



FCC Radio Test Report

FCC ID: QT72013SPA0001

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

Issued Date : Jun. 28, 2013
Project No. : 1306C128
Equipment : WIFI dongle for USB storage and Power Bank
Model Name : SPA-WIFI-USB
Applicant : POWER 7 TECHNOLOGY Co., Ltd
Address : No.28 BinJiang Street. ShiShuikou Village, QiaoTou Town, DongGuan, GuangDong Province P.R. China

Tested by:

Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Jun. 14 2013

Date of Test:

Jun. 14, 2013~ Jun. 27, 2013

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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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1. CERTIFICATION

Equipment : WIFI dongle for USB storage and Power Bank
Brand Name : POWER7
Model Name : SPA-WIFI-USB
Applicant : POWER 7 TECHNOLOGY Co., Ltd
Factory : POWER 7 TECHNOLOGY Co., Ltd
Address : No.28 BinJiang Street. ShiShuikou Village, QiaoTou Town, DongGuan,
GuangDong Province P.R. China
Date of Test : Jun. 14, 2013~ Jun. 27, 2013
Test Item : ENGINEERING SAMPLE
Standards : FCC Part15, Subpart C(15.247) / ANSI C63.4-2009

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-FCCP-1-1306C128) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of 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 (15.247) , Subpart C				
Standard	Section	Test Item	Judgment	Remark
	15.207	Conducted Emission	PASS	
	15.247(d)	Antenna conducted Spurious Emission	PASS	
	15.247(a)(2)	6dB Bandwidth	PASS	
	15.247(b)(3)	Peak Output Power	PASS	
	15.209/15.205	Radiated Spurious Emission	PASS	
	15.247(e)	Power Spectral Density	PASS	
	15.203	Antenna Requirement	PASS	

NOTE:

- (1) "N/A" denotes test is not applicable in this test report
- (2) The test follows FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r01 (Measurement Guidelines of DTS)



2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-CB03/DG-C02** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792
 Neutron's test firm number is 319330

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
DG-CB03	CISPR	9K~30MHz	V	3.79	
		9K~30MHz	H	3.57	
		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	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	WIFI dongle for USB storage and Power Bank	
Brand Name	POWER7	
Model Name	SPA-WIFI-USB	
Model Difference	N/A	
Product Description	The EUT is a WIFI dongle for USB storage and Power Bank.	
	Operation Frequency	2412~2462 MHz
	Modulation Technology	802.11b:DSSS
		802.11g:OFDM 802.11n:OFDM
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps
		802.11g:54/48/36/24/18/12/9/6 Mbps Draft 802.11n:up to 150Mbps
	Number of Channel	11 CH, Please see note 2. (Page 9)
	Antenna Designation	Please see note 3.(Page 9)
	Antenna Gain(Peak)	
	Peak Output Power	802.11b: 18.12dBm 802.11g: 21.45dBm 802.11n(20MHz): 21.36dBm 802.11n(40MHz):21.33dBm
AVG Output Power	802.11b: 16.13dBm 802.11g: 13.23dBm 802.11n(20MHz): 13.11dBm 802.11n(40MHz):13.35dBm	
More details of EUT technical specification, please refer to the User's Manual.		
Power Source	#1 DC voltage supplied from Host System for charging. #2 DC voltage supplied from Li-ion Battery	
Power Rating	#1 DC 5V #2 DC 3.7V	

Note:

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



2.

Channel List							
CH 01 – CH 11 for 802.11b, 802.11g, 802.11n(20MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List							
CH 03 – CH 09 for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
		04	2427	07	2442		
		05	2432	08	2447		
03	2422	06	2437	09	2452		

3. Table for Filed Antenna

Group 1						
Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	JOHANSON	2450AT18A100	Chip	N/A	0.5	



3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base 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	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09
Mode 5	TX MODE

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 5	TX MODE

For Radiated Test	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)
 802.11g mode: OFDM (6Mbps)
 802.11n HT20 mode : BPSK (6.5Mbps)
 802.11n HT40 mode : BPSK (13.5Mbps)
 For radiated emission tests, the highest output powers were set for final test.
- (3) The power supply from USB port and Li-ion battery were tested for radiated, the power supply from Li-ion battery is worst case for and included in the test report.
- (4) For radiated emissions below 1GHz, the TX B MODE is worst case for and included in the test report.



3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

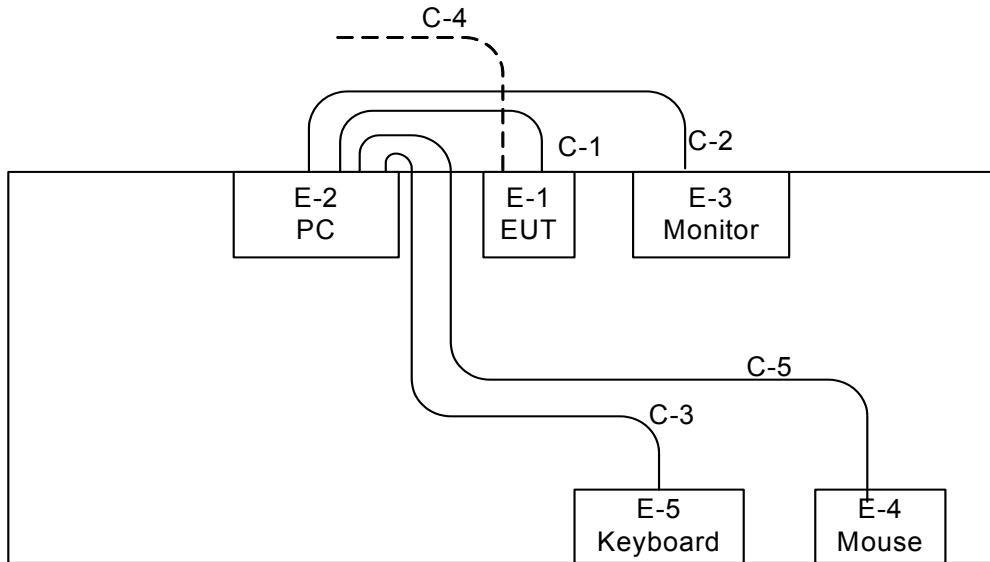
Test Software Version	RT5350QA		
Frequency	2412 MHz	2442 MHz	2472 MHz
IEEE 802.11b DSSS	1A	1A	1B
IEEE 802.11g OFDM	1B	1B	1B

Test Software Version	RT5350QA		
Frequency (MHz)	2412 MHz	2442 MHz	2472 MHz
IEEE 802.11n (20MHz)	1A	1A	1A
Frequency (MHz)	2422 MHz	2442 MHz	2462 MHz
IEEE 802.11n (40MHz)	1A	1A	1A

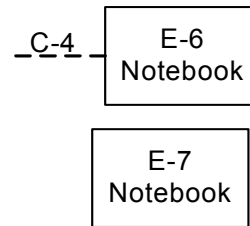


3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

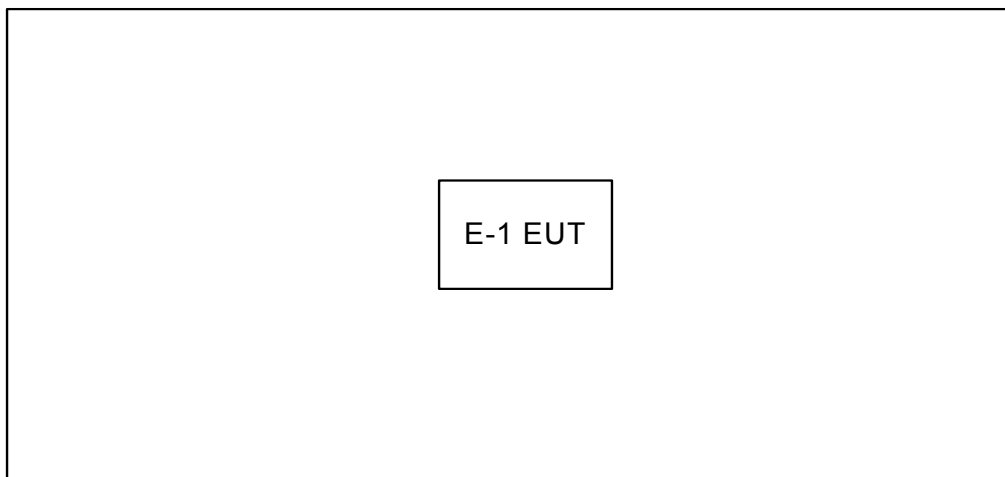
Conducted Mode:



- C-1: USB Cable
- C-2: D-Sub Cable
- C-3: USB Cable
- C-4: RJ45 Cable
- C-5: USB Cable



Radiated TX Mode:





3.5 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	WIFI dongle for USB storage and Power Bank	POWER7	SPA-WIFI-USB	QT72013SPA0001	N/A	EUT
E-2	PC	Dell 745	DCSM	DOC	G7K832X	
E-3	LCD monitor	Dell	E177FPc	DOC	CNOFJ179-64180-6AG-1WNS	
E-4	USB Mouse	Dell	MO56UC	DOC	G0R000XN	
E-5	USB Keyboard	DELL	SK-8115	DOC	MY-0DJ325-71619-77N-1526	
E-6	Notebook	DELL	PP18L	DOC	PF329 A01	
E-7	Notebook	DELL	D600	DOC	7T390 A03	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	0.8m	
C-2	YES	YES	1.5m	
C-3	YES	NO	1.8m	
C-4	NO	NO	10m	
C-5	YES	YES	1.8m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) 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 AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	LISN	EMCO	3816/2	00052765	May.04.2013	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov.17.2012	Nov.16.2013
3	Test Cable	N/A	C_17	N/A	Mar.28.2013	Mar.15.2014
4	EMI TEST RECEIVER	R&S	ESCS30	826547/02 2	May.04.2013	Apr. 25, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	May.04.2013	Apr. 25, 2014

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

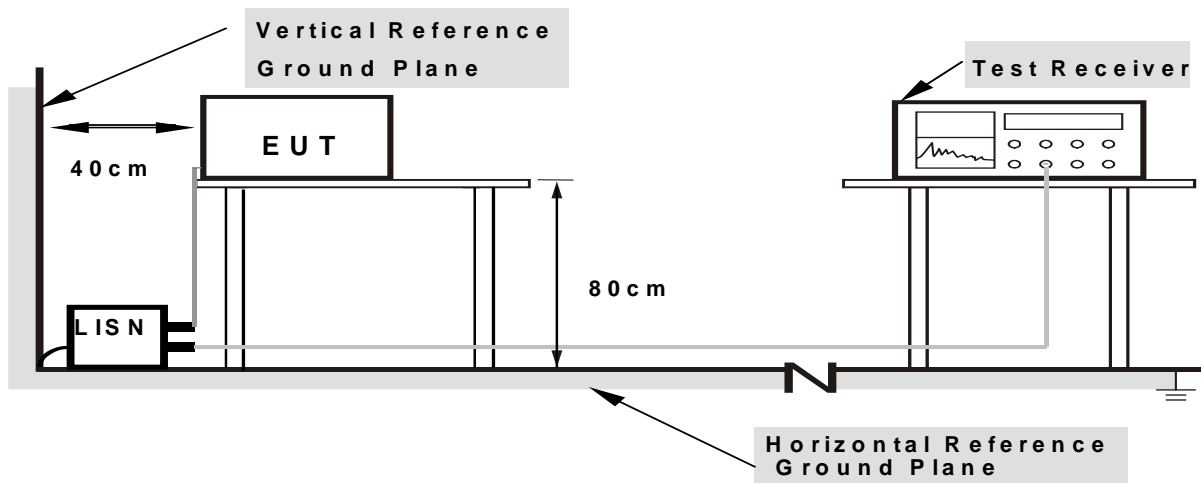
4.1.3 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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.



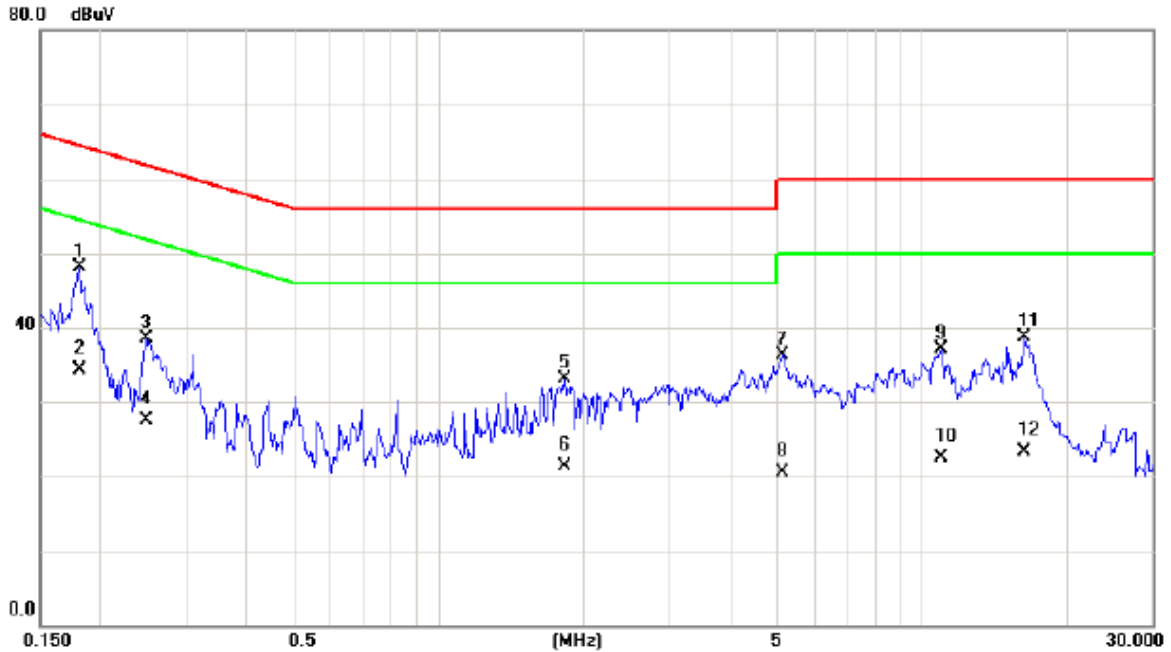
4.1.7 TEST RESULTS

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz.
- (2) 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.
- (3) Peak value recorded in table if the margin from QP Limit is larger than 2dB, otherwise, QP value is recorded.



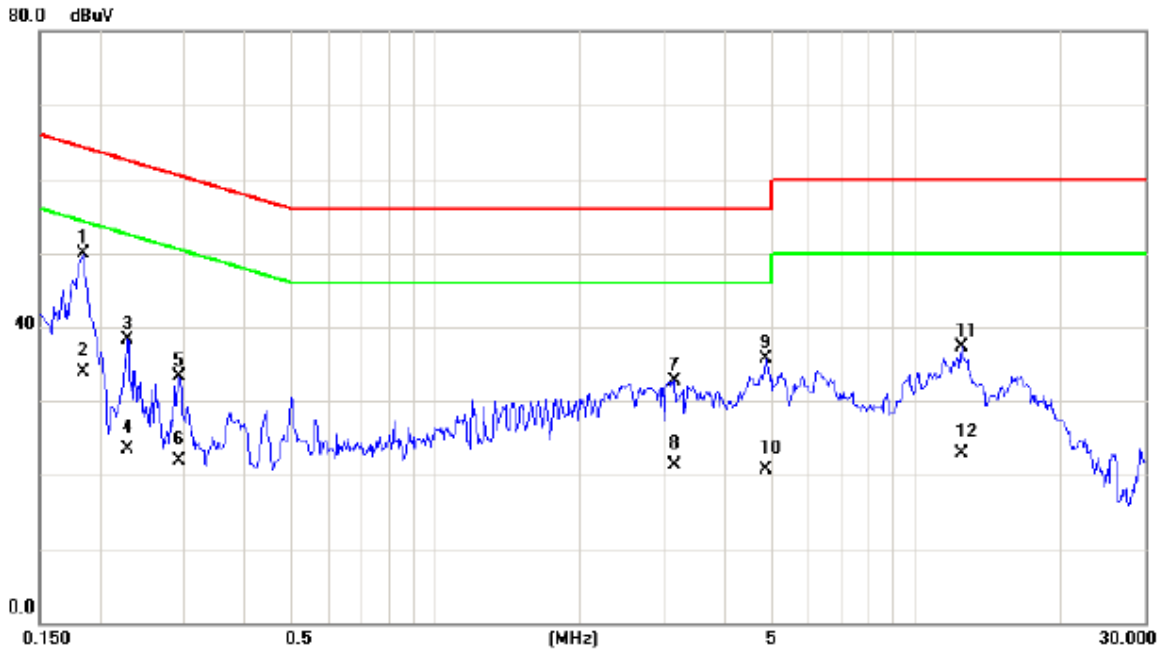
EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	55%
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX MODE	Phase:	Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1805	38.39	9.69	48.08	64.46	-16.38	peak	
2		0.1805	24.62	9.69	34.31	54.46	-20.15	AVG	
3		0.2481	28.72	9.69	38.41	61.82	-23.41	peak	
4		0.2481	17.79	9.69	27.48	51.82	-24.34	AVG	
5		1.8190	23.32	9.83	33.15	56.00	-22.85	peak	
6		1.8191	11.56	9.83	21.39	46.00	-24.61	AVG	
7		5.1390	26.34	9.92	36.26	60.00	-23.74	peak	
8		5.1390	10.57	9.92	20.49	50.00	-29.51	AVG	
9		10.9630	27.03	10.08	37.11	60.00	-22.89	peak	
10		10.9630	12.50	10.08	22.58	50.00	-27.42	AVG	
11		16.3118	28.40	10.23	38.63	60.00	-21.37	peak	
12		16.3118	12.99	10.23	23.22	50.00	-26.78	AVG	



EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	55%
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX MODE	Phase:	Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1844	40.23	9.69	49.92	64.29	-14.37	peak	
2		0.1844	24.21	9.69	33.90	54.29	-20.39	AVG	
3		0.2280	28.71	9.69	38.40	62.52	-24.12	peak	
4		0.2280	13.89	9.69	23.58	52.52	-28.94	AVG	
5		0.2926	23.59	9.70	33.29	60.45	-27.16	peak	
6		0.2926	12.27	9.70	21.97	50.45	-28.48	AVG	
7		3.1325	22.74	9.88	32.62	56.00	-23.38	peak	
8		3.1325	11.36	9.88	21.24	46.00	-24.76	AVG	
9		4.8650	25.87	9.92	35.79	56.00	-20.21	peak	
10		4.8650	10.70	9.92	20.62	46.00	-25.38	AVG	
11		12.4384	27.19	10.11	37.30	60.00	-22.70	peak	
12		12.4384	12.74	10.11	22.85	50.00	-27.15	AVG	



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz-1000MHz)

