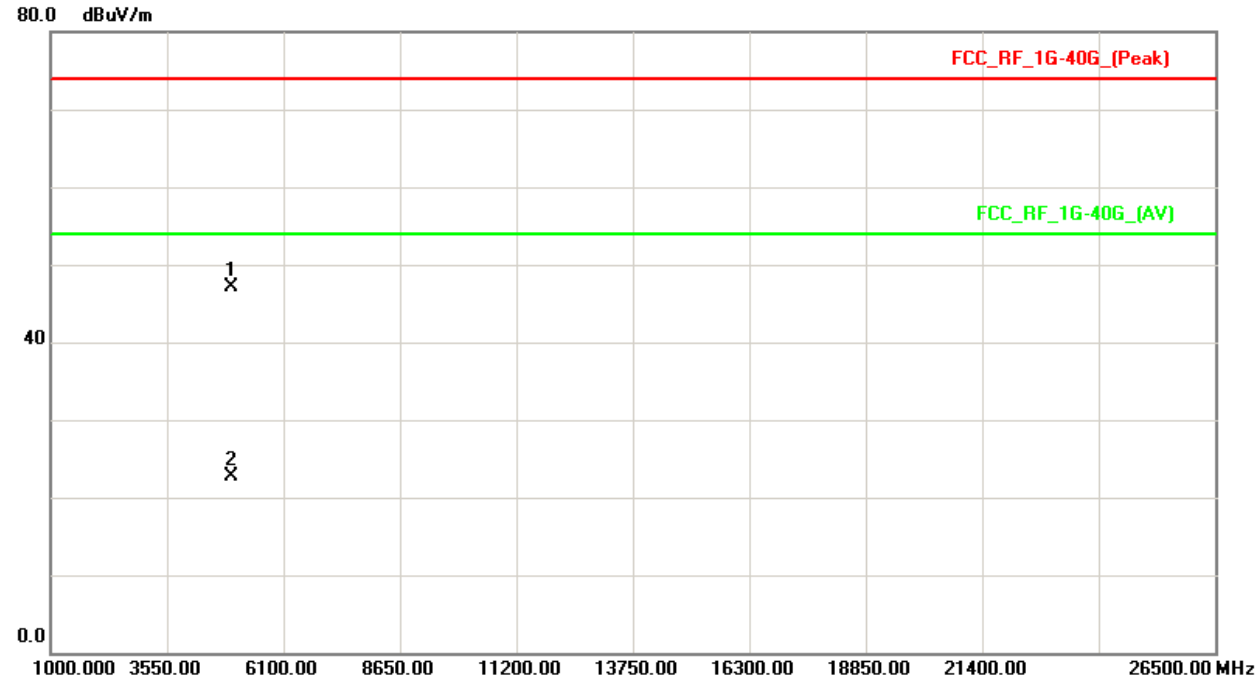
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2473MHz (Above 1000 MHz, Vertical)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX 2473MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2472.88	**H**	**57.31**	**32.91**	**31.81**	**89.12**	**64.72**	**114.00**	**94.00**	**X/F**
2483.50	H	22.25	-2.15	31.80	54.05	29.65	74.00	54.00	X/E
4947.35	H	42.34	17.94	5.74	48.08	23.68	74.00	54.00	X/H

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

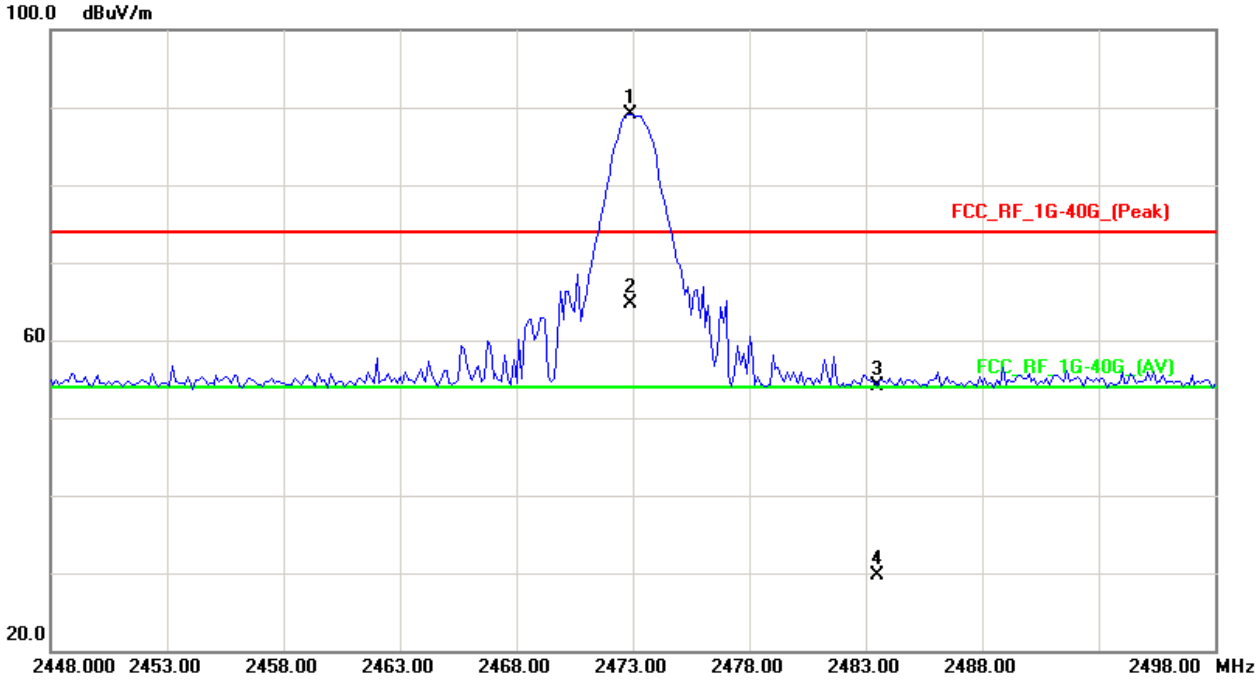
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

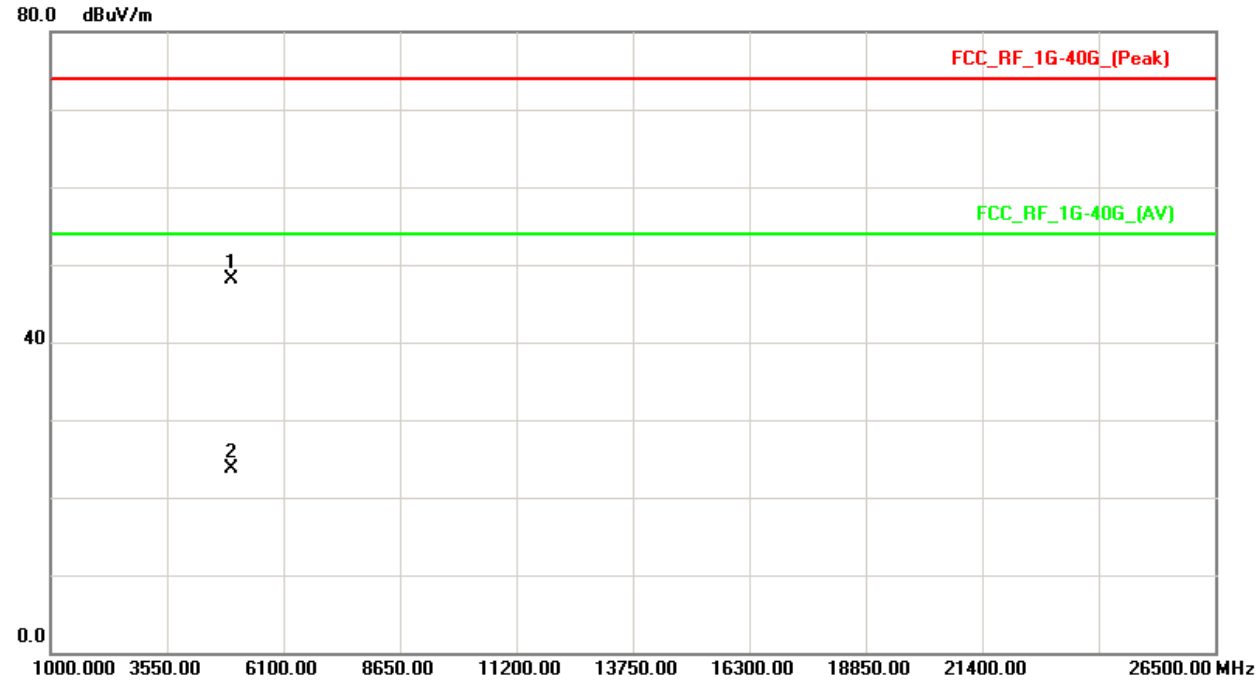
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