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower



4.2.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Antenna	Schwarzbeck	VULB9160	9160-3232	May.25.2013	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	May.04.2013	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	May.04.2013	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jun.30.2013	Jun. 29.2014
5	Antenna	ETS	3115	00075789	May.25.2013	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	May.04.2013	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov.24.2012	Nov. 16.2013
8	Test Cable	HUBER+SUHNER	C-45	N/A	May.02.2013	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	May.25.2013	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.04.2013	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct.13.2012	Oct.12.2013

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
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

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



4.2.3 TEST PROCEDURE

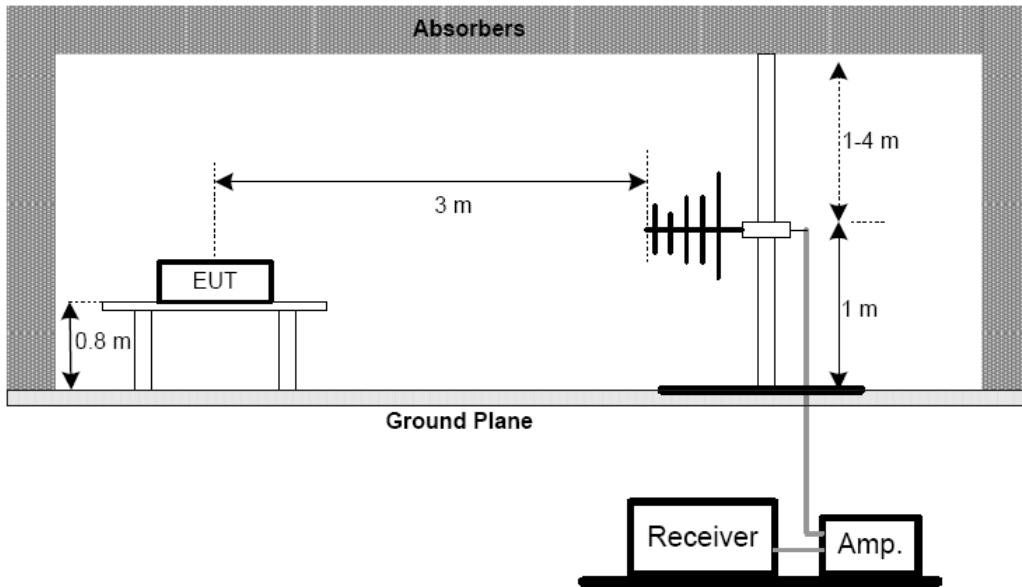
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-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 Quasi Peak 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

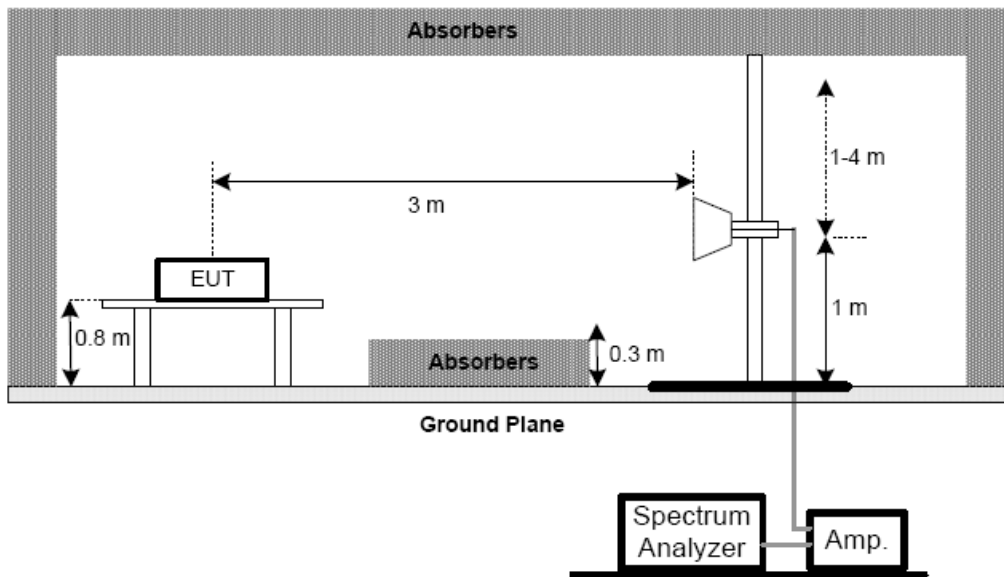
No deviation

4.2.5 TEST SETUP

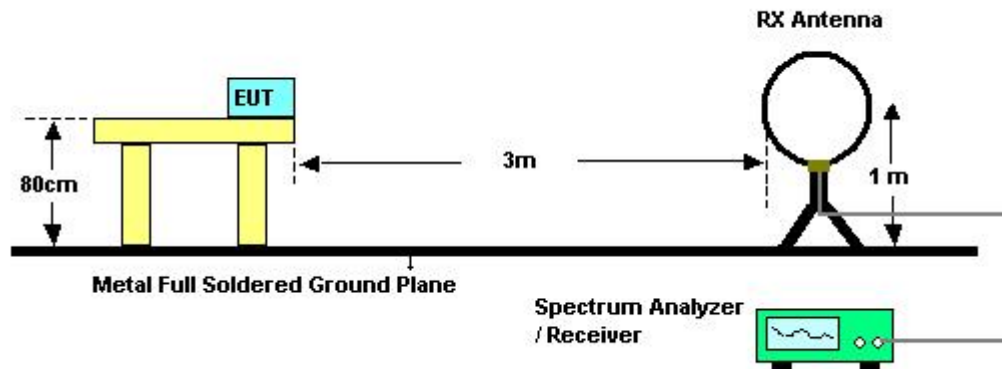
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(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-BETWEEN 30MHZ AND 1000MHZ

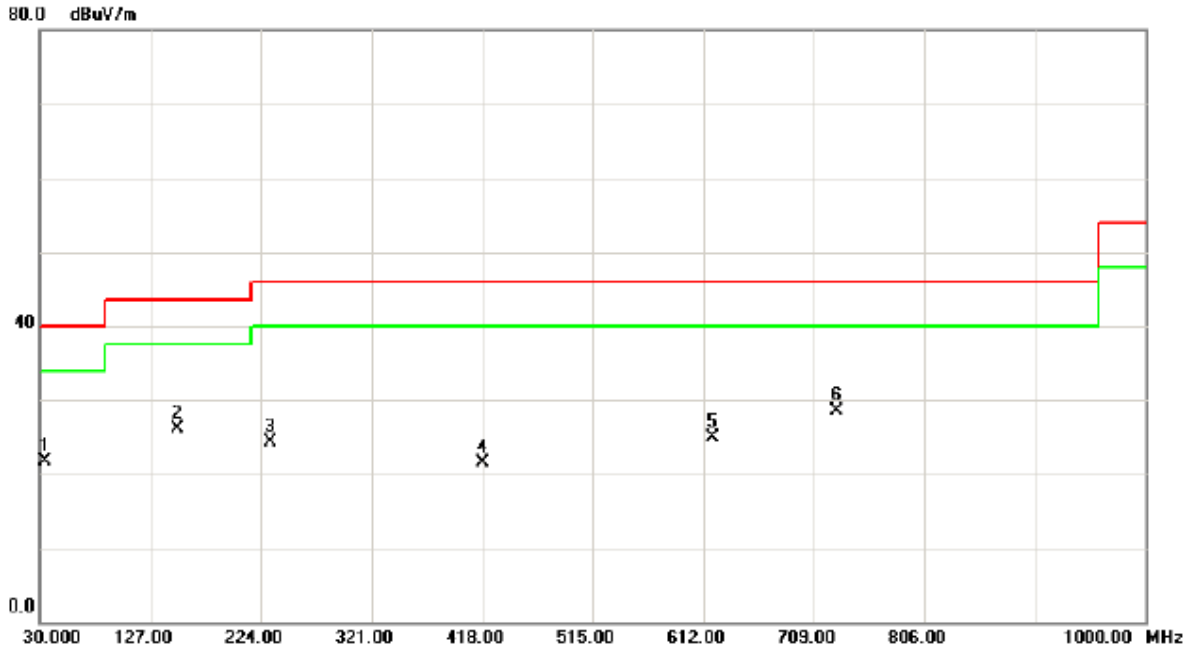
Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) 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.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.



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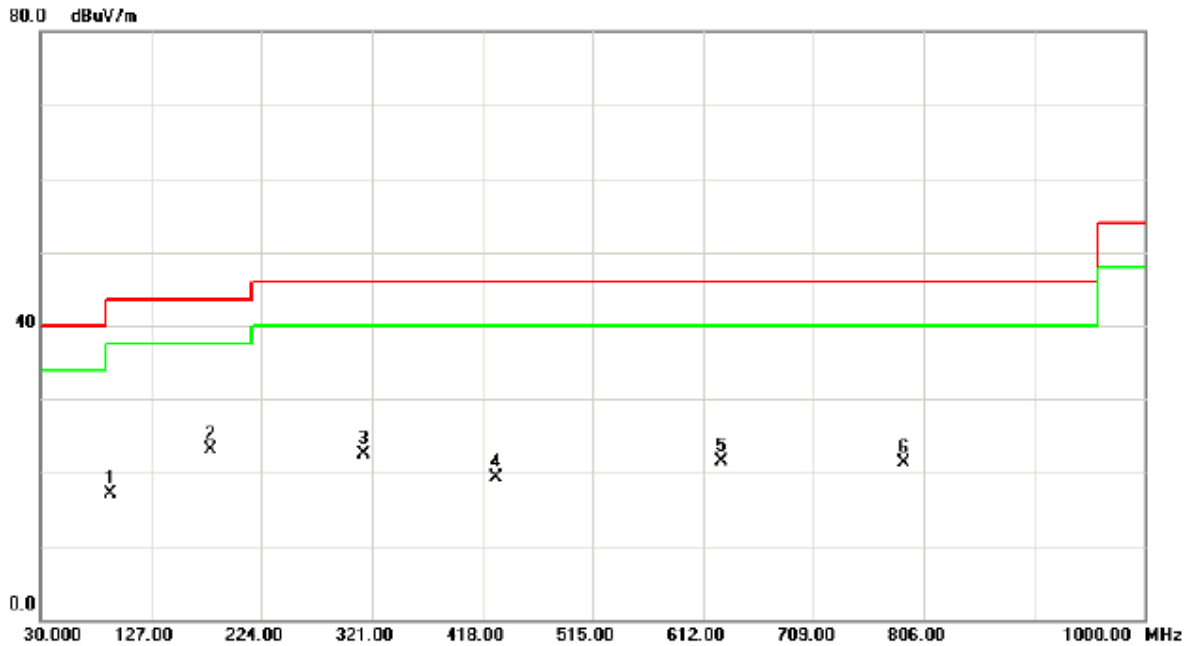
EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 01	Polarization:	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		34.8500	38.63	-16.95	21.68	40.00	-18.32	peak	
2	*	151.2500	43.99	-17.85	26.14	43.50	-17.36	peak	
3		232.7300	40.35	-15.95	24.40	46.00	-21.60	peak	
4		418.9700	30.95	-9.50	21.45	46.00	-24.55	peak	
5		619.7600	30.06	-5.17	24.89	46.00	-21.11	peak	
6		728.4000	33.02	-4.43	28.59	46.00	-17.41	peak	



EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 01	Polarization:	Horizontal

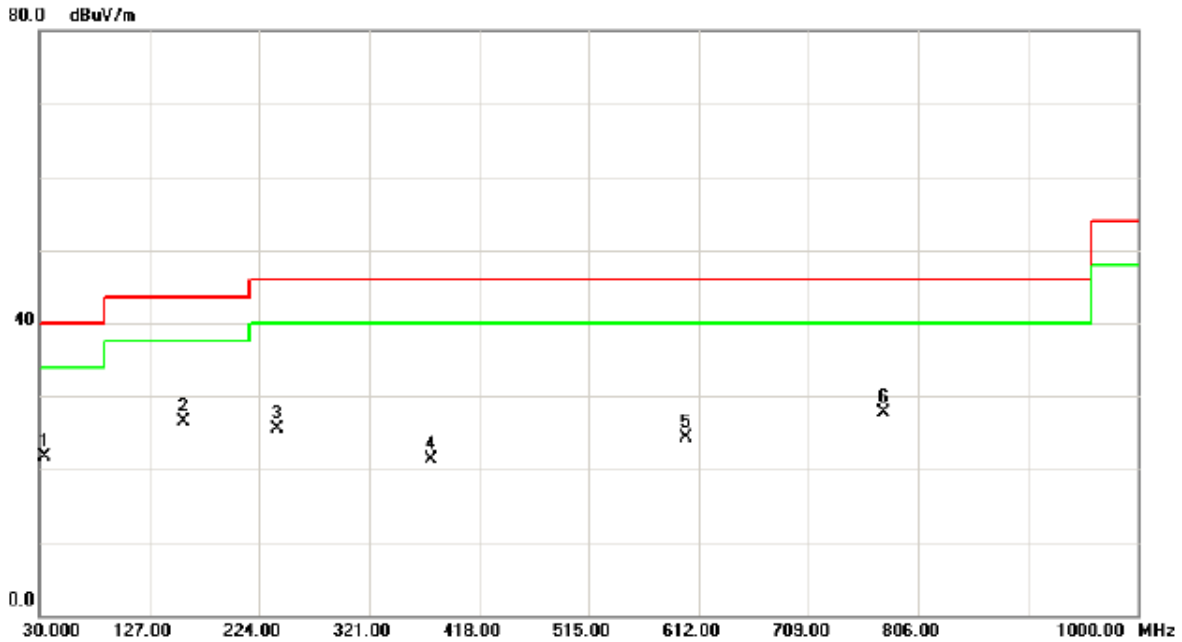


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		91.1100	36.27	-19.12	17.15	43.50	-26.35	peak	
2	*	179.3800	40.39	-17.28	23.11	43.50	-20.39	peak	
3		314.2100	34.90	-12.33	22.57	46.00	-23.43	peak	
4		430.6100	28.60	-9.32	19.28	46.00	-26.72	peak	
5		627.5200	26.47	-5.02	21.45	46.00	-24.55	peak	
6		788.5400	25.03	-3.76	21.27	46.00	-24.73	peak	



Neutron Engineering Inc.

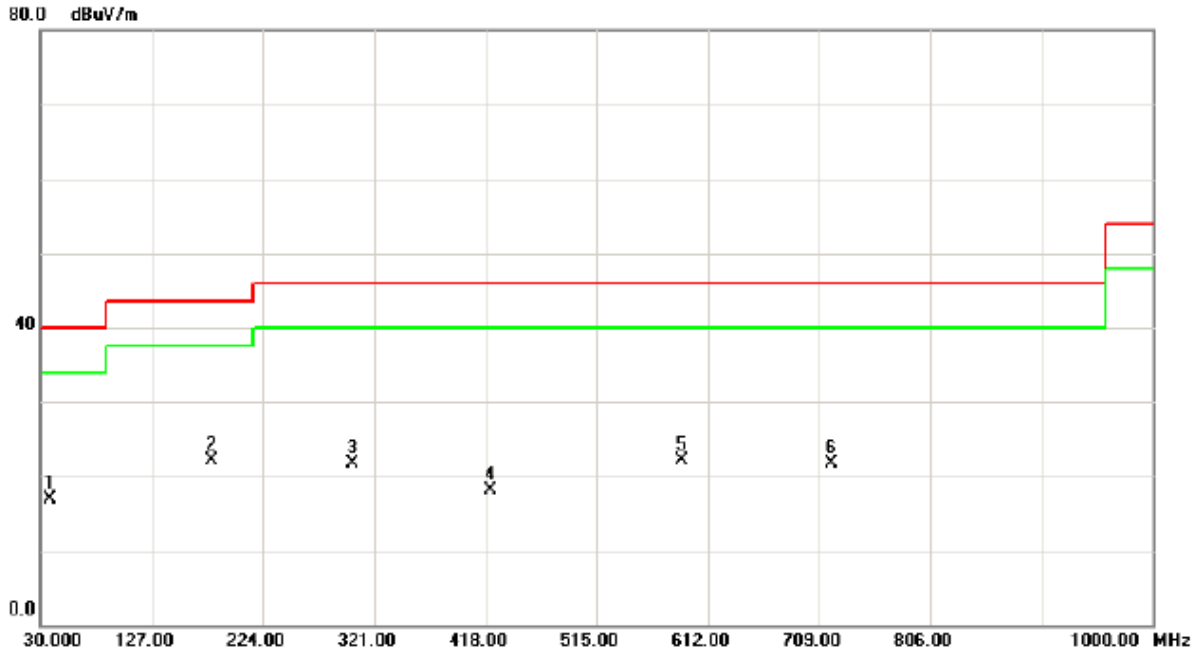
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 06	Polarization:	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		34.8500	38.63	-16.95	21.68	40.00	-18.32	peak	
2	*	157.0700	44.43	-17.93	26.50	43.50	-17.00	peak	
3		240.4900	41.19	-15.67	25.52	46.00	-20.48	peak	
4		375.3200	32.02	-10.66	21.36	46.00	-24.64	peak	
5		600.3600	29.77	-5.49	24.28	46.00	-21.72	peak	
6		775.9300	31.55	-3.93	27.62	46.00	-18.38	peak	



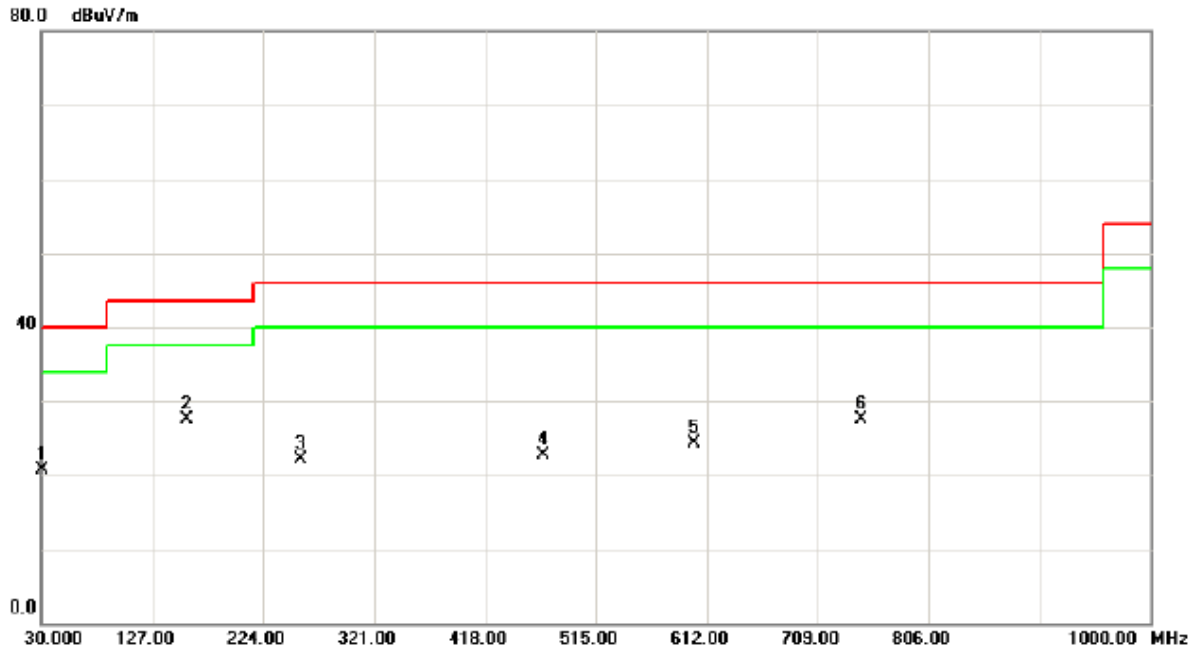
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 06	Polarization:	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		38.7300	33.88	-17.01	16.87	40.00	-23.13	peak	
2	*	179.3800	39.39	-17.28	22.11	43.50	-21.39	peak	
3		302.5700	34.29	-12.59	21.70	46.00	-24.30	peak	
4		421.8800	27.50	-9.46	18.04	46.00	-27.96	peak	
5		589.6900	27.83	-5.72	22.11	46.00	-23.89	peak	
6		719.6700	26.14	-4.49	21.65	46.00	-24.35	peak	



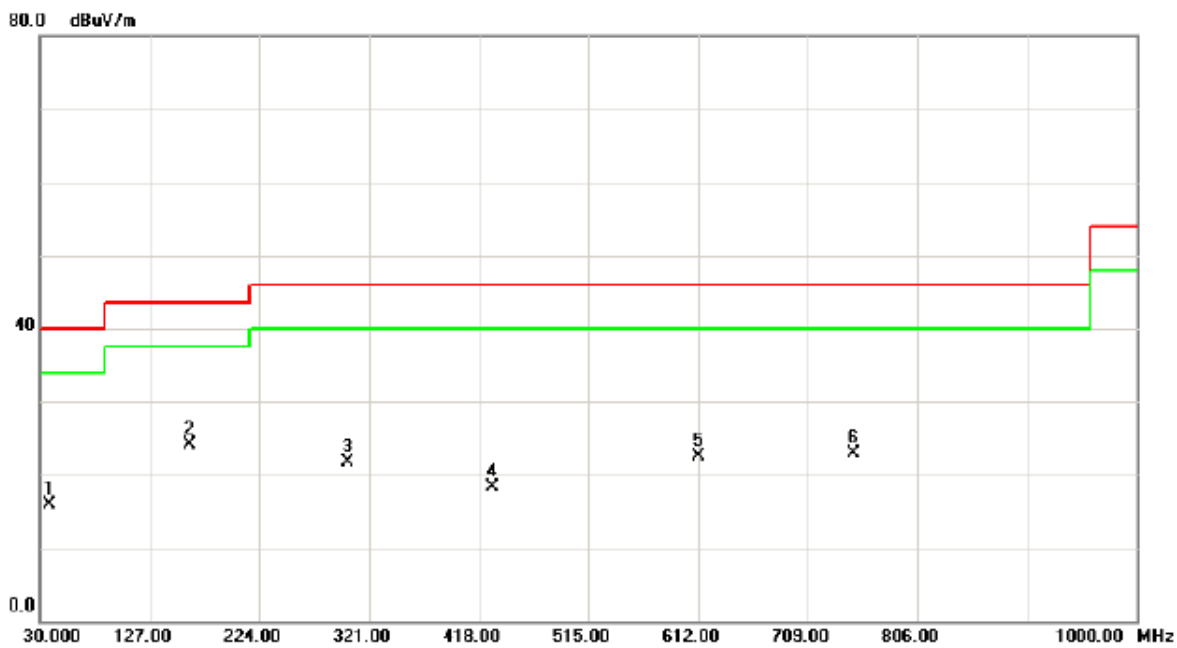
EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 11	Polarization:	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		30.0000	36.76	-16.05	20.71	40.00	-19.29	peak	
2	*	157.0700	45.43	-17.93	27.50	43.50	-16.00	peak	
3		256.9800	36.65	-14.58	22.07	46.00	-23.93	peak	
4		469.4100	31.38	-8.76	22.62	46.00	-23.38	peak	
5		600.3600	29.77	-5.49	24.28	46.00	-21.72	peak	
6		746.8300	31.75	-4.27	27.48	46.00	-18.52	peak	



EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE CHANNEL 11	Polarization:	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		38.7300	32.88	-17.01	15.87	40.00	-24.13	peak	
2	*	162.8900	42.02	-17.86	24.16	43.50	-19.34	peak	
3		302.5700	34.29	-12.59	21.70	46.00	-24.30	peak	
4		430.6100	27.60	-9.32	18.28	46.00	-27.72	peak	
5		612.9700	27.71	-5.28	22.43	46.00	-23.57	peak	
6		749.7400	27.10	-4.24	22.86	46.00	-23.14	peak	



4.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2412MHz		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	22.73	13.34	32.28	55.01	45.62	74.00	54.00	X/E
2410.20	V	71.21	69.13	32.25	103.46	101.38			X/F
4824.10	V	48.72	35.56	5.29	54.01	40.85	74.00	54.00	X/H

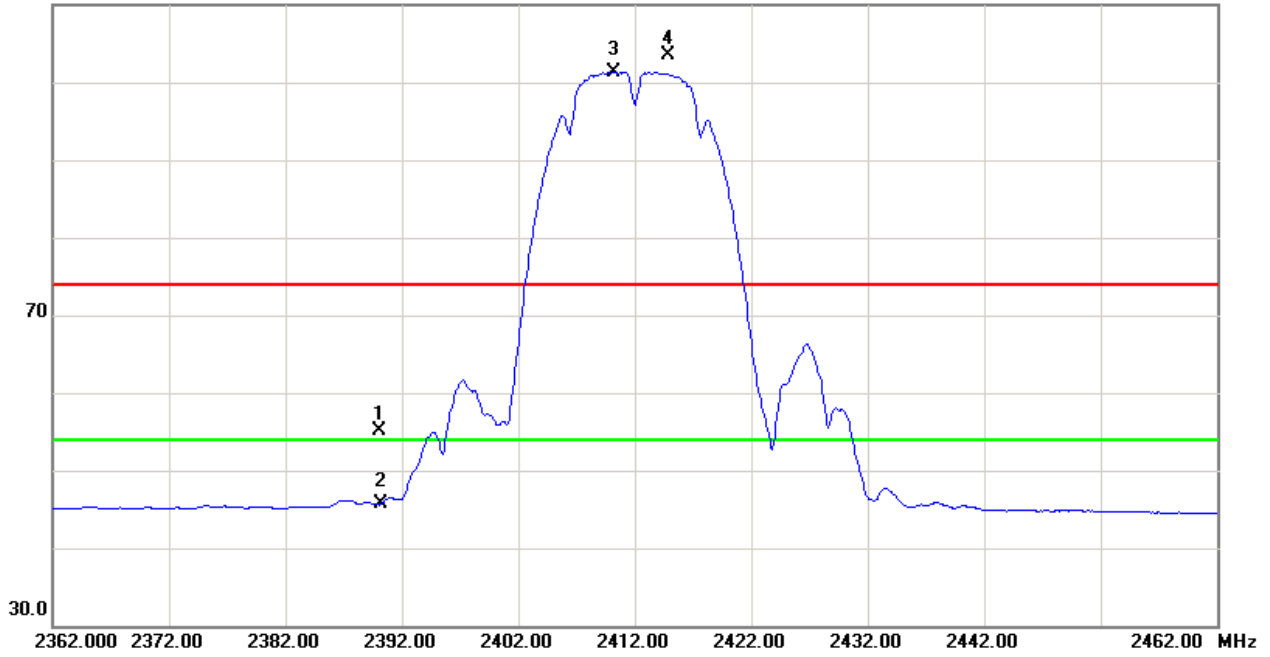
Remark :

- (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

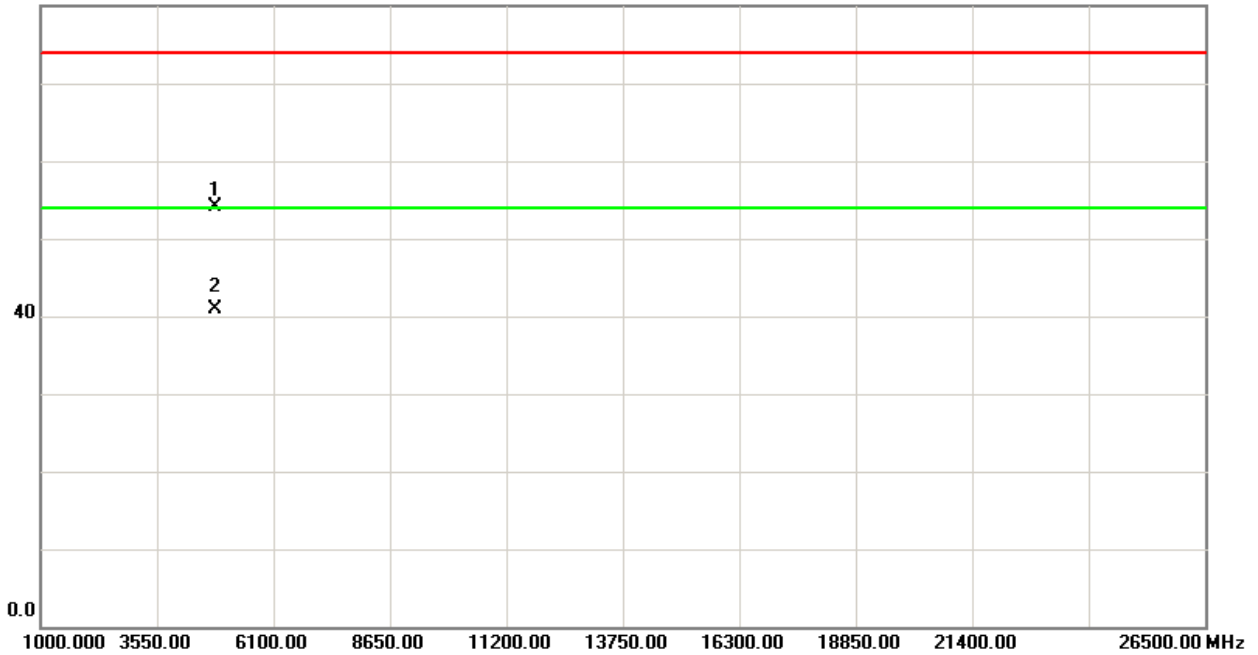


TX CH01 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2412MHz		

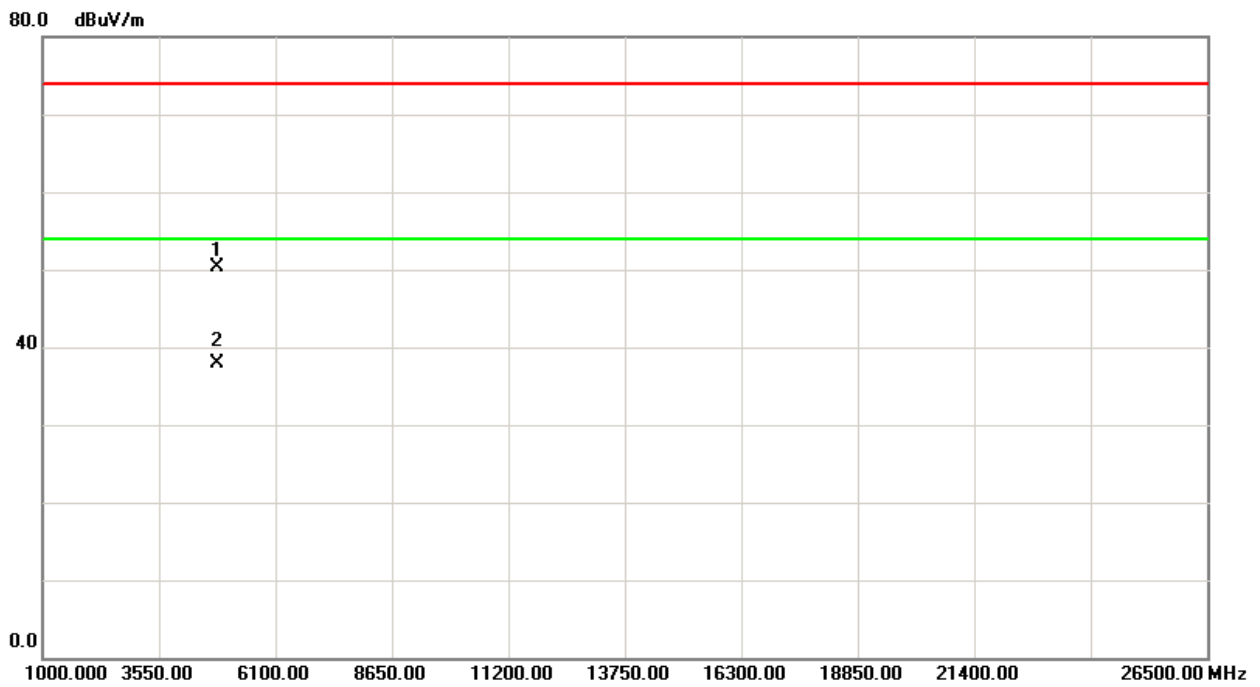
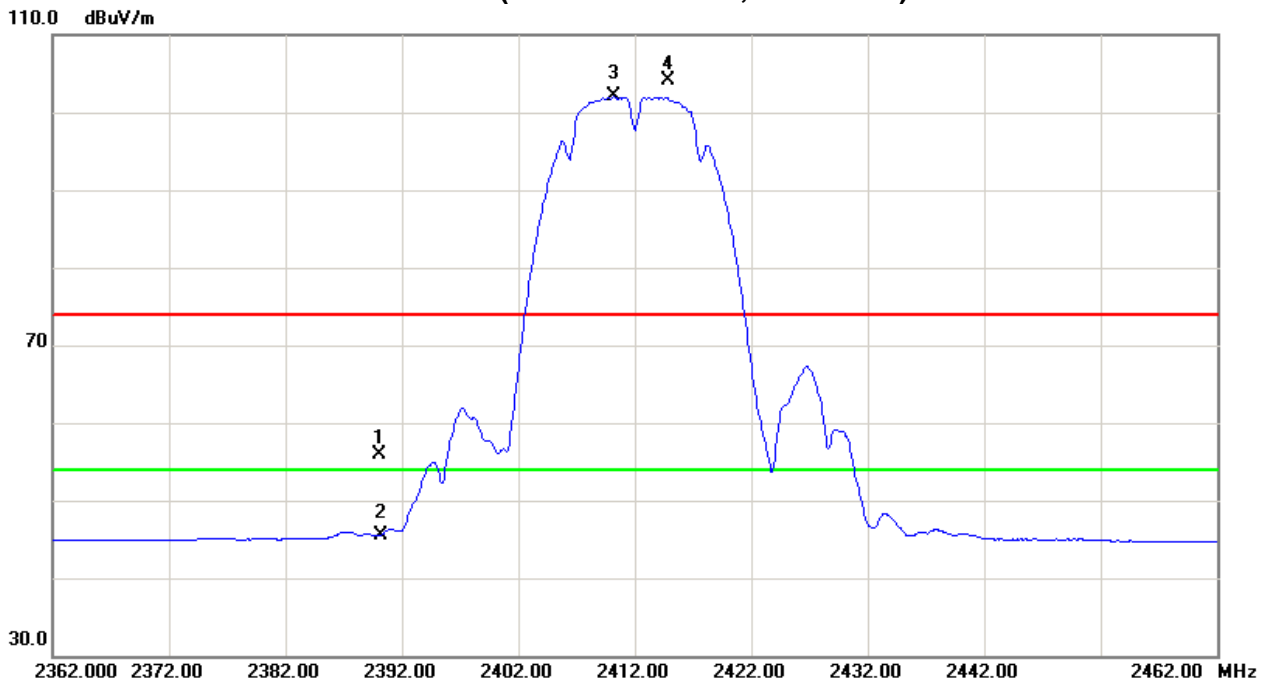
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	23.56	13.13	32.28	55.84	45.41	74.00	54.00	X/E
2410.20	H	71.83	69.75	32.26	104.09	102.01			X/F
4824.10	H	45.07	32.54	5.29	50.36	37.83	74.00	54.00	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



TX CH01 (Above 1000 MHz, Horizontal)





EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2437MHz		

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)	
2436.20	V	70.60	68.67	32.23	102.83	100.90			X/F
4874.13	V	48.71	35.96	5.47	54.18	41.43	74.00	54.00	X/H

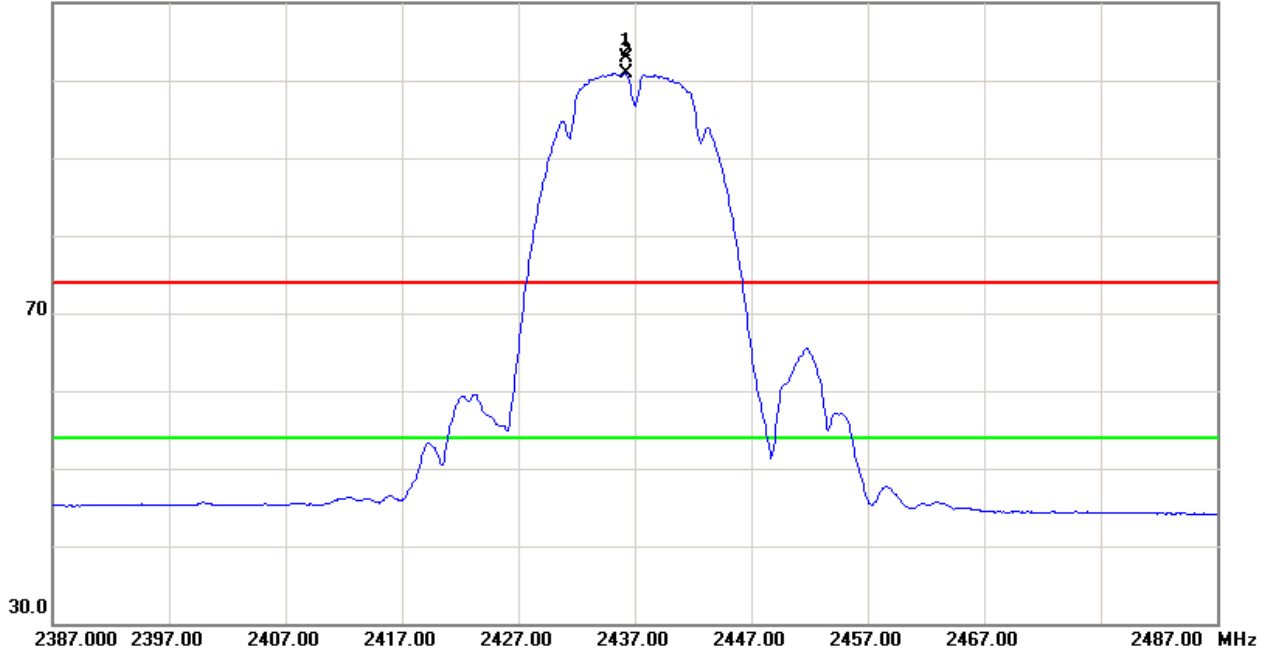
Remark :