Orthogonal Axis：X
TX 2473MHz (Above 1000 MHz, Horizontal)





EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2406MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2487.50	V	48.40	24.00	-1.62	46.78	22.38	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

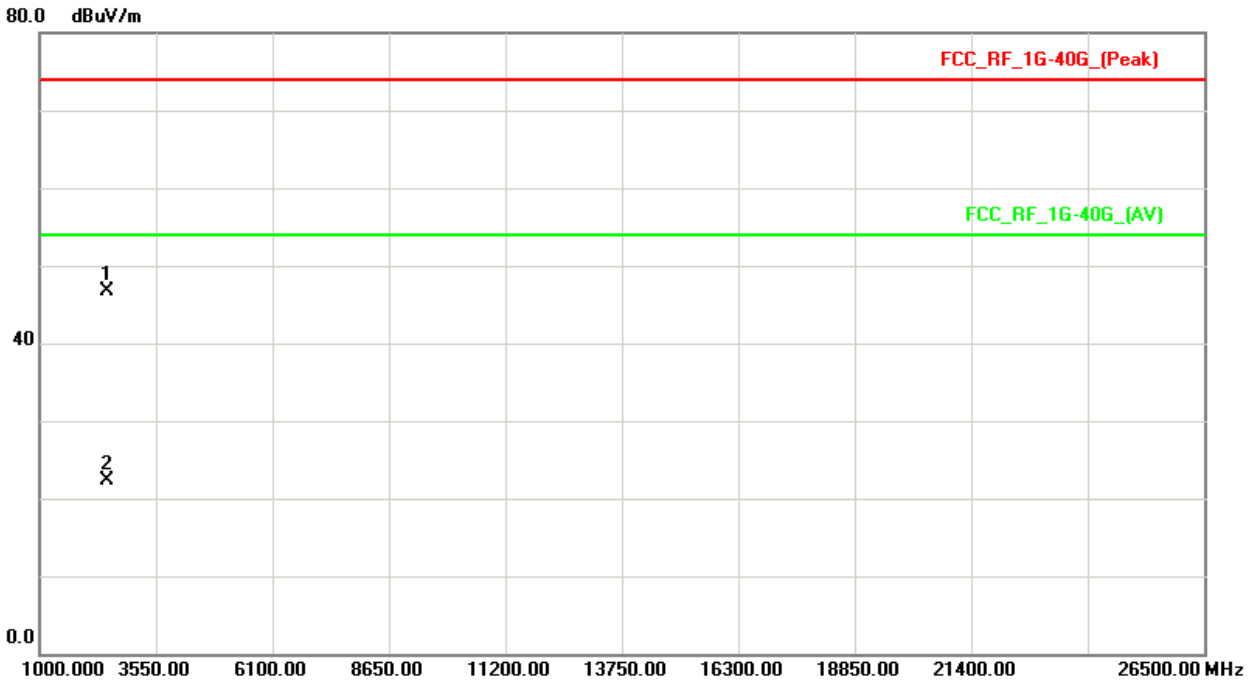
(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2406MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2466.25	H	46.21	21.81	-1.60	44.61	20.21	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

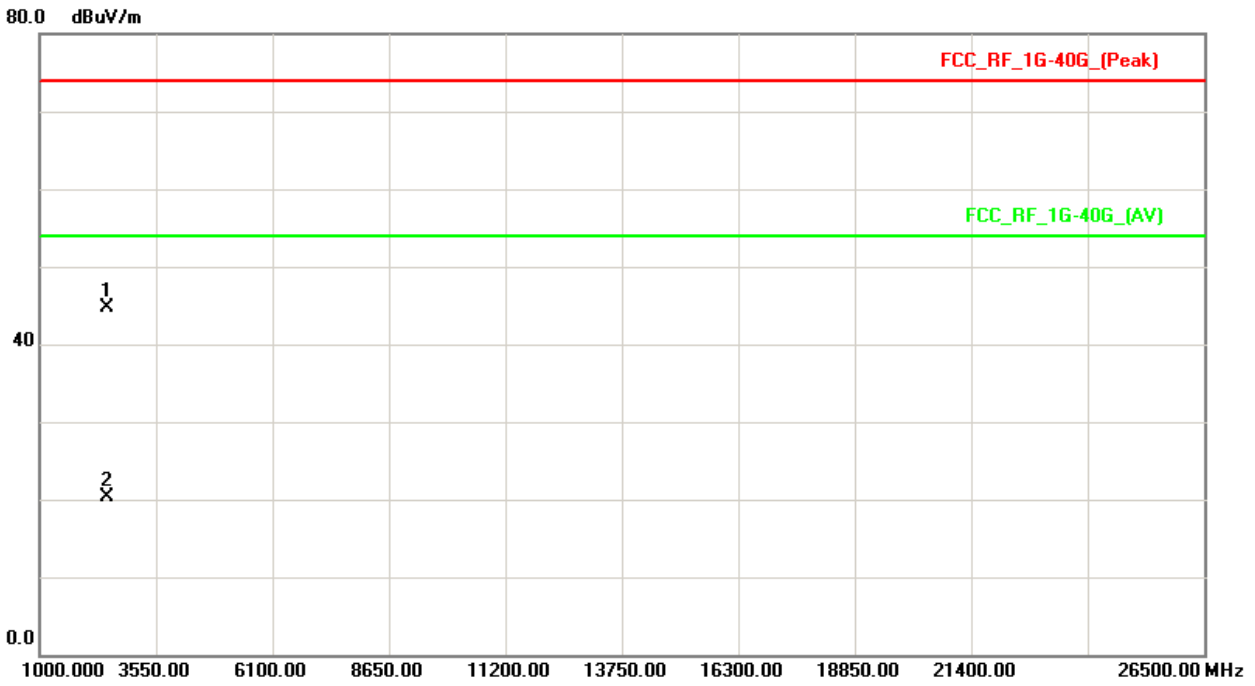
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2440MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2490.00	V	41.18	16.78	-1.63	39.55	15.15	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