- (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

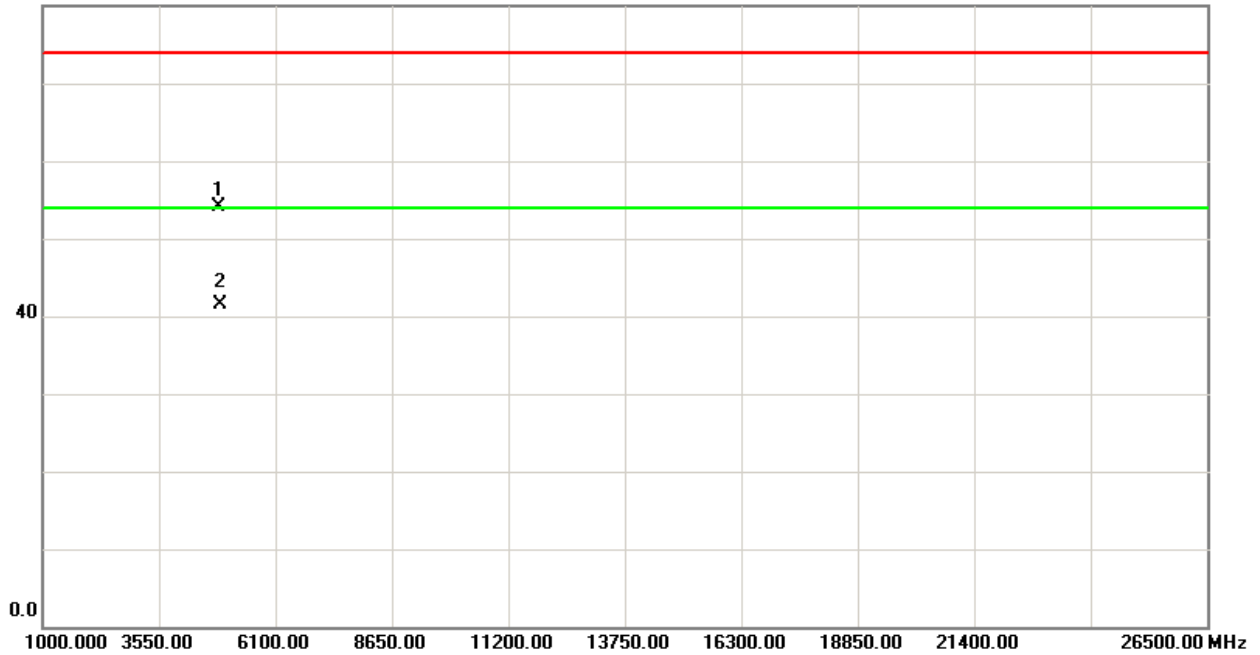


TX CH06 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2437MHz		

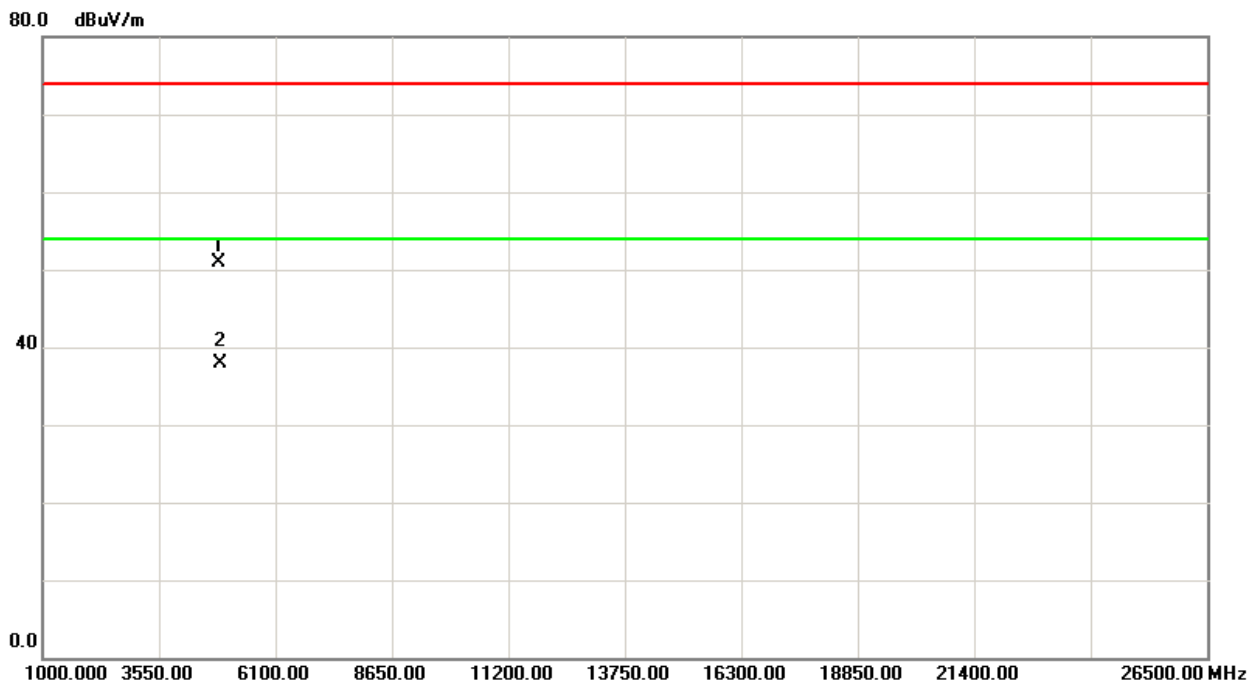
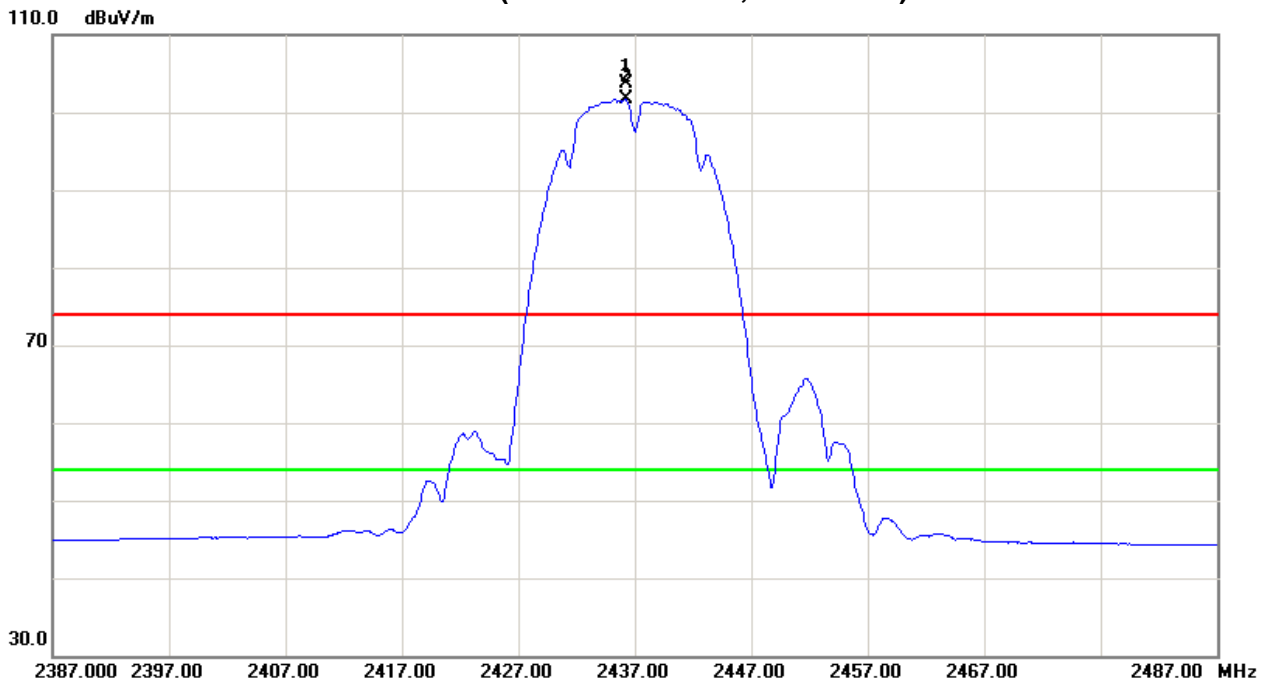
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2436.20	H	71.40	69.42	32.23	103.63	101.65			X/F
4873.97	H	45.37	32.48	5.47	50.84	37.95	74.00	54.00	X/H

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



TX CH06 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2462MHz		

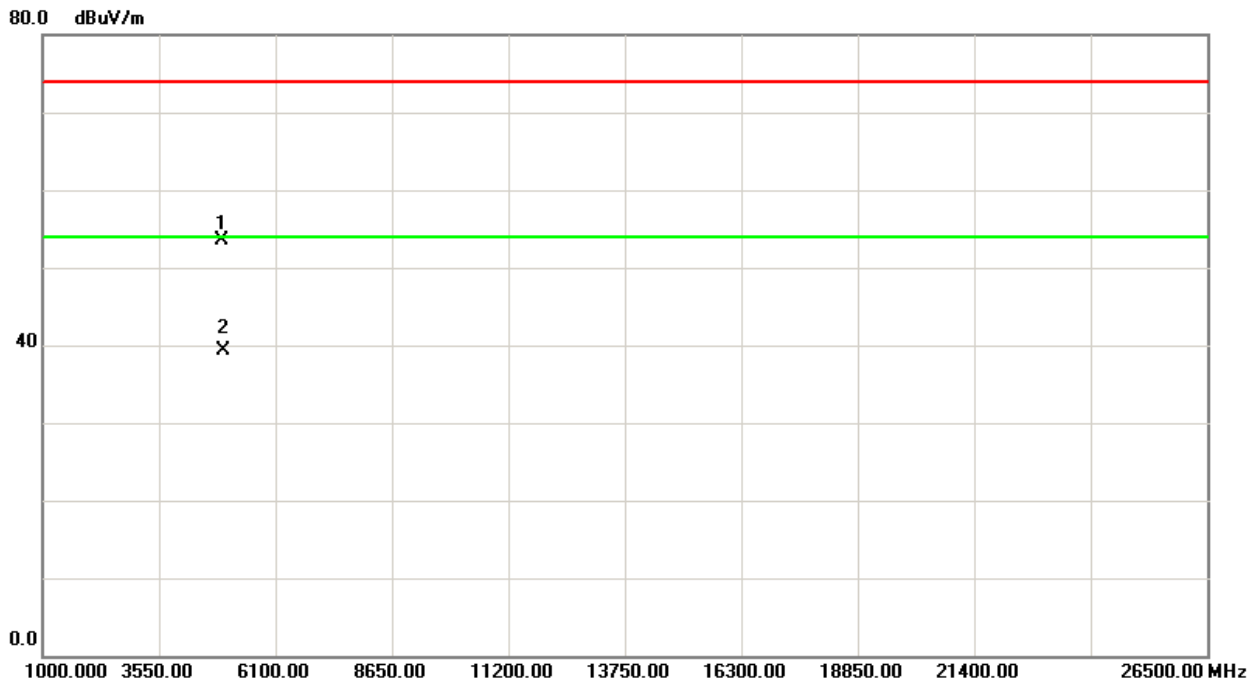
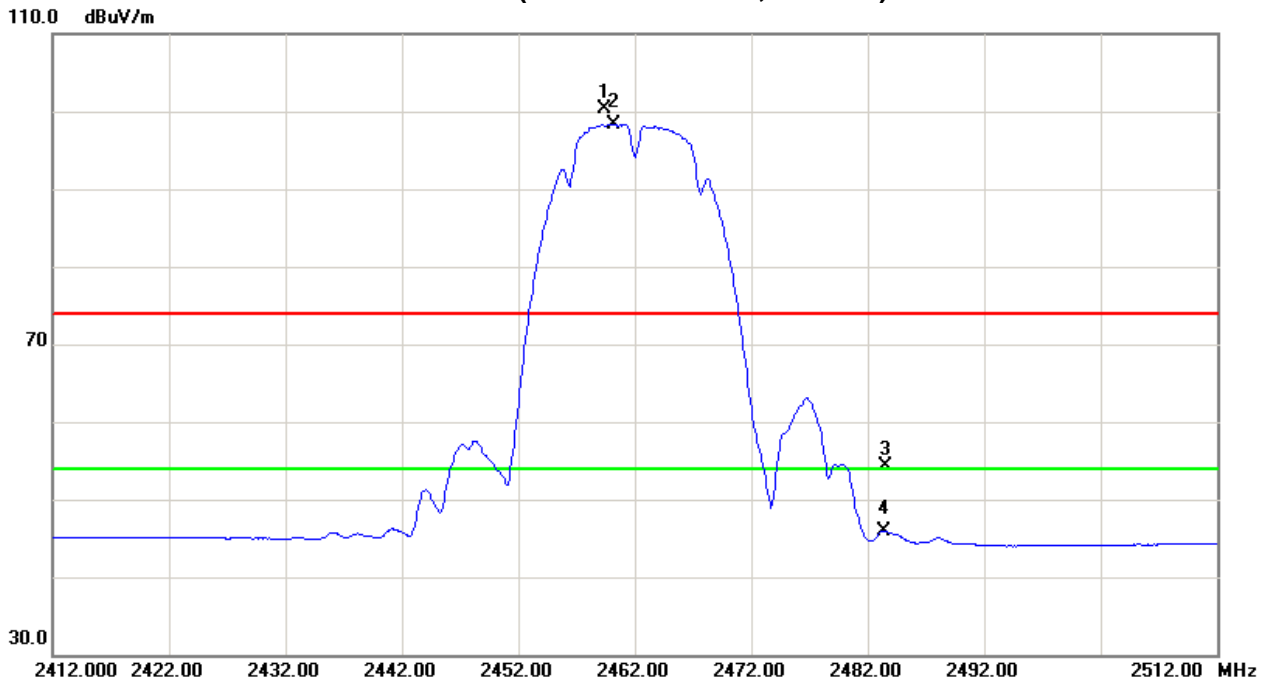
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2460.20	V	68.12	66.20	32.20	100.32	98.40			X/F
2483.50	V	22.16	13.78	32.17	54.33	45.95	74.00	54.00	X/E
4923.96	V	47.86	33.60	5.65	53.51	39.25	74.00	54.00	X/H

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



TX CH11 (Above 1000 MHz, Vertical)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE 2462MHz		

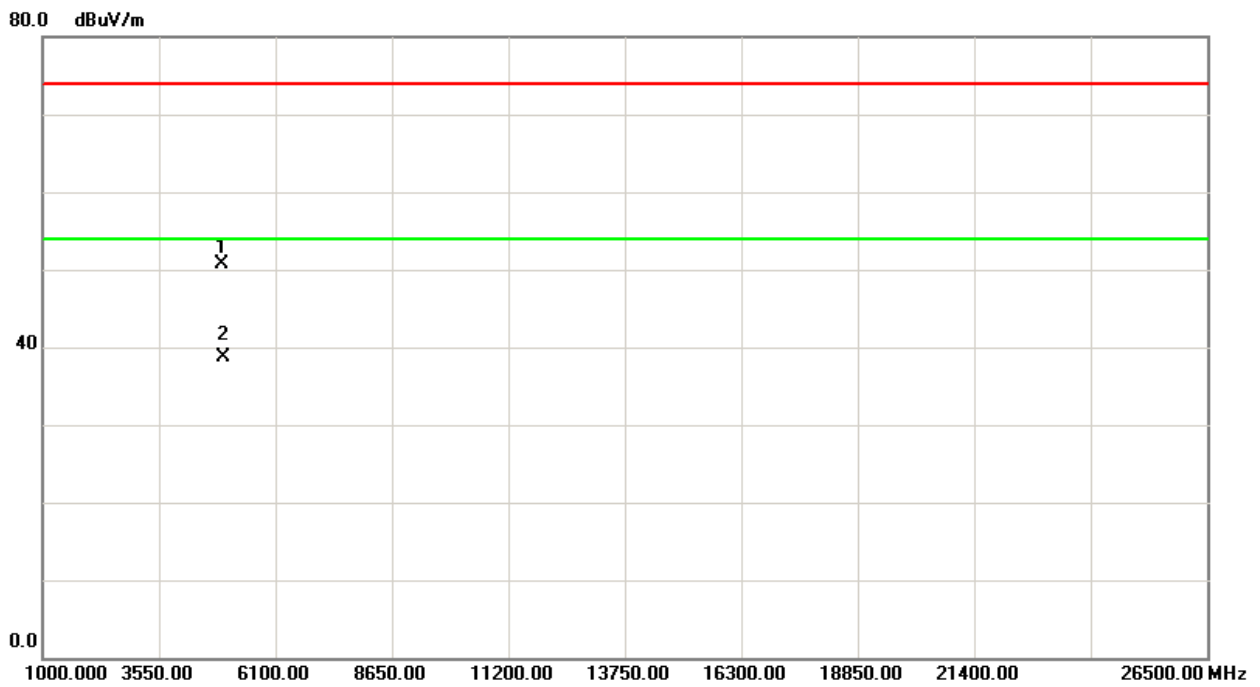
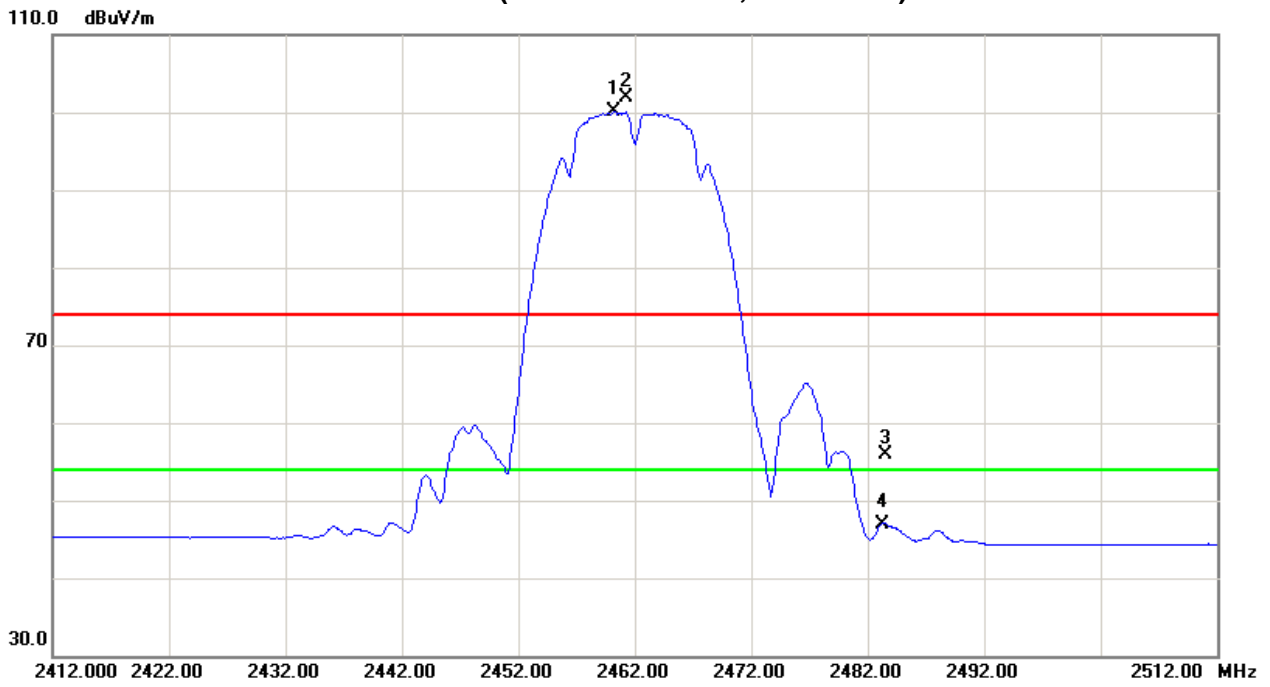
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2460.20	H	69.72	67.83	32.20	101.92	100.03			X/F
2483.50	H	23.65	14.80	32.17	55.82	46.97	74.00	54.00	X/E
4924.00	H	44.98	33.07	5.65	50.63	38.72	74.00	54.00	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



TX CH11 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2412MHz		

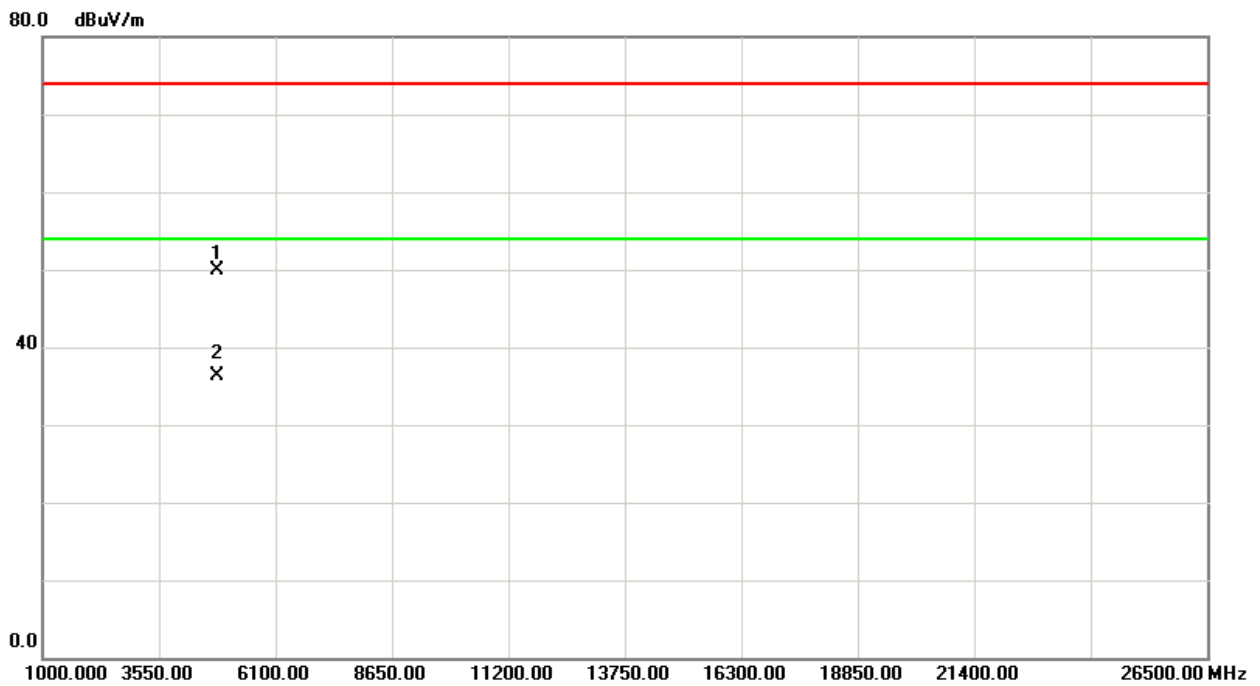
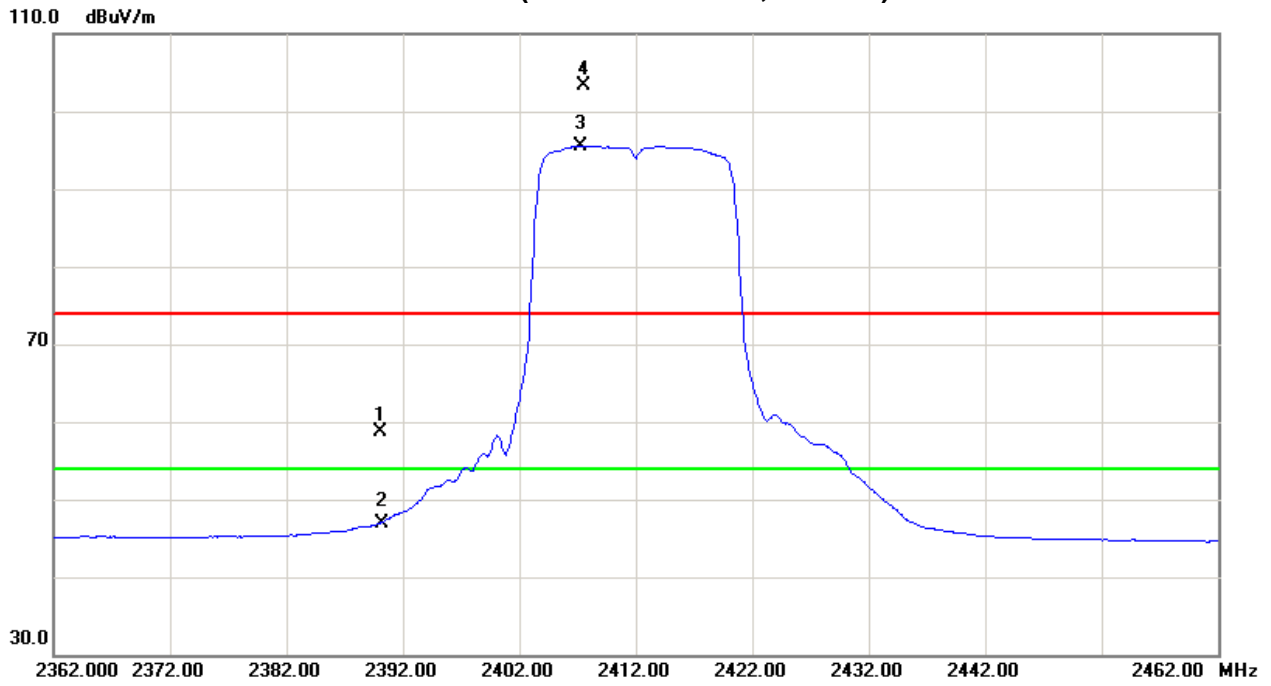
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	26.51	14.68	32.28	58.79	46.96	74.00	54.00	X/E
2407.30	V	70.96	63.26	32.26	103.22	95.52			X/F
4824.10	V	44.54	31.02	5.29	49.83	36.31	74.00	54.00	X/H

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



TX CH01 (Above 1000 MHz, Vertical)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2412MHz		

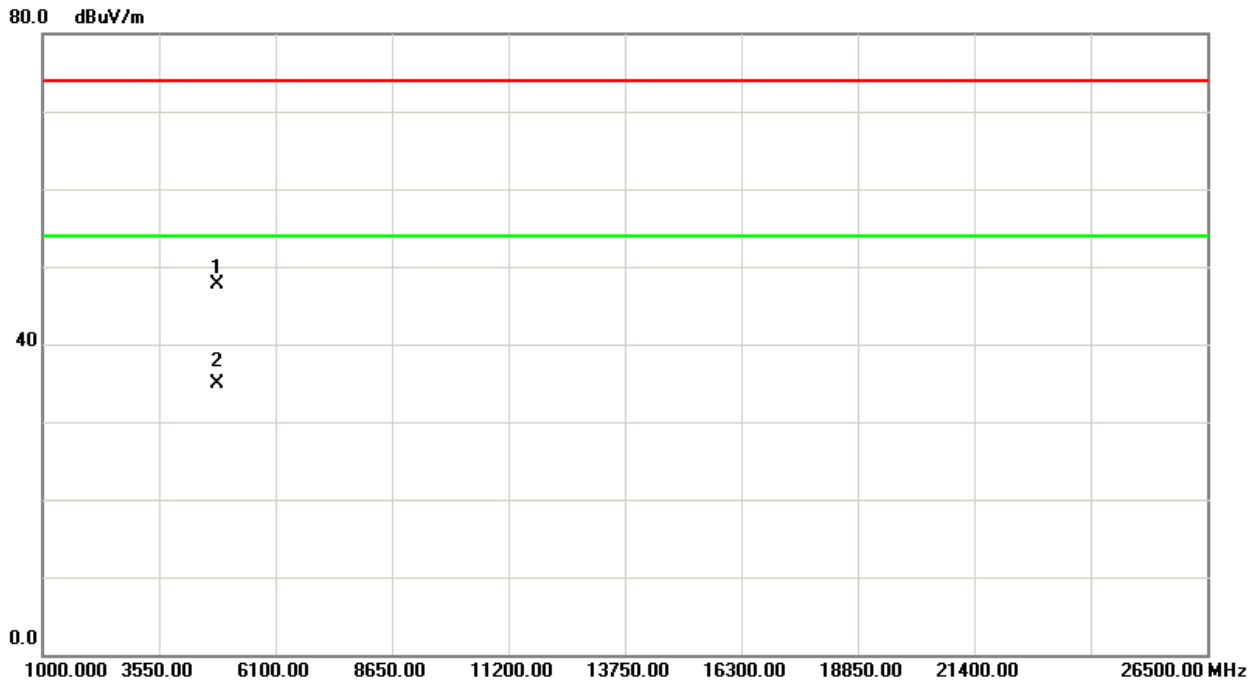
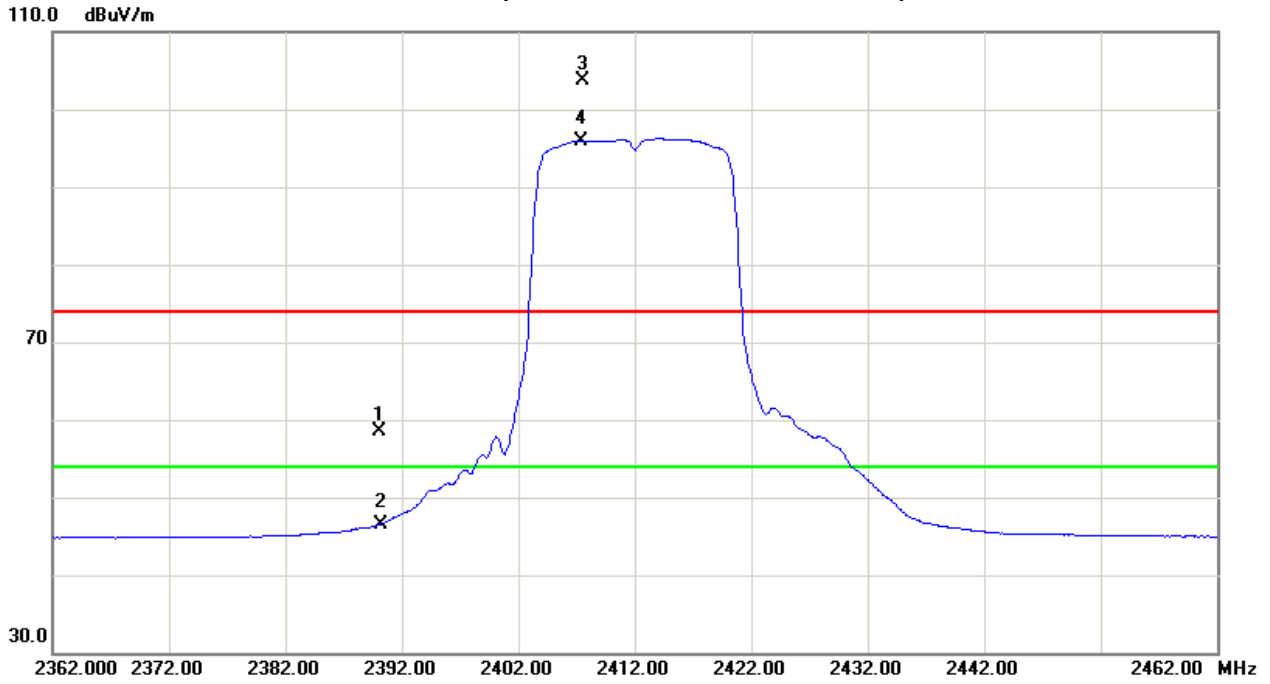
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	26.27	14.25	32.28	58.55	46.53	74.00	54.00	X/E
2407.50	H	71.45	63.68	32.26	103.71	95.94			X/F
4823.99	H	42.48	29.68	5.29	47.77	34.97	74.00	54.00	X/H

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



TX CH01 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2437MHz-		

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)	
2432.50	V	69.94	62.42	32.24	102.18	94.66			X/F
4873.94	V	45.94	32.35	5.47	51.41	37.82	74.00	54.00	X/H

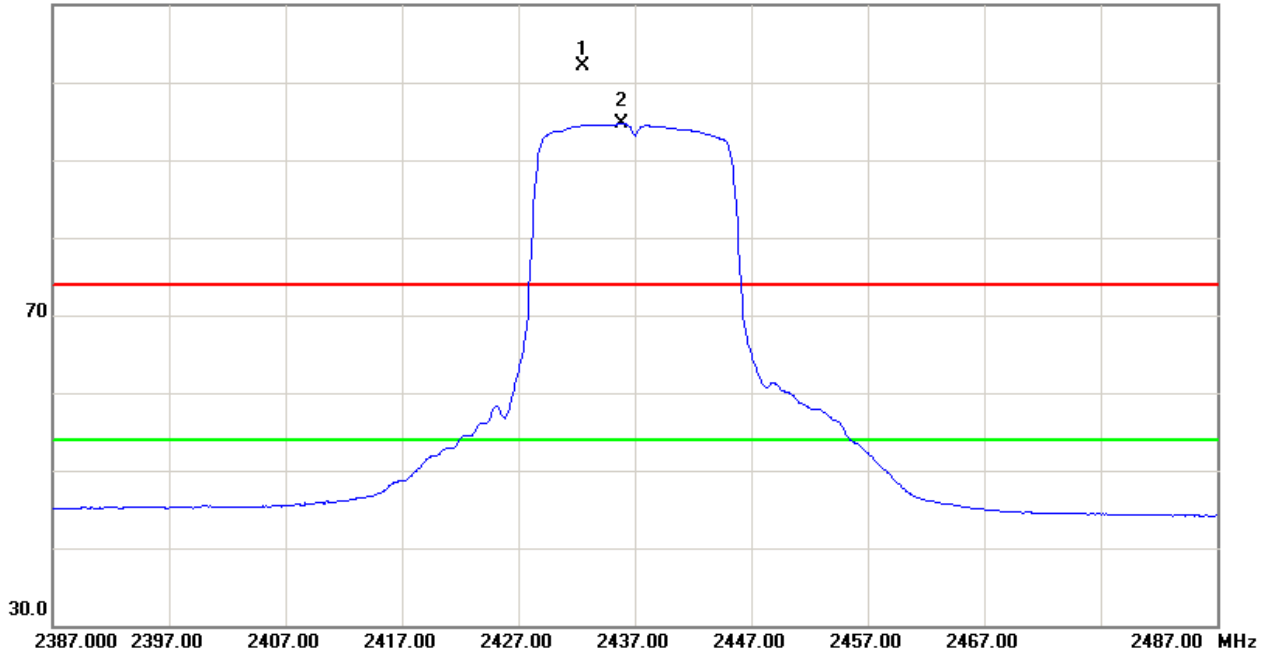
Remark :