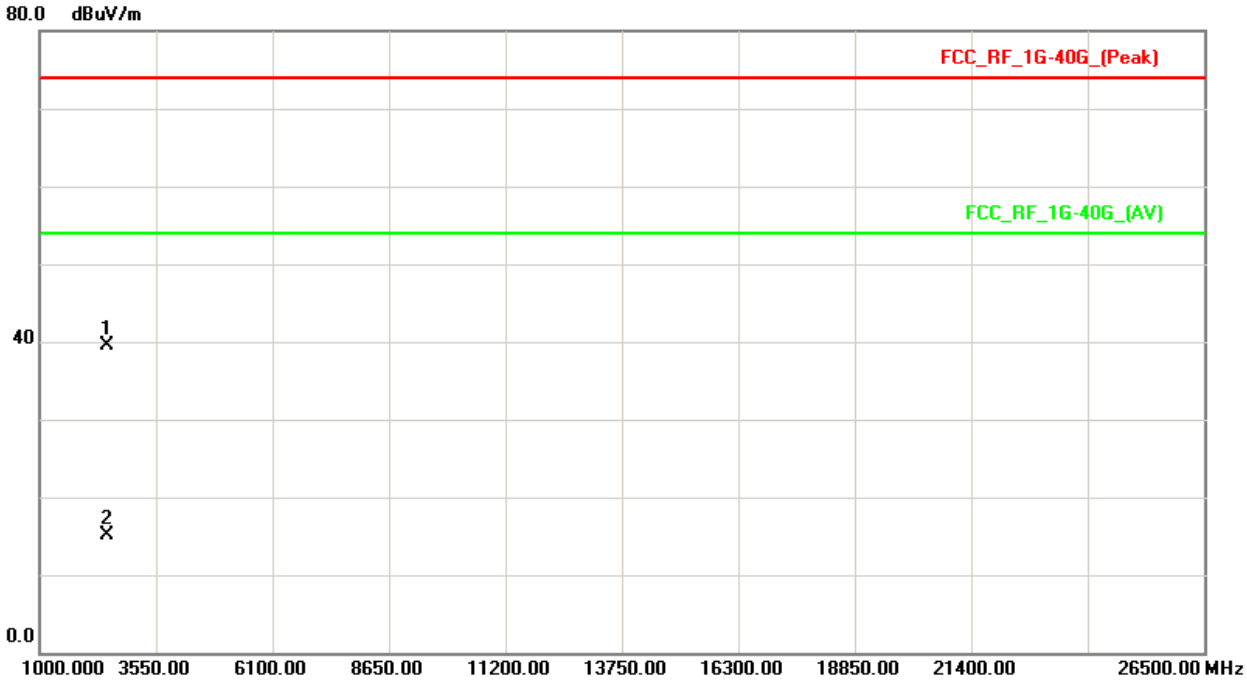
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2440MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2490.00	H	47.24	22.84	-1.63	45.61	21.21	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

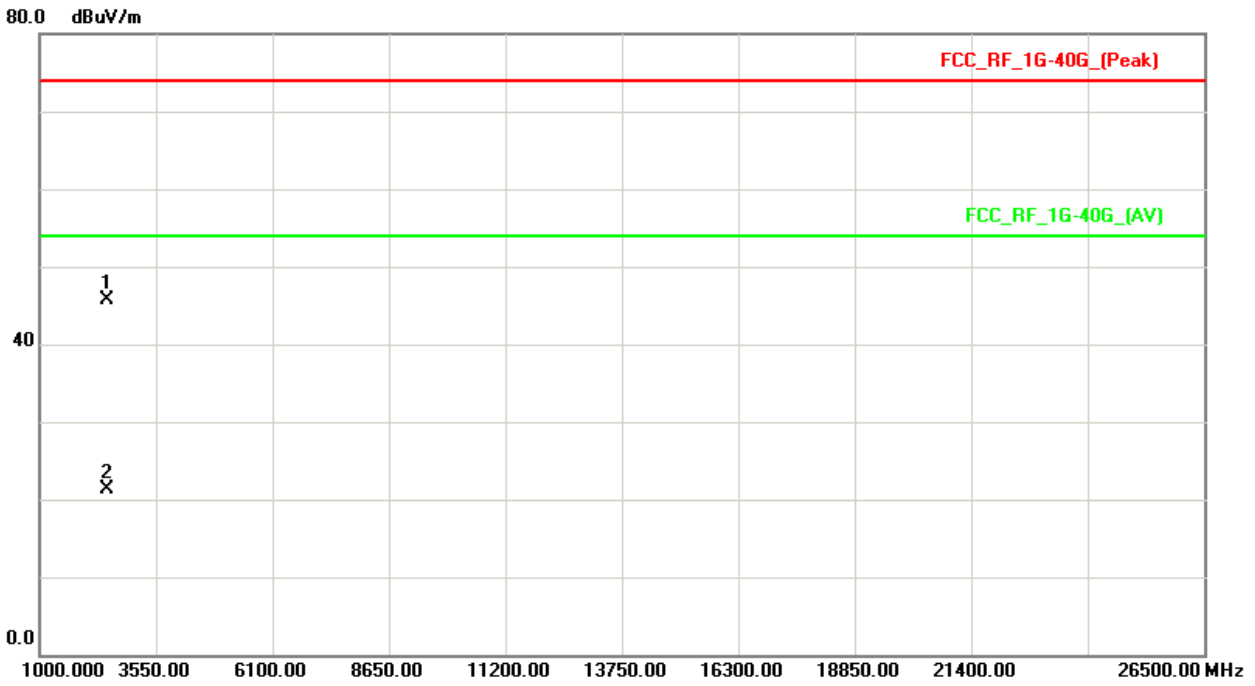
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2473MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
1610.00	V	47.34	22.94	-5.20	42.14	17.74	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

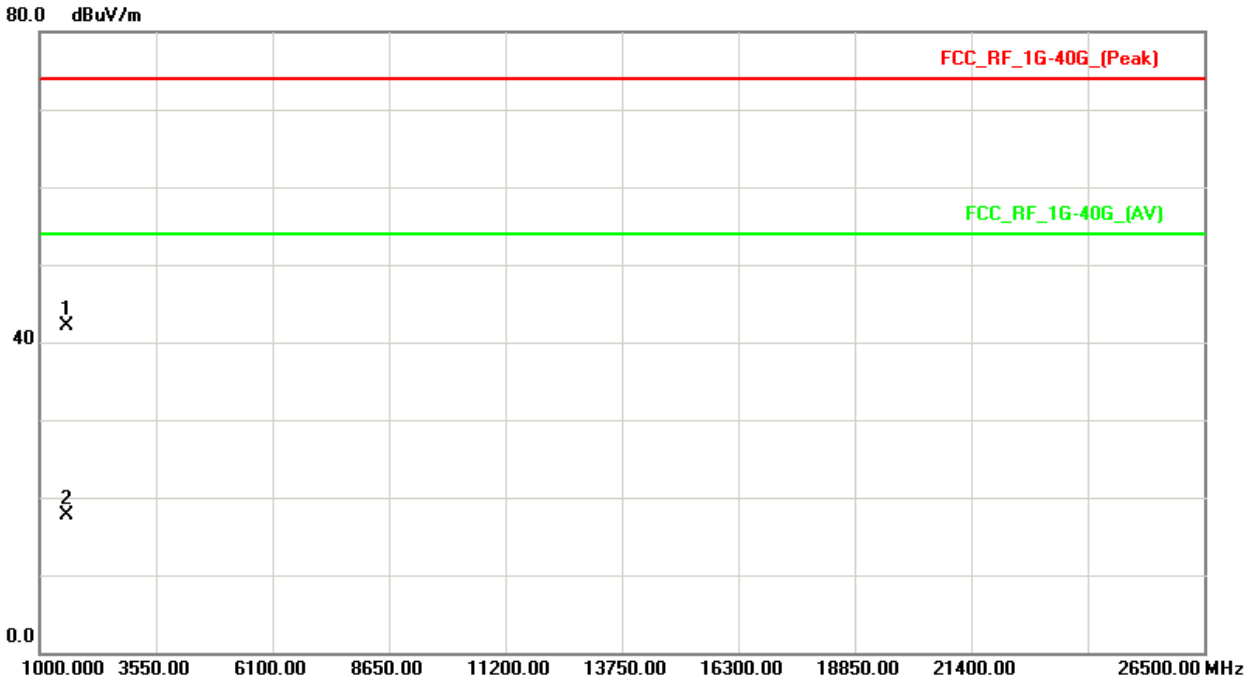
(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	RX 2473MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2340.00	H	45.03	20.63	-1.40	43.63	19.23	74.00	54.00	X/E