- (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

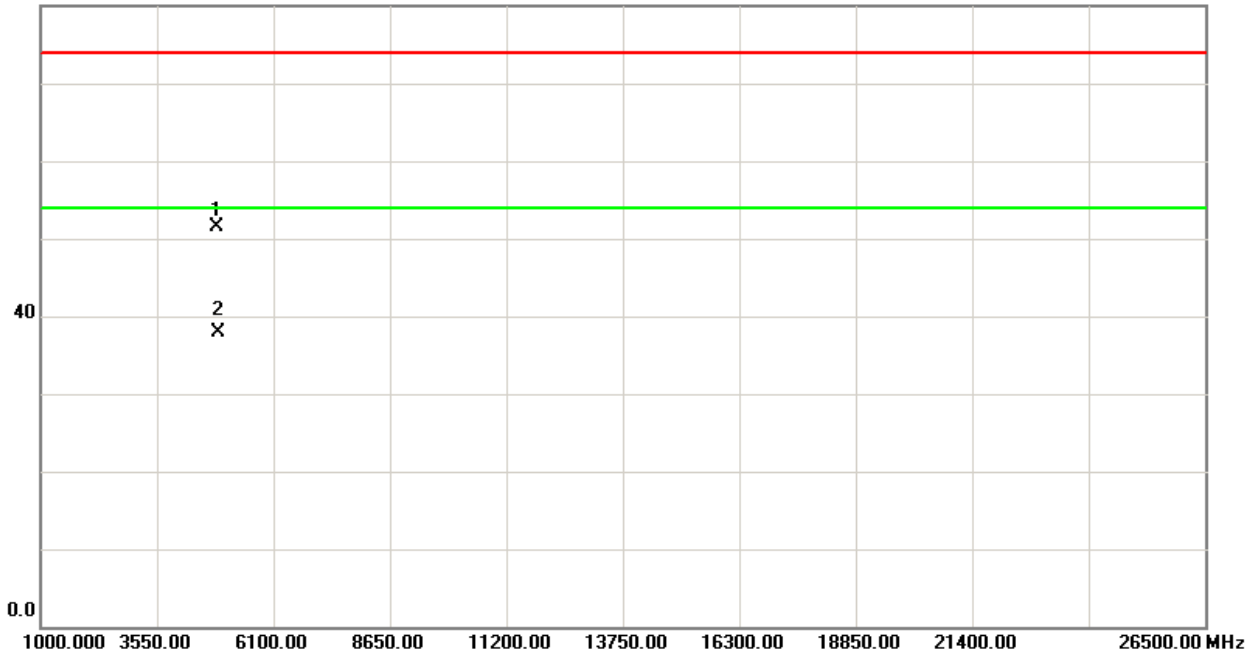


TX CH06 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2437MHz		

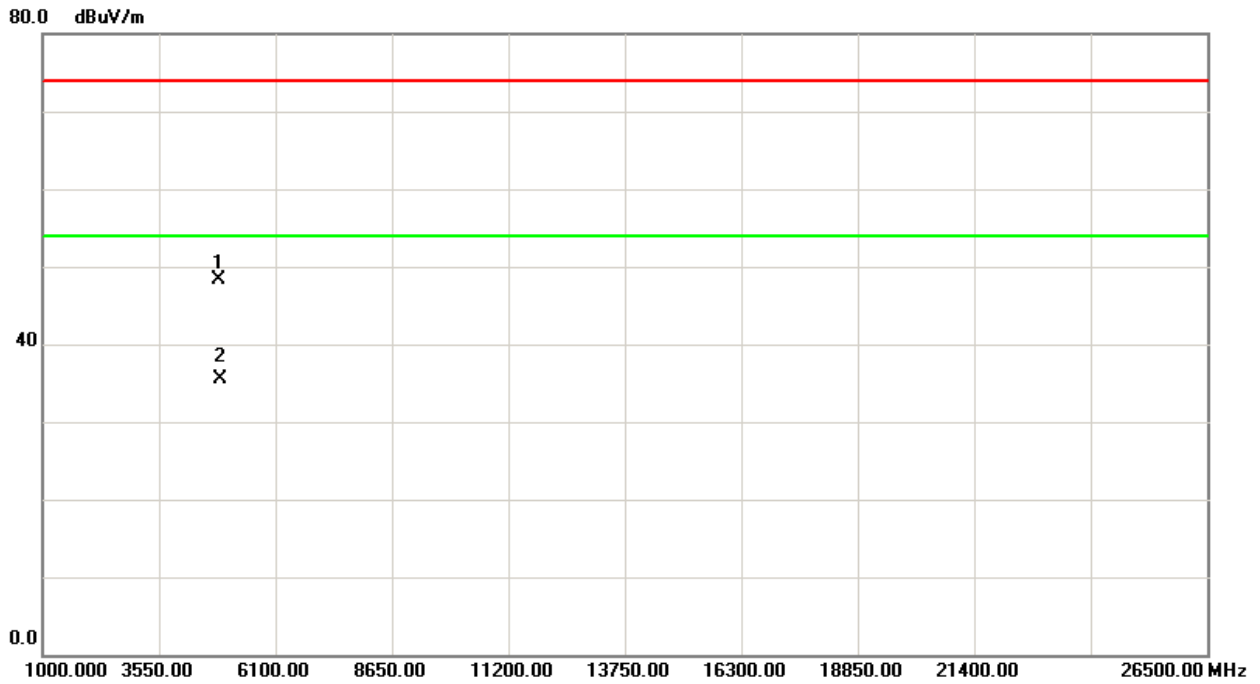
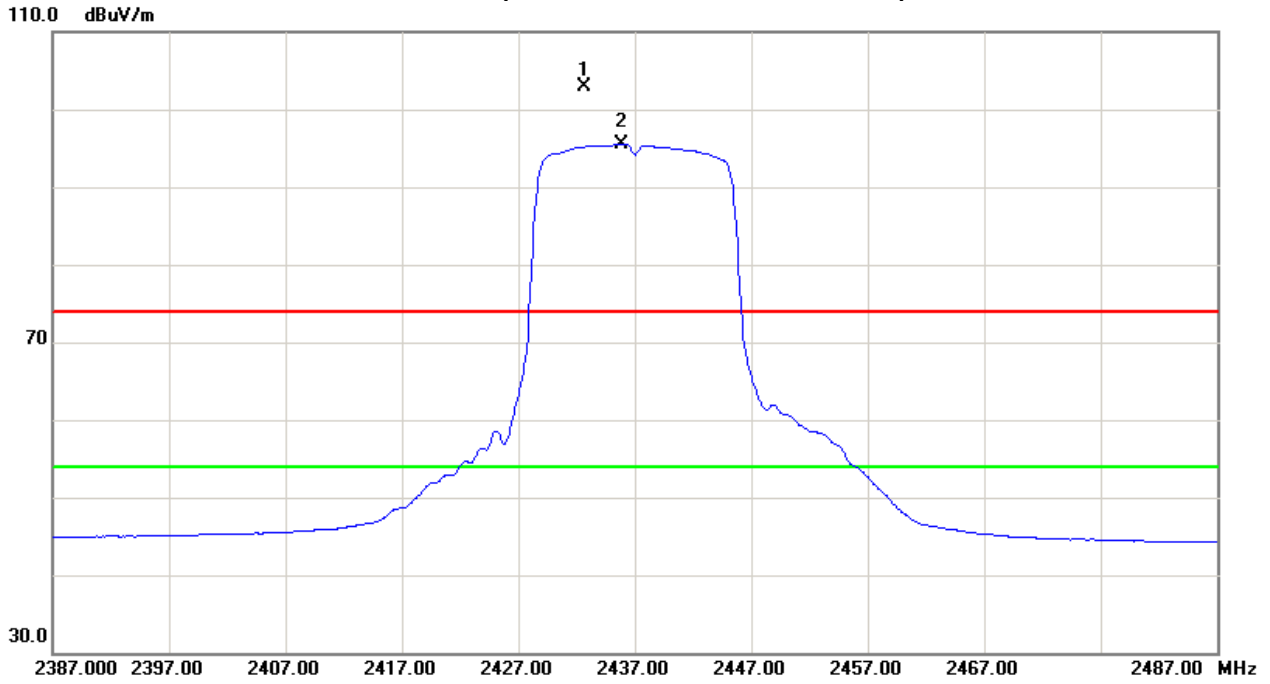
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2432.60	H	70.74	63.34	32.23	102.97	95.57			X/F
4874.01	H	42.79	30.02	5.47	48.26	35.49	74.00	54.00	X/H

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



TX CH06 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2462MHz		

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)	
2457.50	V	67.75	60.11	32.20	99.95	92.31			X/F
2483.50	V	30.44	15.38	32.17	62.61	47.55	74.00	54.00	X/E
4924.02	V	45.57	31.24	5.65	51.22	36.89	74.00	54.00	X/H

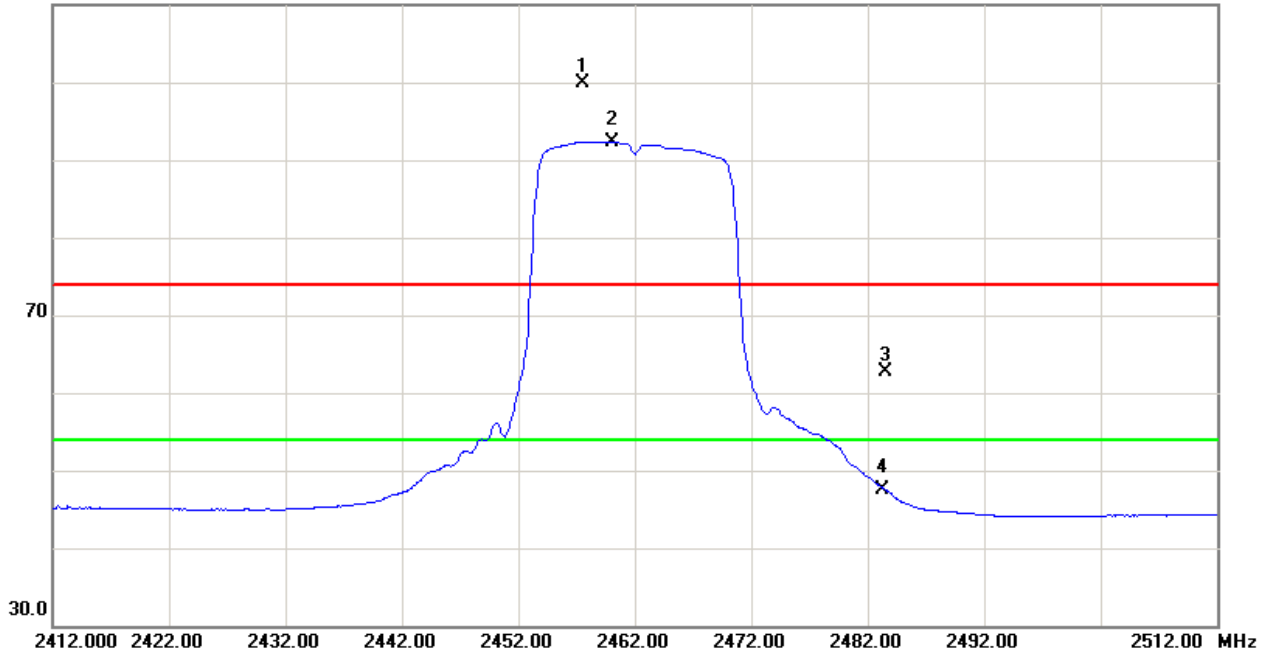
Remark :

- (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

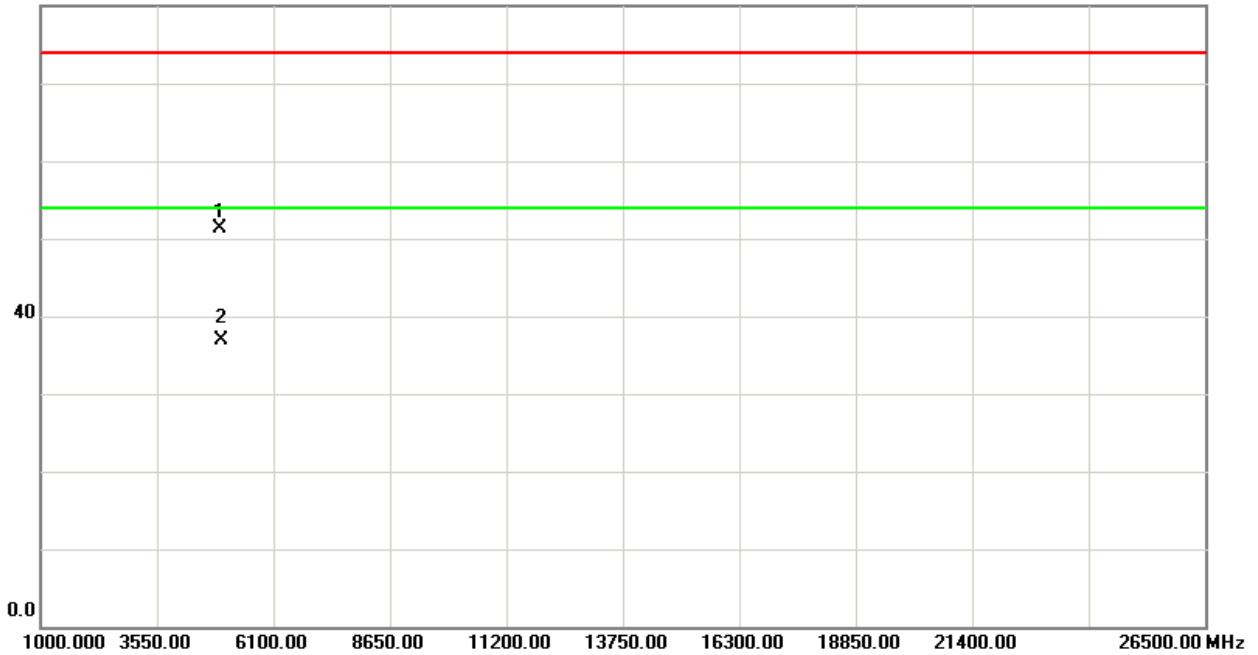


TX CH11 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE 2462MHz		

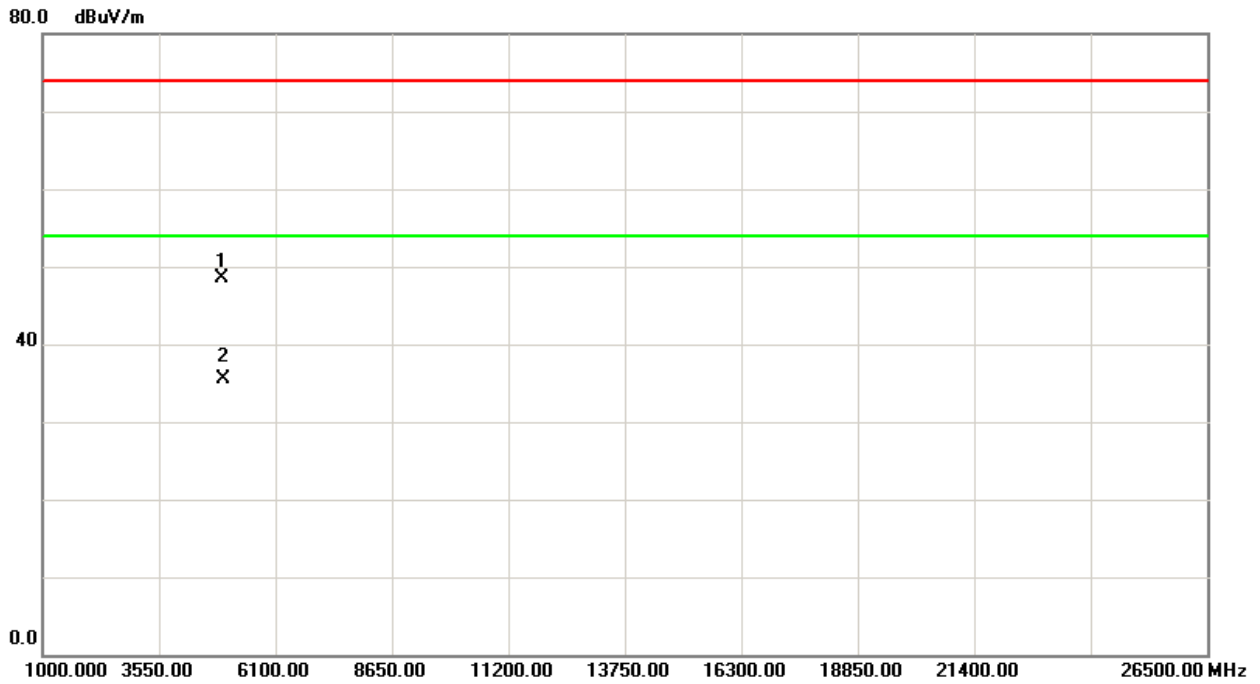
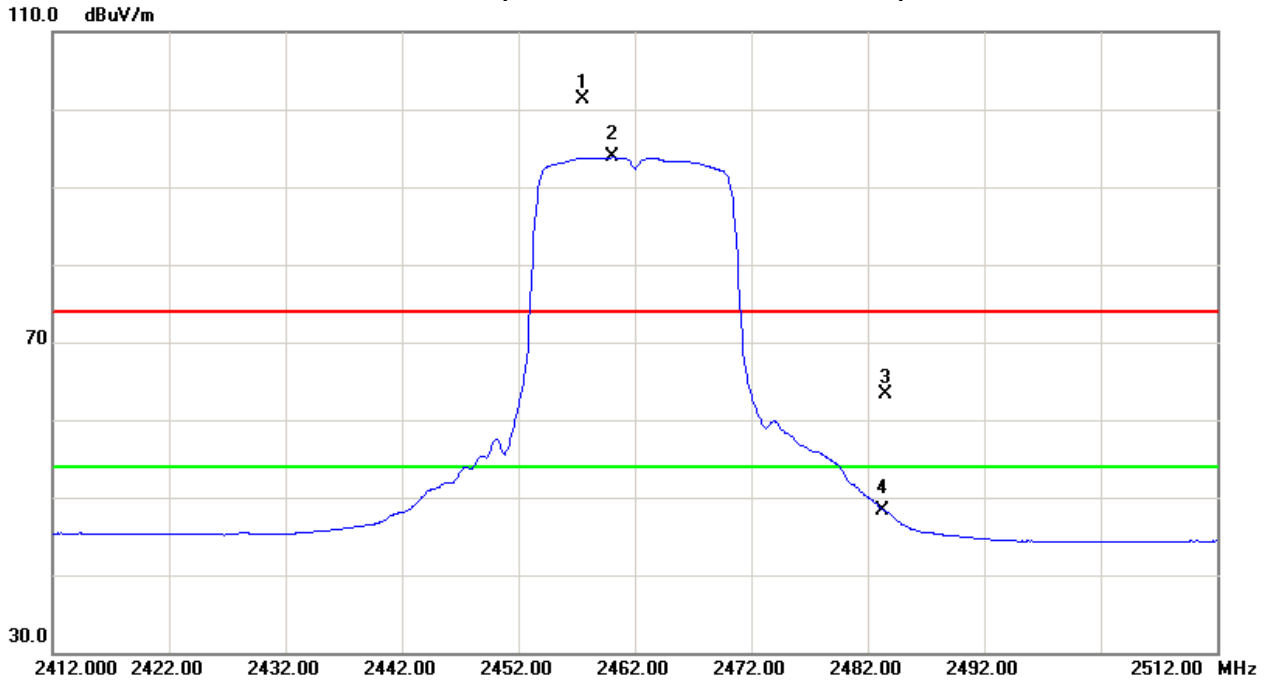
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2460.10	H	69.14	61.61	32.20	101.34	93.81			X/F
2483.50	H	31.05	16.11	32.17	63.22	48.28	74.00	54.00	X/E
4924.12	H	42.94	29.94	5.65	48.59	35.59	74.00	54.00	X/H

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



TX CH11 (Above 1000 MHz, Horizontal)





EUT :	WiFi dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2412MHz		

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	27.40	14.63	32.28	59.68	46.91	74.00	54.00	X/E
2407.20	V	70.79	62.66	32.26	103.05	94.92			X/F
4824.11	V	44.09	30.73	5.29	49.38	36.02	74.00	54.00	X/H

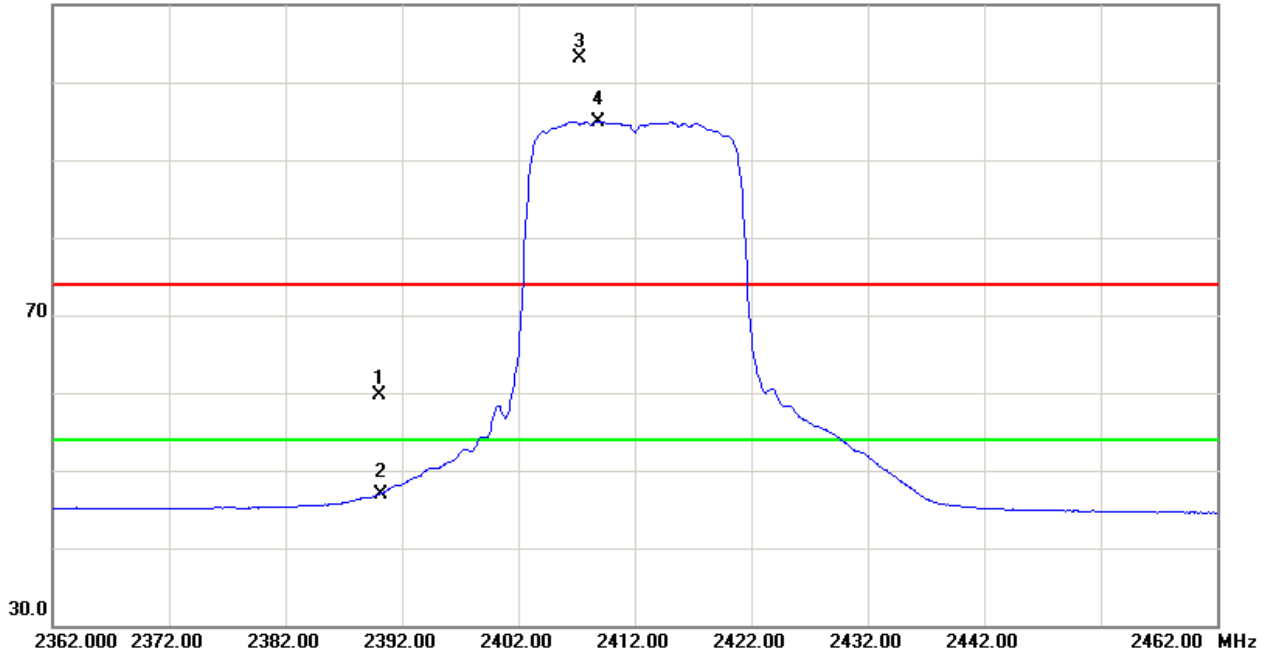
Remark :

- (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

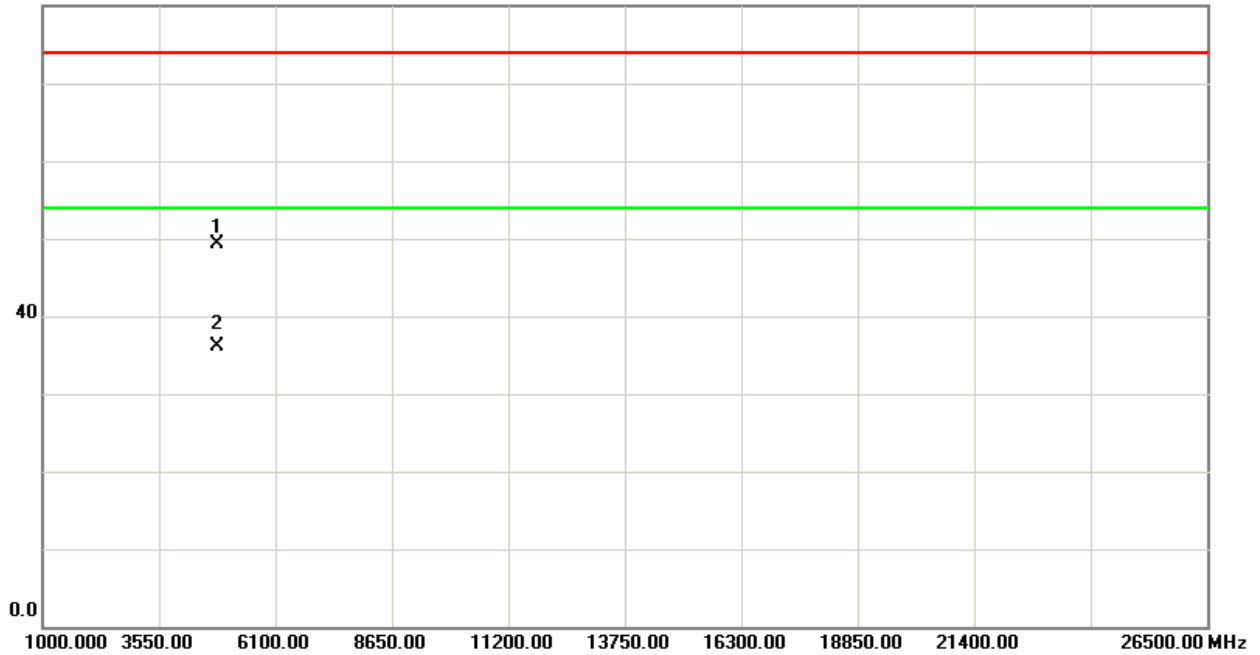


TX CH01 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2412MHz		

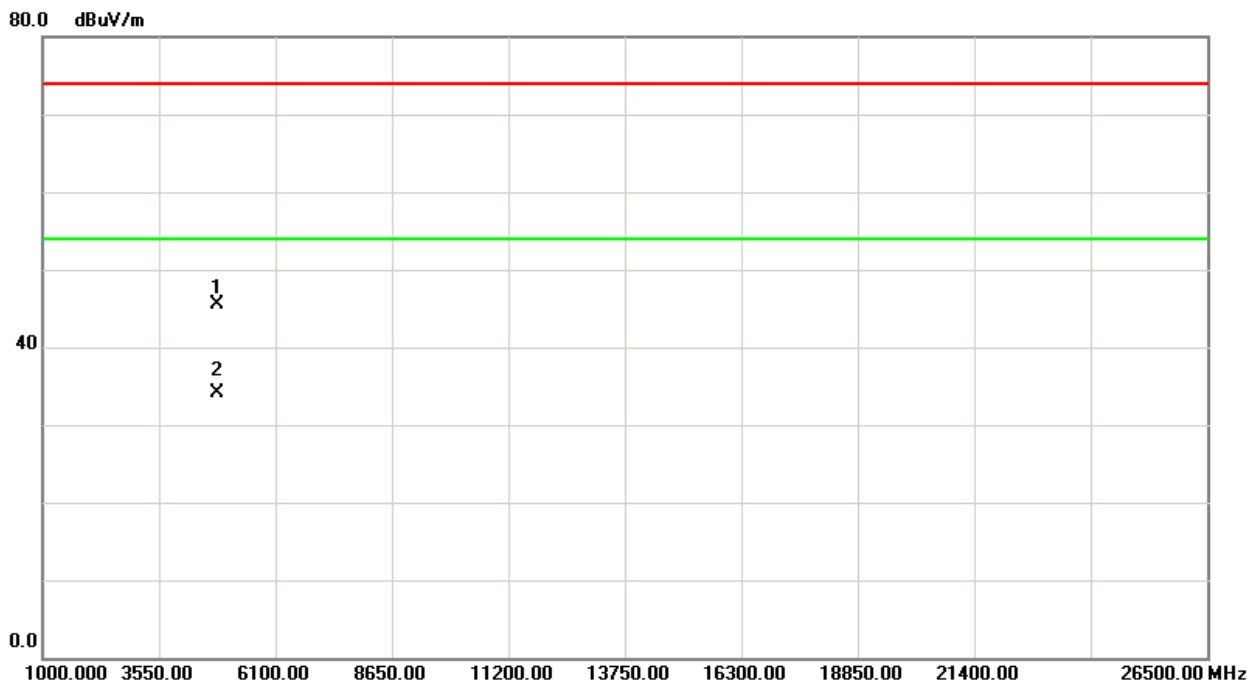
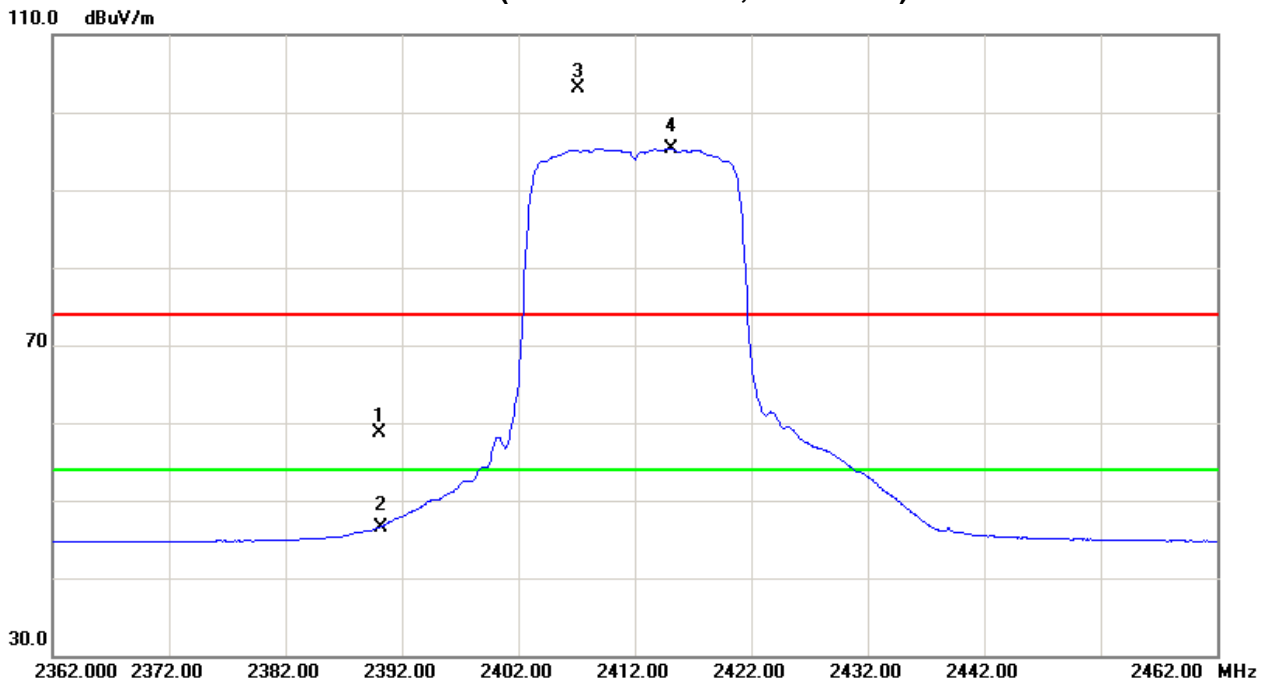
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	26.36	14.16	32.28	58.64	46.44	74.00	54.00	X/E
2407.10	H	70.90	62.96	32.26	103.16	95.22			X/F
4824.01	H	40.24	28.81	5.29	45.53	34.10	74.00	54.00	X/H

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



TX CH01 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2437MHZ-		

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)	
2432.20	V	69.93	61.87	32.24	102.17	94.11			X/F
4874.01	V	43.01	31.04	5.47	48.48	36.51	74.00	54.00	X/H

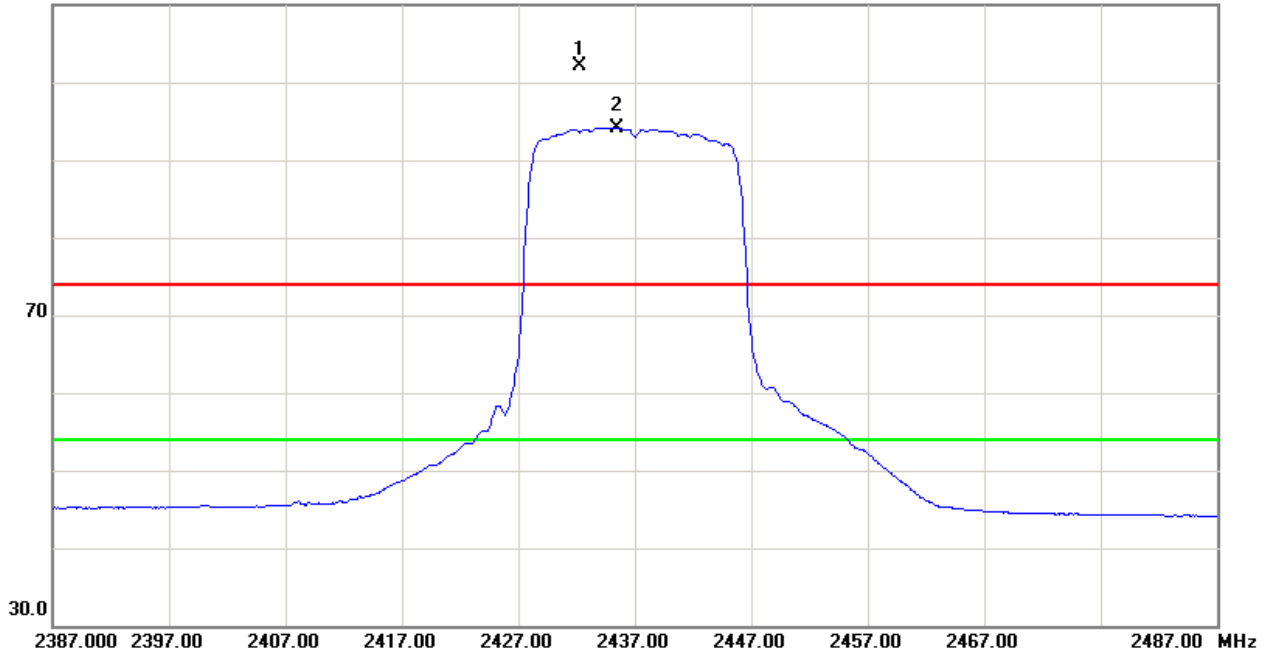
Remark :

- (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

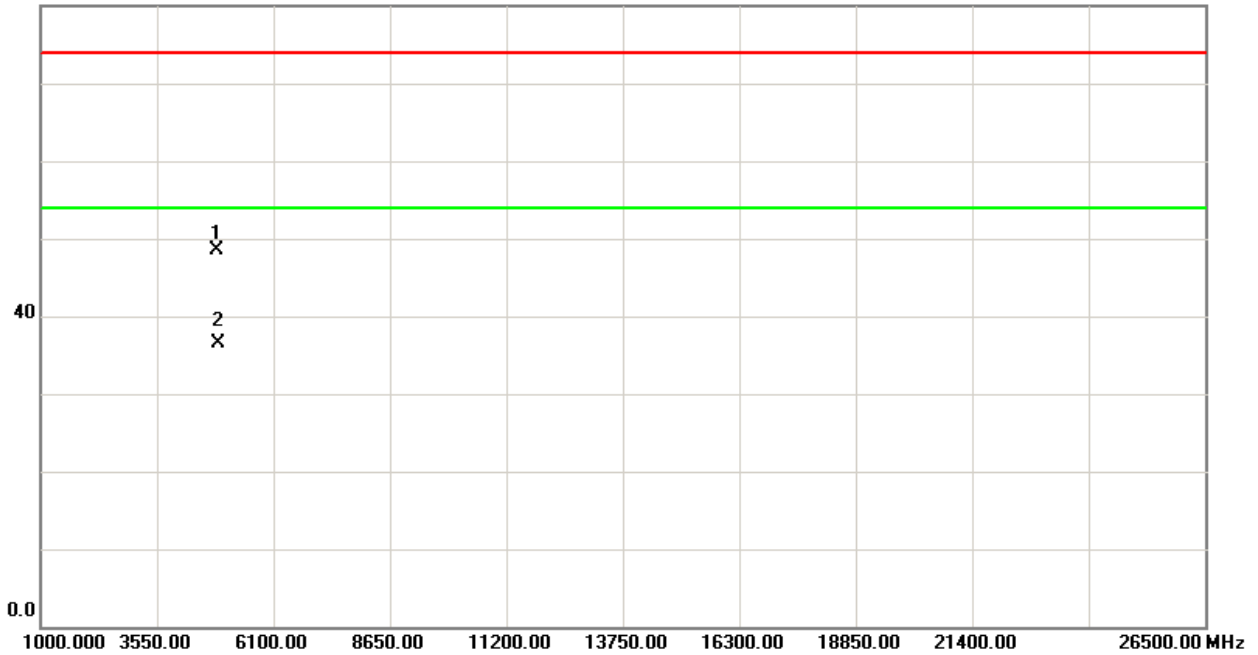


TX CH06 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2437MHz		

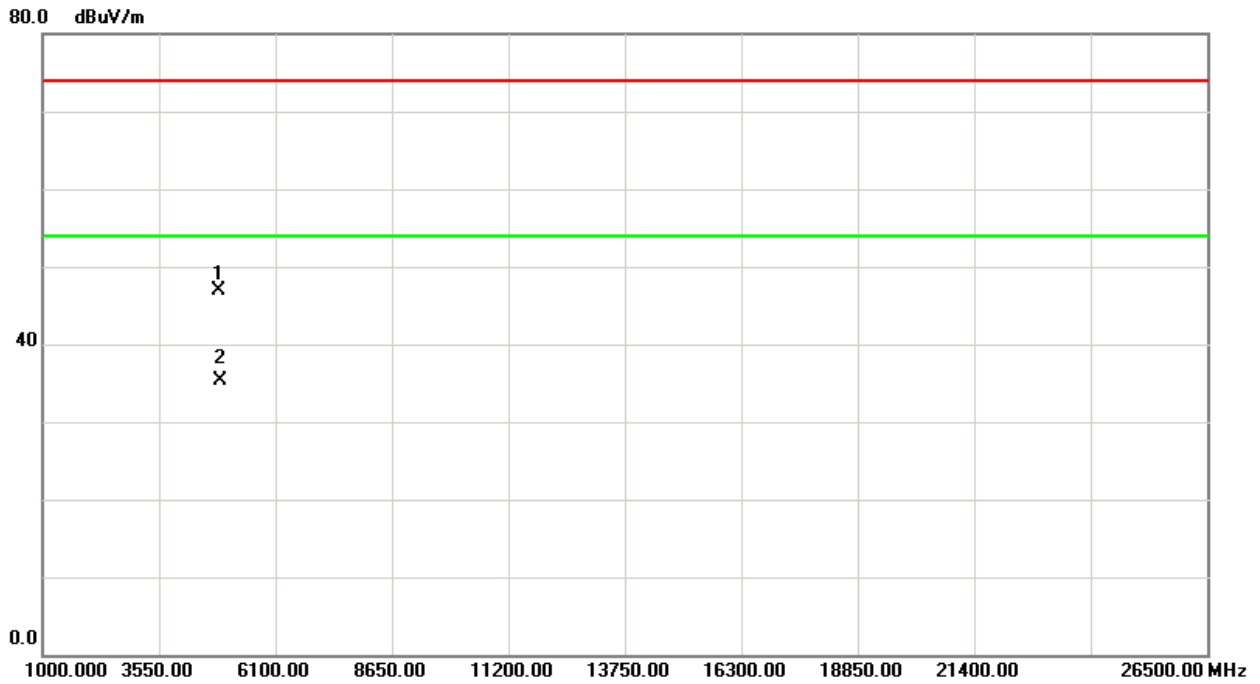
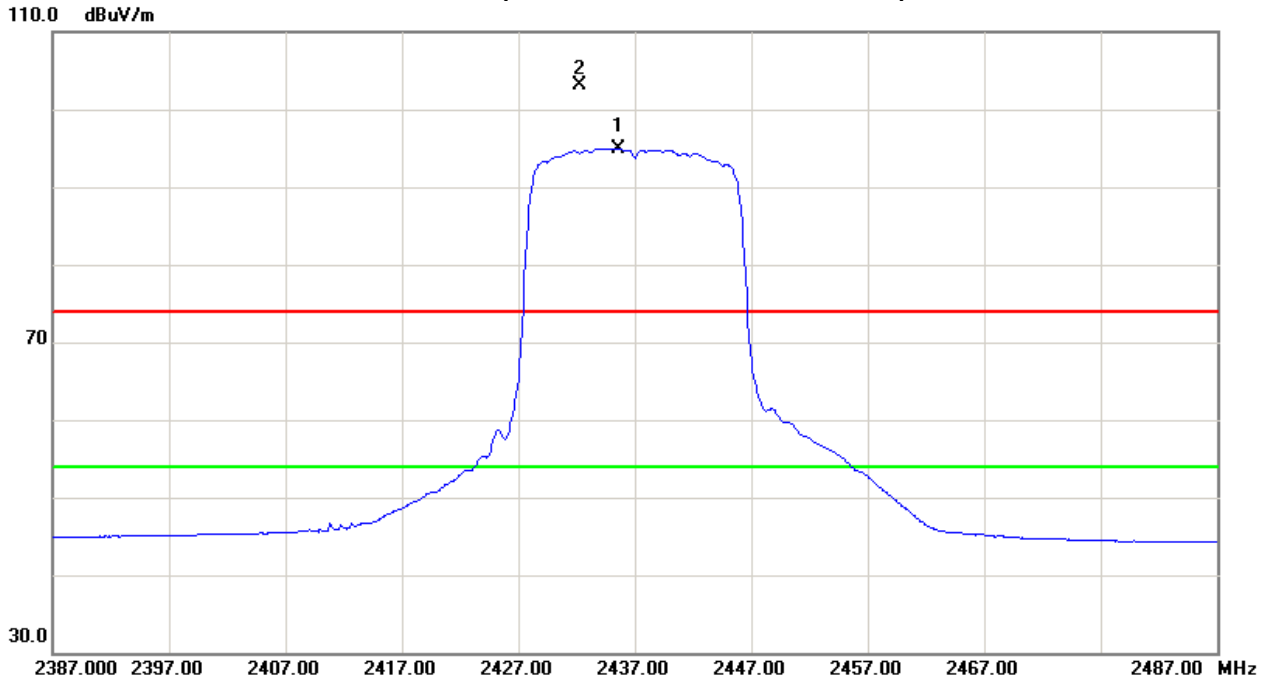
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2435.60	H	70.78	62.77	32.24	103.02	95.01			X/F
4874.13	H	41.42	29.84	5.47	46.89	35.31	74.00	54.00	X/H