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 1000MHz to 6000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

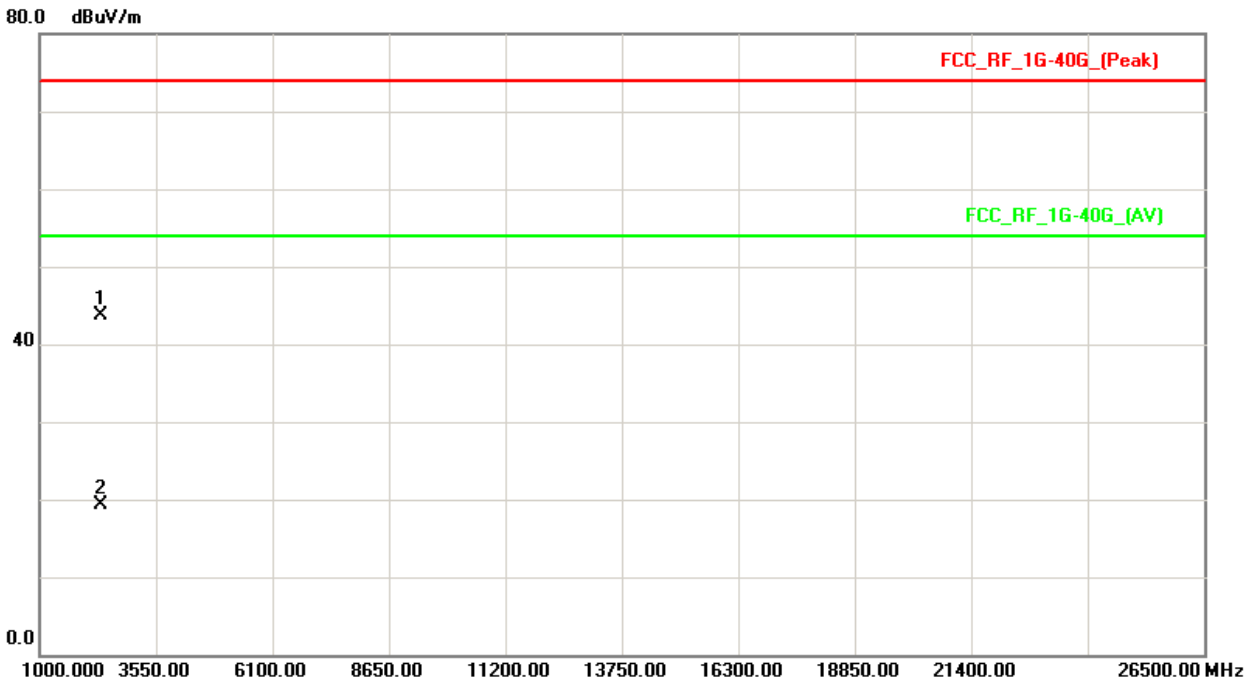
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



4.2.10 TEST RESULTS (2400 – 2483.5 MHz)

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	22 ℃	Relative Humidity	60 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX CH 2406MHz/2440MHz/2473MHz		

		Peak	AV		Peak	AV	Peak	AV	
Freq.	Ant.Pol.	Reading		Ant./CL/	Actual FS		Limit3m		
(MHz)	(H/V)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	NOTE
2405.88	V	63.60	39.20	31.90	95.50	71.10	114.00	94.00	CH01
2406.00	H	64.62	40.22	31.90	96.52	72.12	114.00	94.00	CH01
2440.13	V	63.09	38.69	31.85	94.94	70.54	114.00	94.00	CH09
2440.00	H	57.88	33.48	31.85	89.73	65.33	114.00	94.00	CH09
2472.88	V	62.07	37.67	31.81	93.88	69.48	114.00	94.00	CH16
2472.88	H	57.31	32.91	31.81	89.12	64.72	114.00	94.00	CH16

Remark：

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

(3) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(5) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-24.4

5. BANDWIDTH TEST

5.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2012

Remark: “N/A” denotes no model name, serial No. or calibration specified.

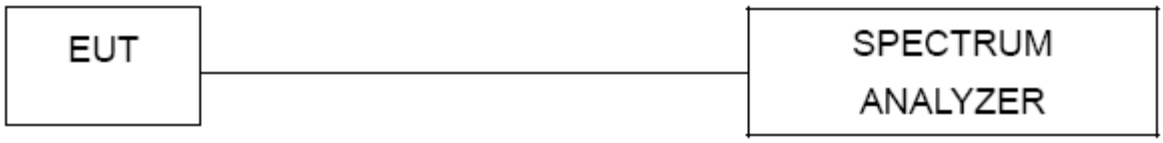
5.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 2.5 ms.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

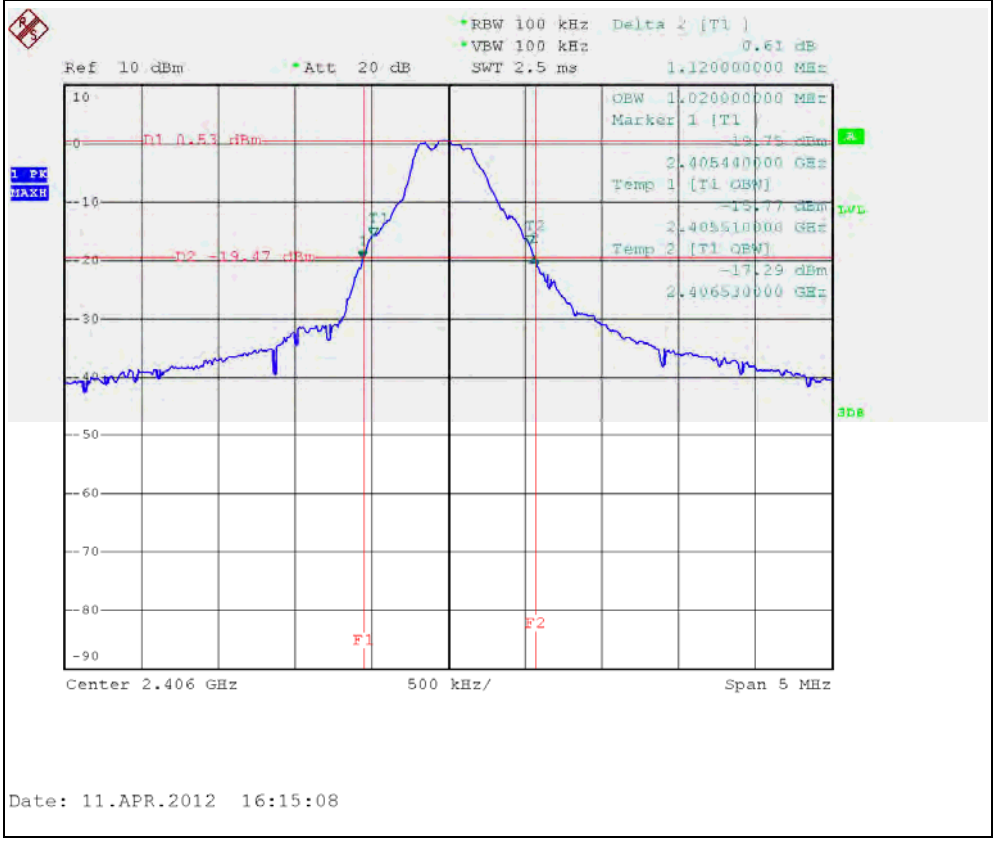
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

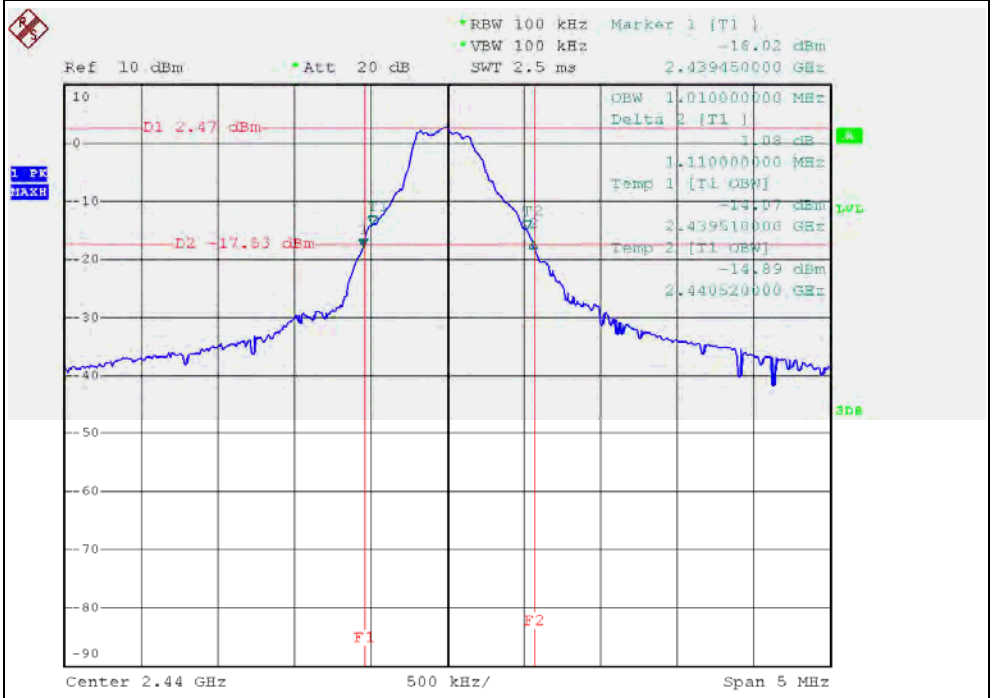
EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25℃	Relative Humidity	55 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX CH 01/35/68		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	99% occupied Bandwidth(MHz)
CH 01	2406	1.12	1.02
CH 35	2440	1.11	1.01
CH 68	2473	1.12	1.03

TX CH01

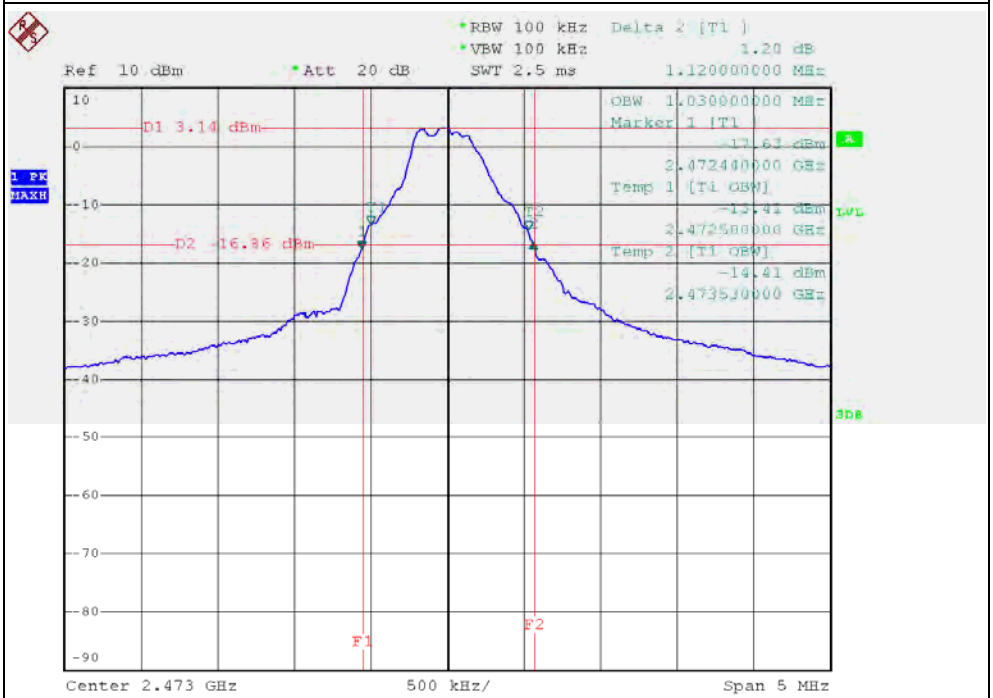


TX CH 35



Date: 11.APR.2012 16:08:04

TX CH 68



Date: 11.APR.2012 15:54:03

6. ANTENNA CONDUCTED SPURIOUS EMISSION

6.1 APPLIED PROCEDURES / LIMIT

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

Frequencies (MHz)	Field Strength (micorvolts/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
960~1000	500	3

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2012

Remark: “N/A” denotes no model name, serial No. or calibration specified.

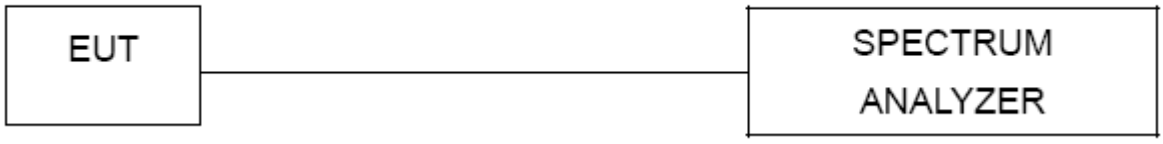
6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 10 ms.

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

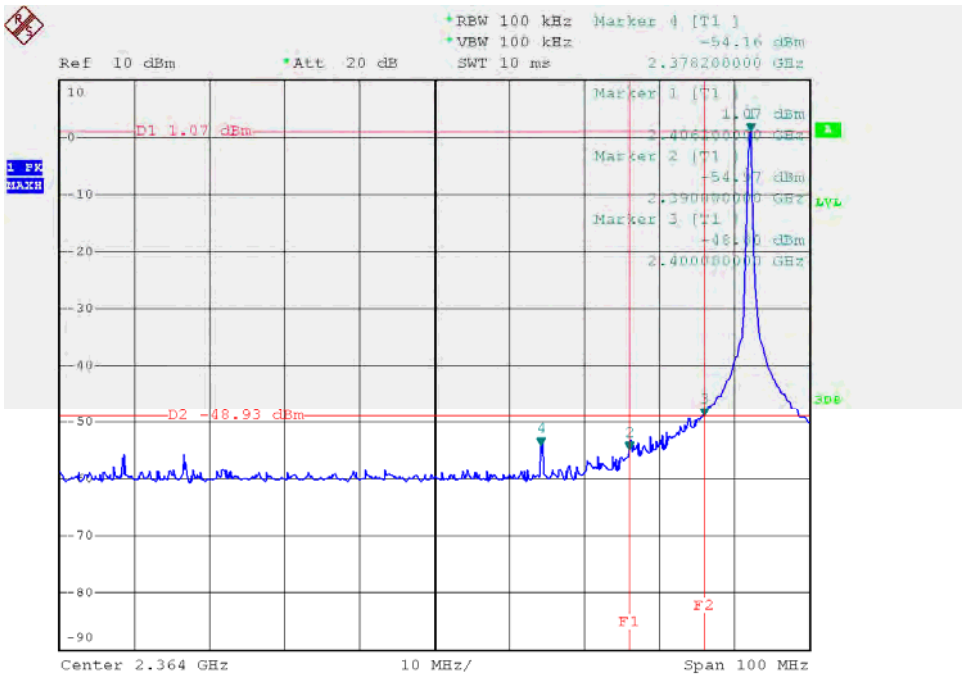
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.6 TEST RESULTS

EUT	3D Vision Pro Embedded Hub	Model Name	P1453
Temperature	25℃	Relative Humidity	55 %
Pressure	1009 hPa	Test Power	DC 3.3V
Test Mode	TX CH01, CH 35, CH 68		

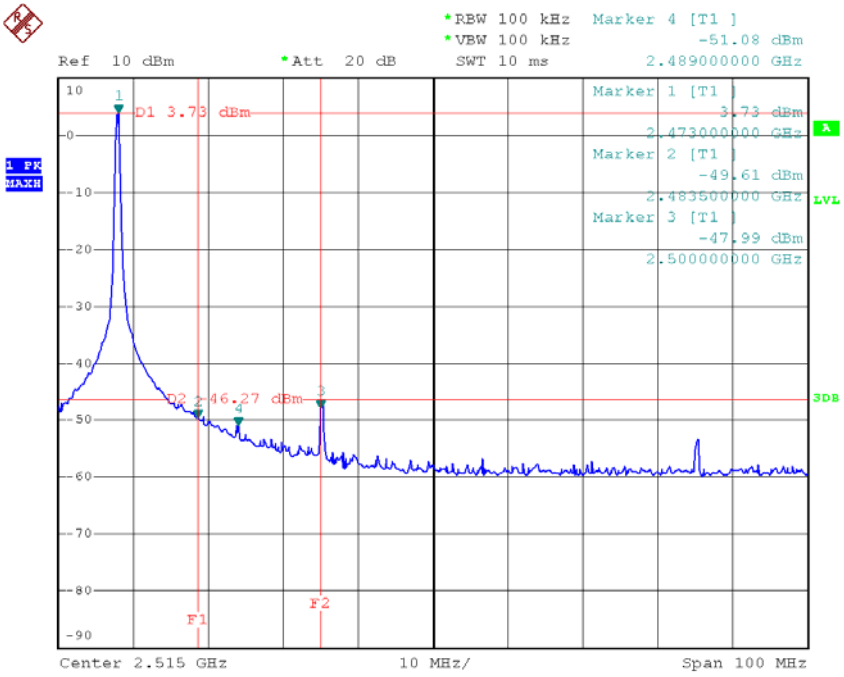
Channel of Worst Data: CH01			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-48.80	2500.00	-47.99
Result			
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation. Please refer to the data of page 32 ~ 43.			

TX CH 01



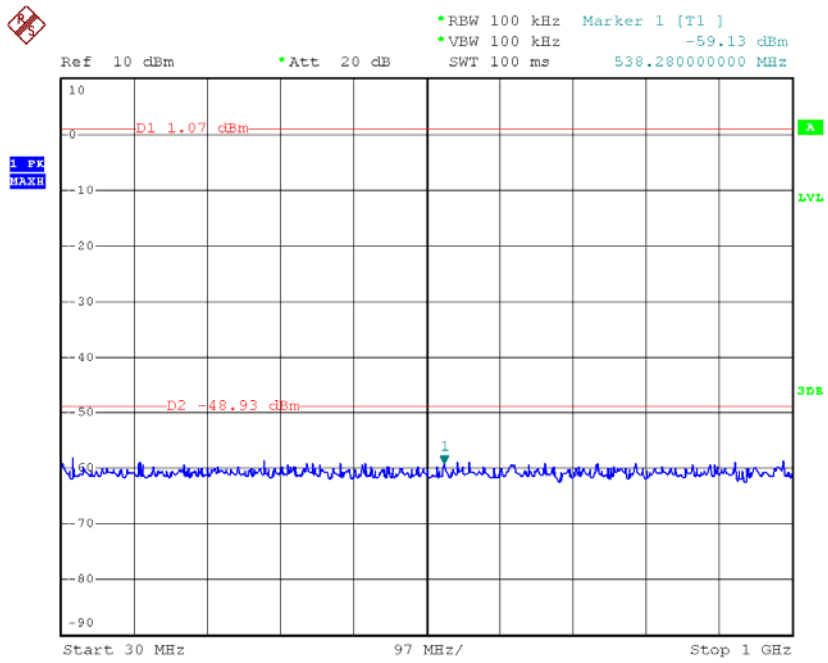
Date: 11.APR.2012 16:17:36

TX CH 68

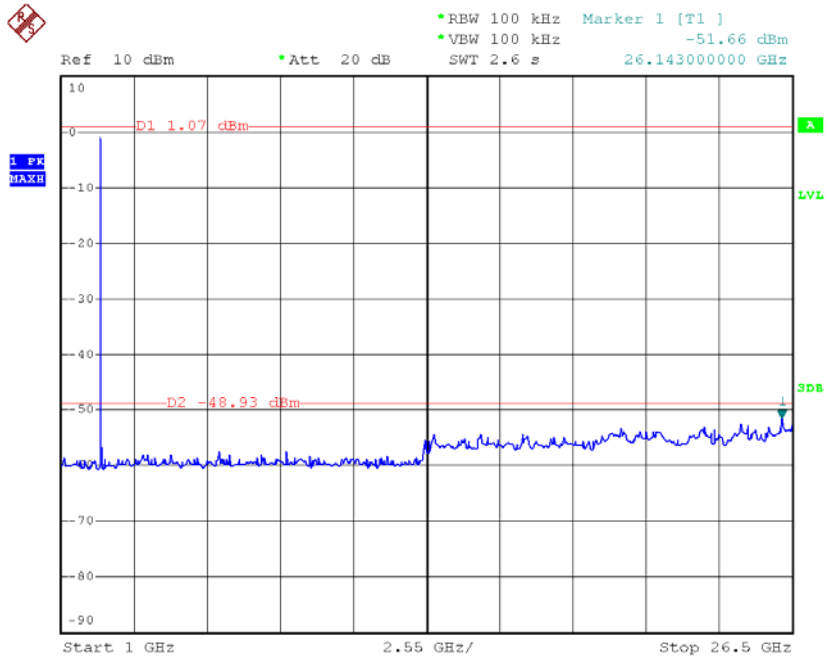


Date: 11.APR.2012 16:02:08

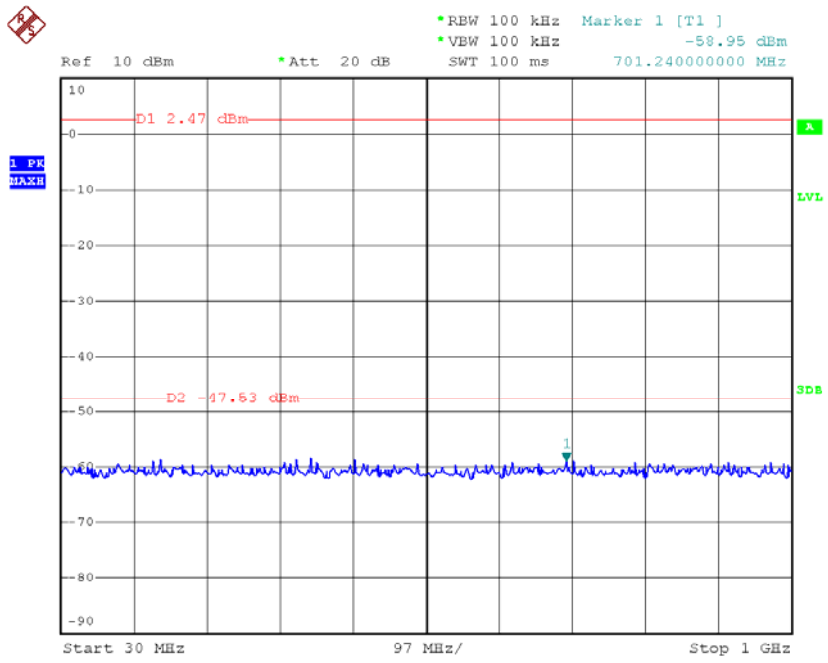
TX CH 01 (30MHz~1GHz)



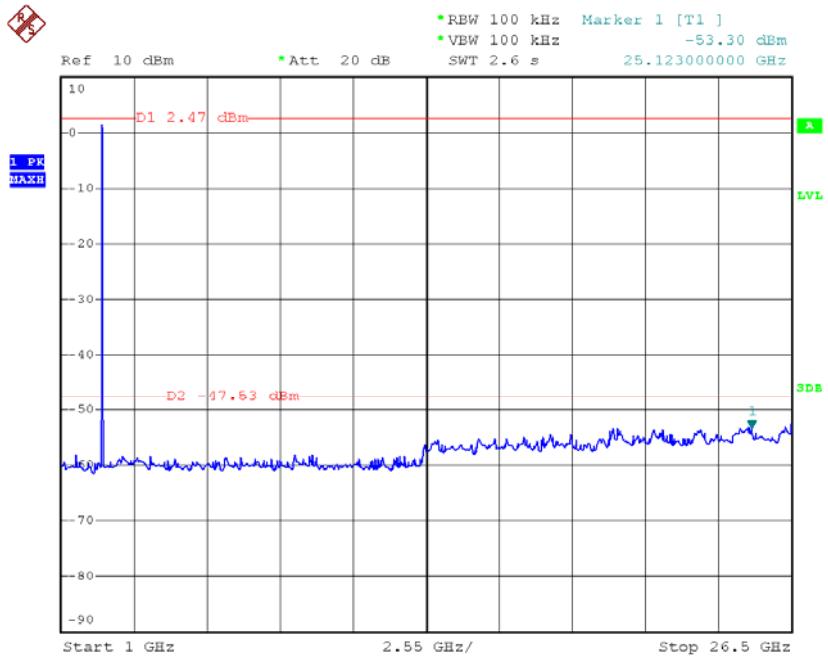
TX CH 01(1GHz～10th Harmonic)



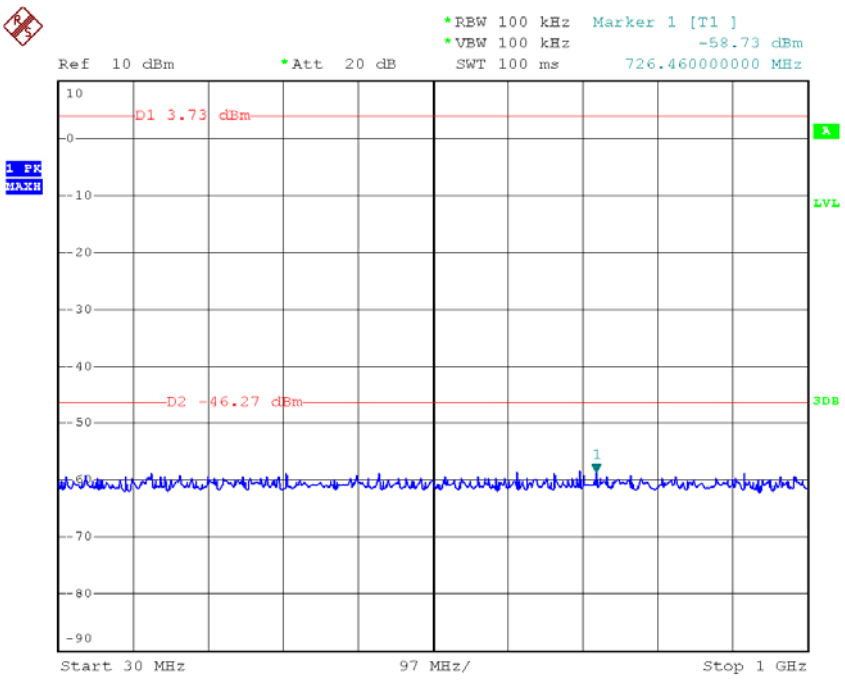
TX CH 35 (30MHz~1GHz)



TX CH 35(1GHz～10th Harmonic)

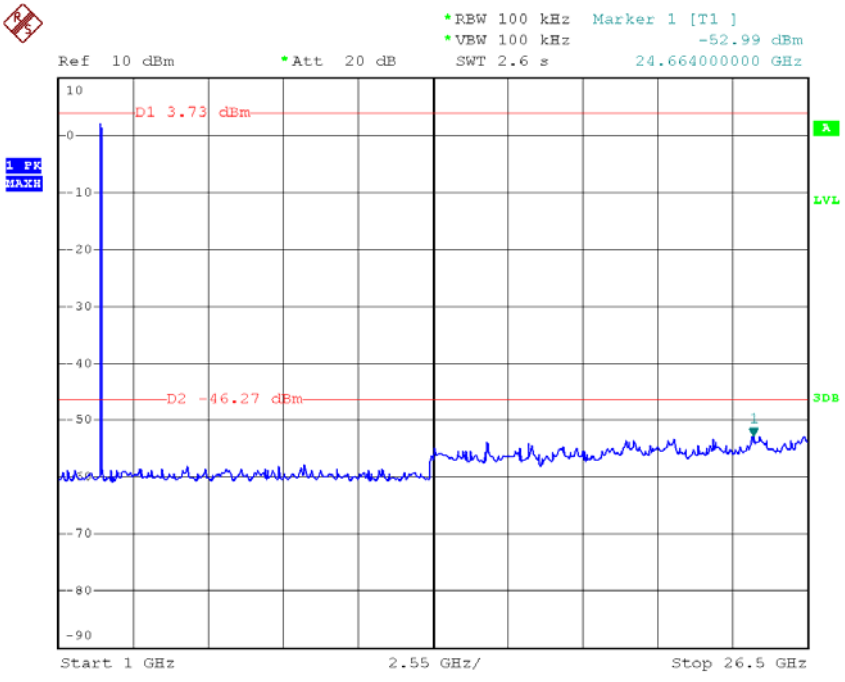


TX CH 68(30MHz~1GHz)



Date: 11.APR.2012 16:02:40

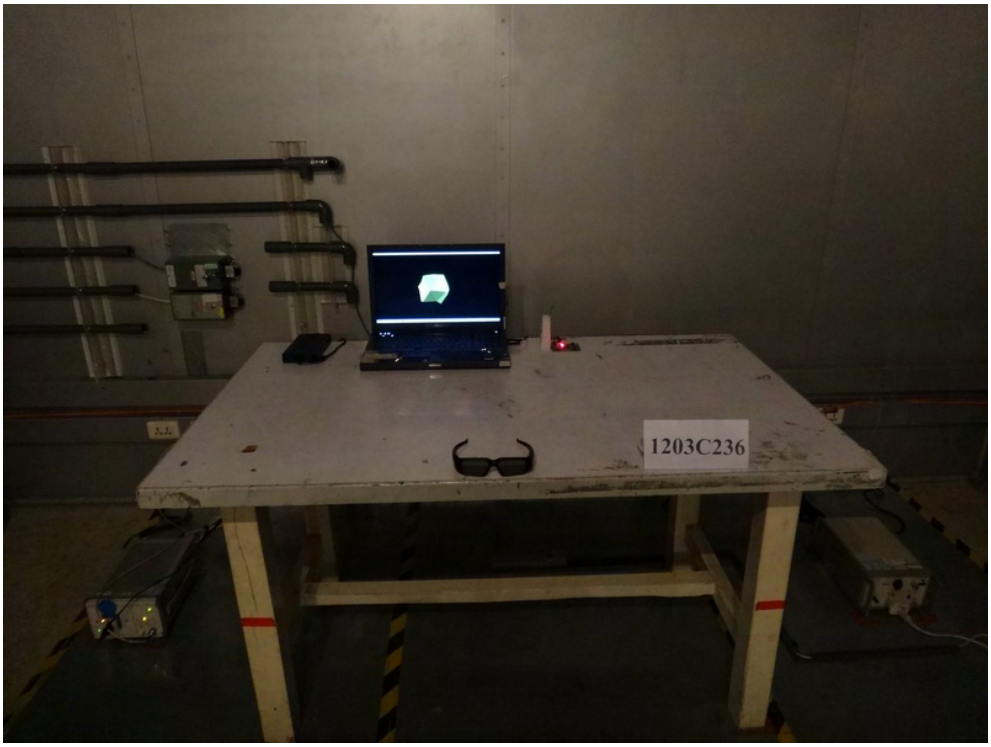
TX CH 68(1GHz～10th Harmonic)



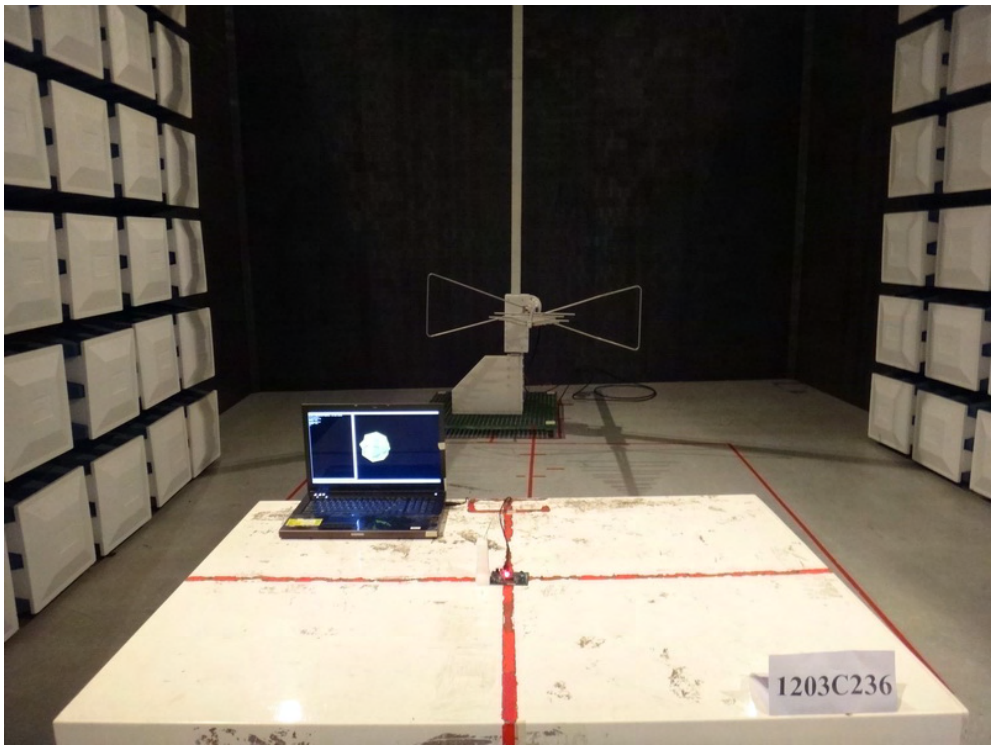
Date: 11.APR.2012 16:03:08

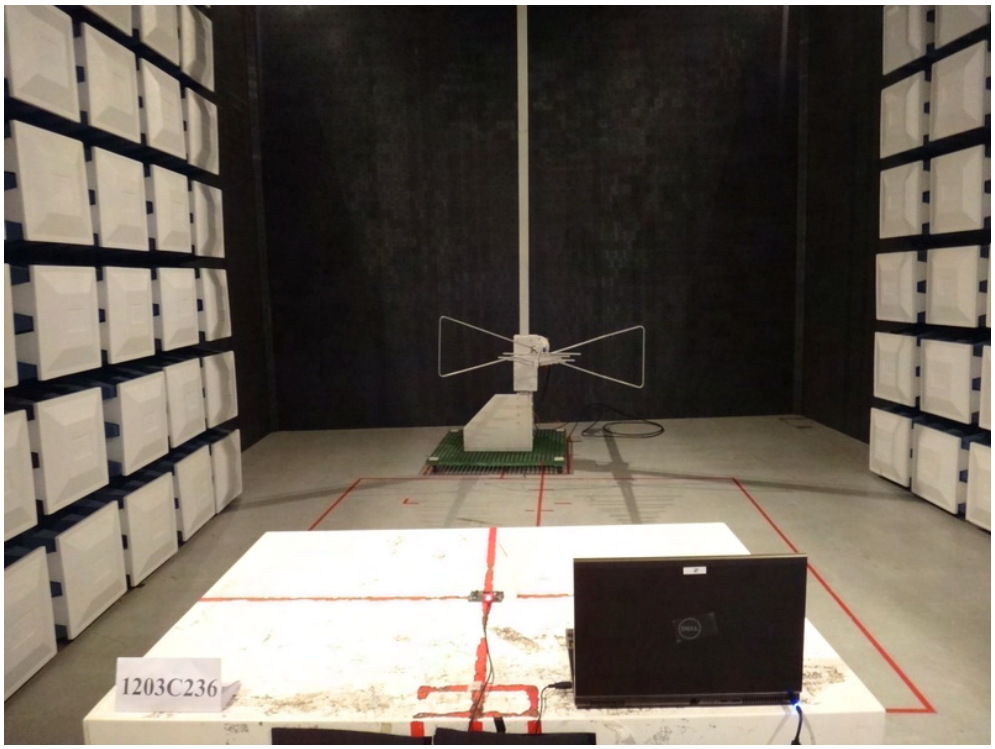
7. EUT TEST PHOTO

Conducted Measurement Photos
Normal Link



Radiated Measurement Photos
30M~1000MHz





Radiated Measurement Photos
Above 1000MHz