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



TX CH06 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2462MHZ-		

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)	
2457.30	V	68.03	59.94	32.21	100.24	92.15			X/F
2483.50	V	30.07	15.48	32.17	62.24	47.65	74.00	54.00	X/E
4924.12	V	44.26	32.84	5.65	49.91	38.49	74.00	54.00	X/H

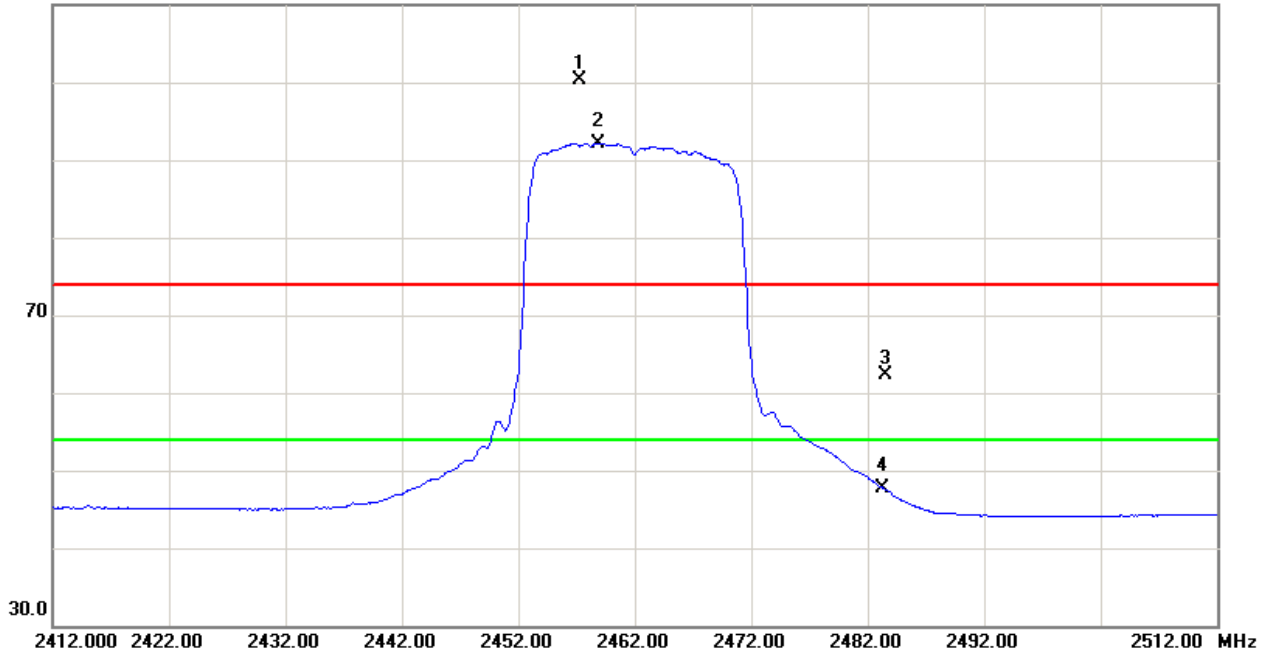
Remark :

- (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

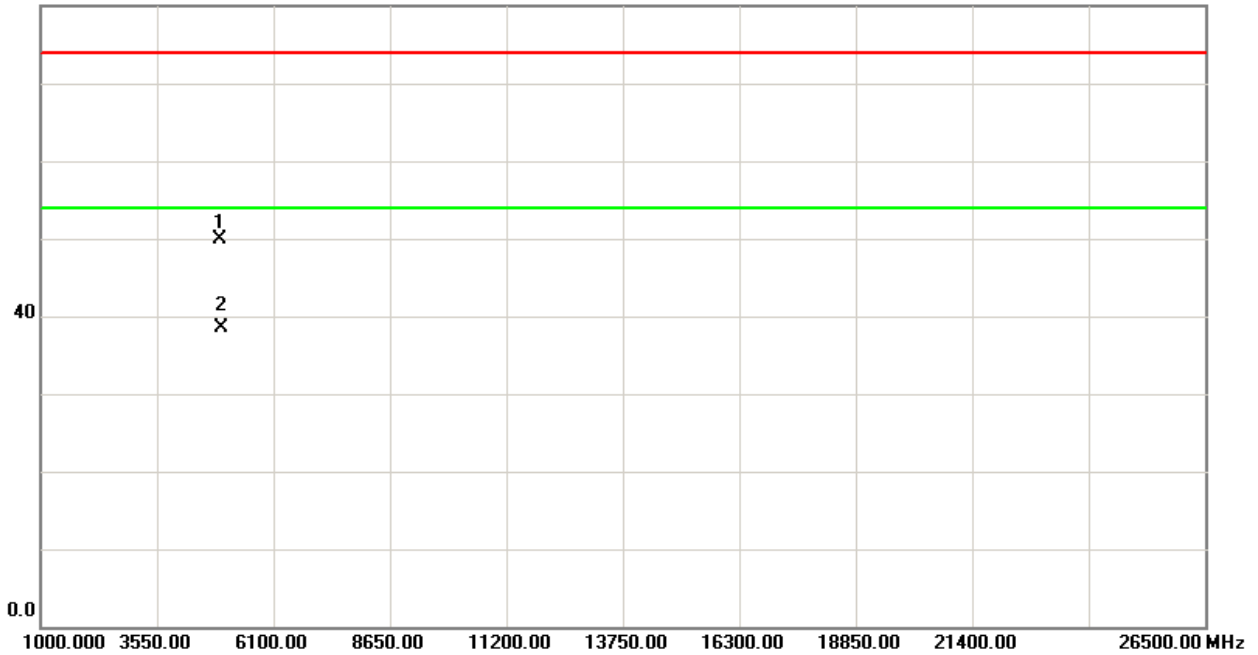


TX CH11 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE 2462MHz		

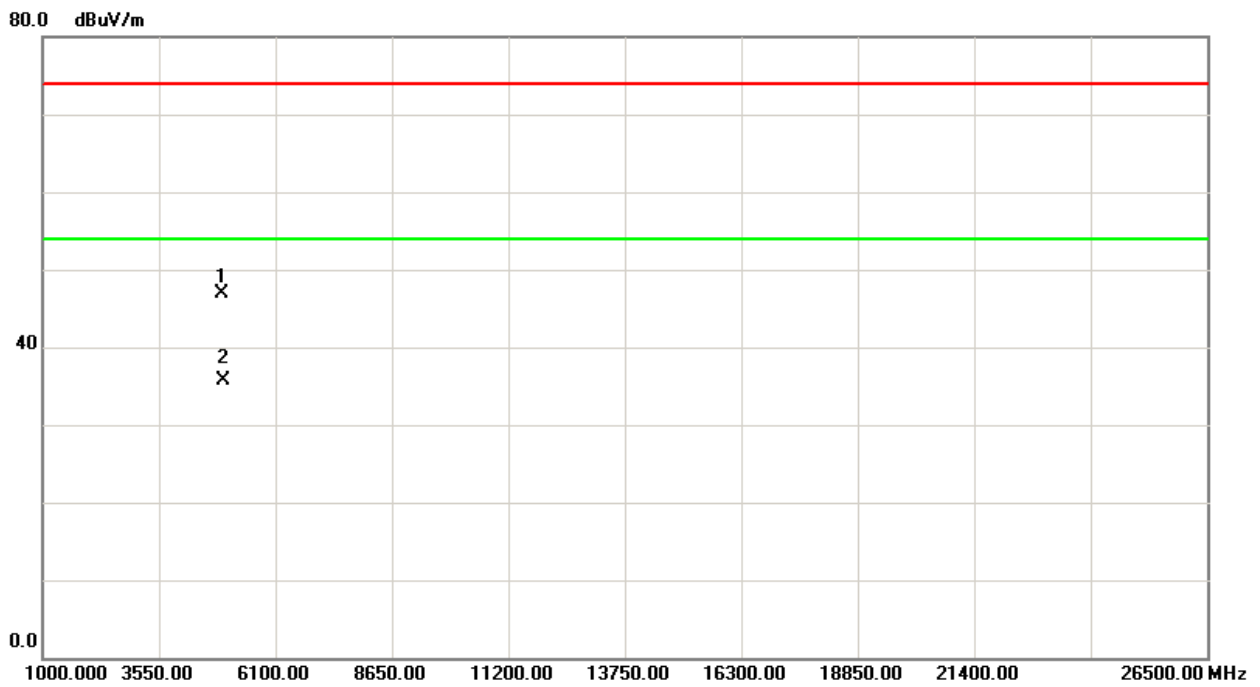
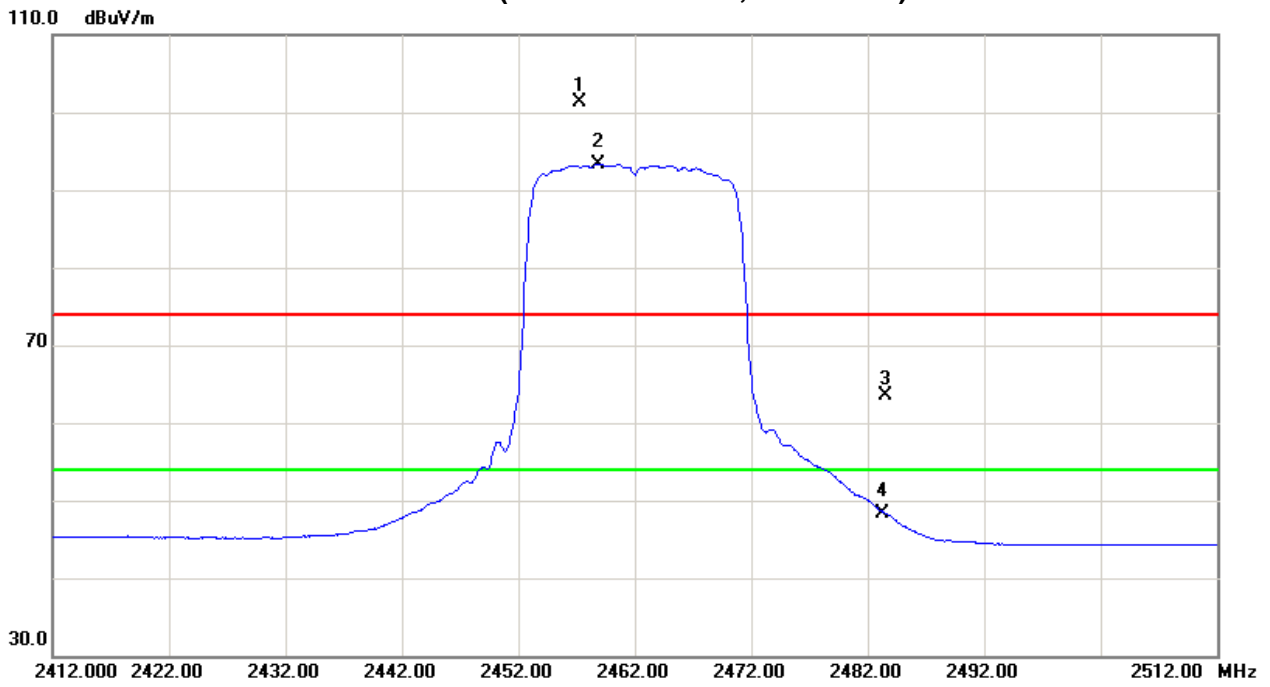
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2458.80	H	69.10	61.09	32.20	101.30	93.29			X/F
2483.50	H	31.42	16.18	32.17	63.59	48.35	74.00	54.00	X/E
4924.03	H	41.24	30.15	5.65	46.89	35.80	74.00	54.00	X/H

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



TX CH11 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2422MHz		

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	30.76	17.81	32.28	63.04	50.09	74.00	54.00	X/E
2418.40	V	67.49	59.55	32.25	99.74	91.80			X/F
4843.96	V	42.94	30.78	5.36	48.30	36.14	74.00	54.00	X/H

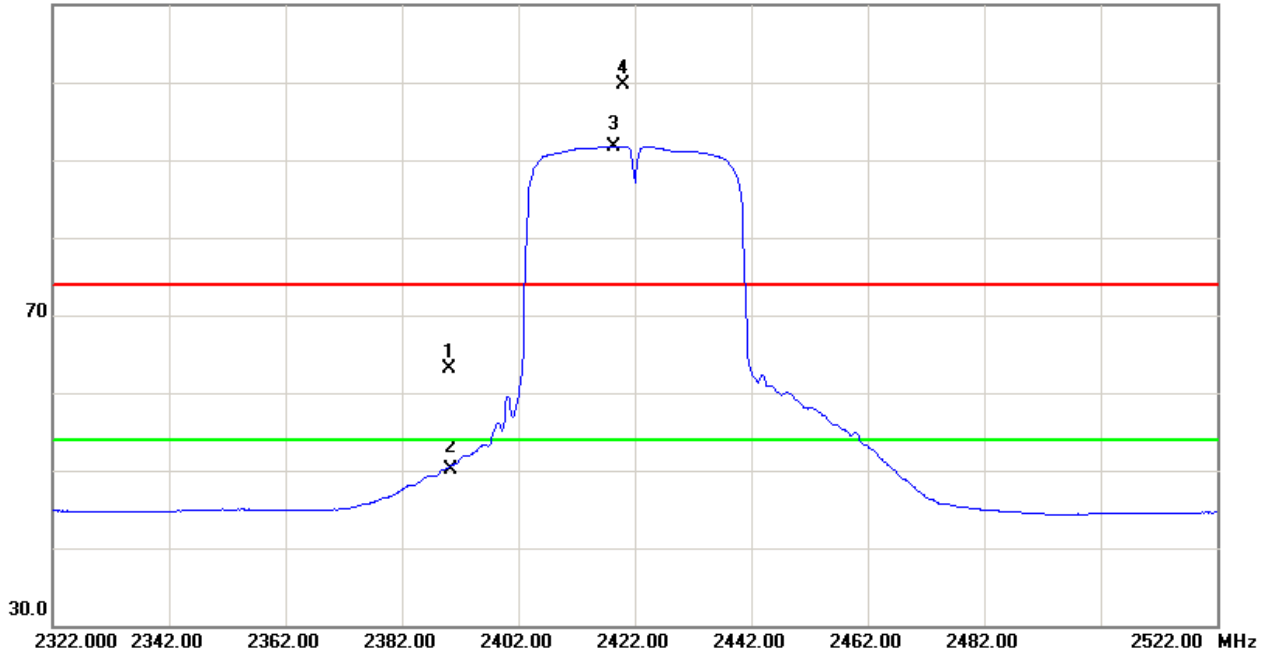
Remark :

- (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

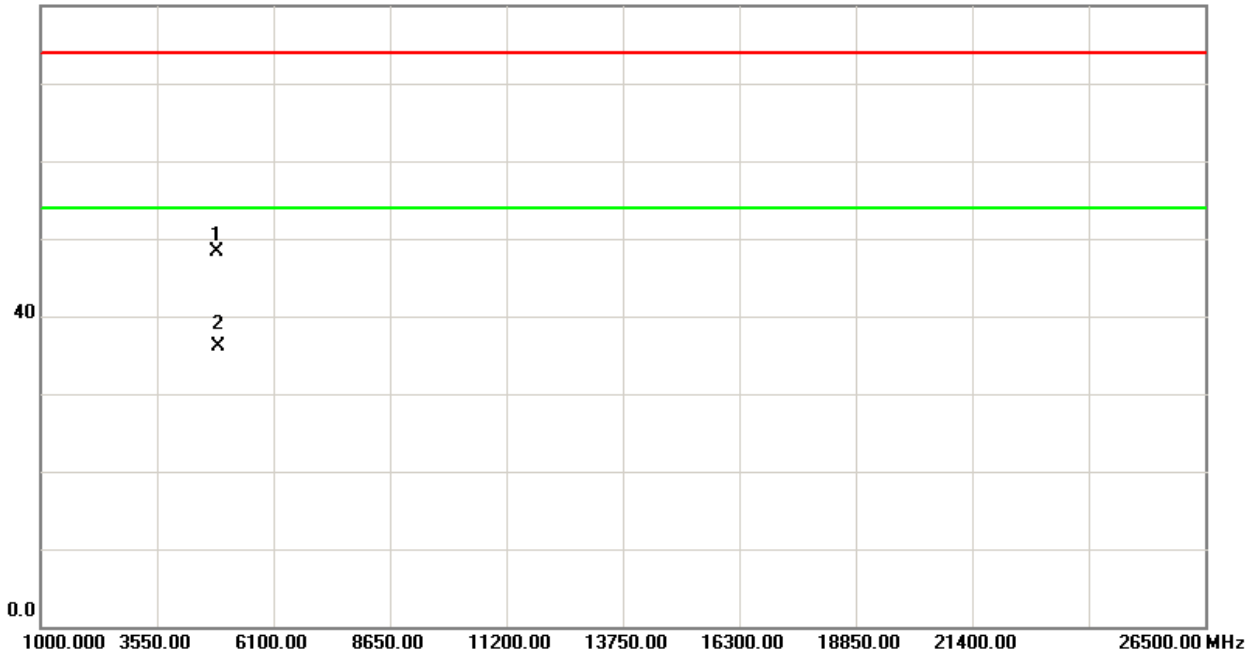


TX CH03 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2422MHz		

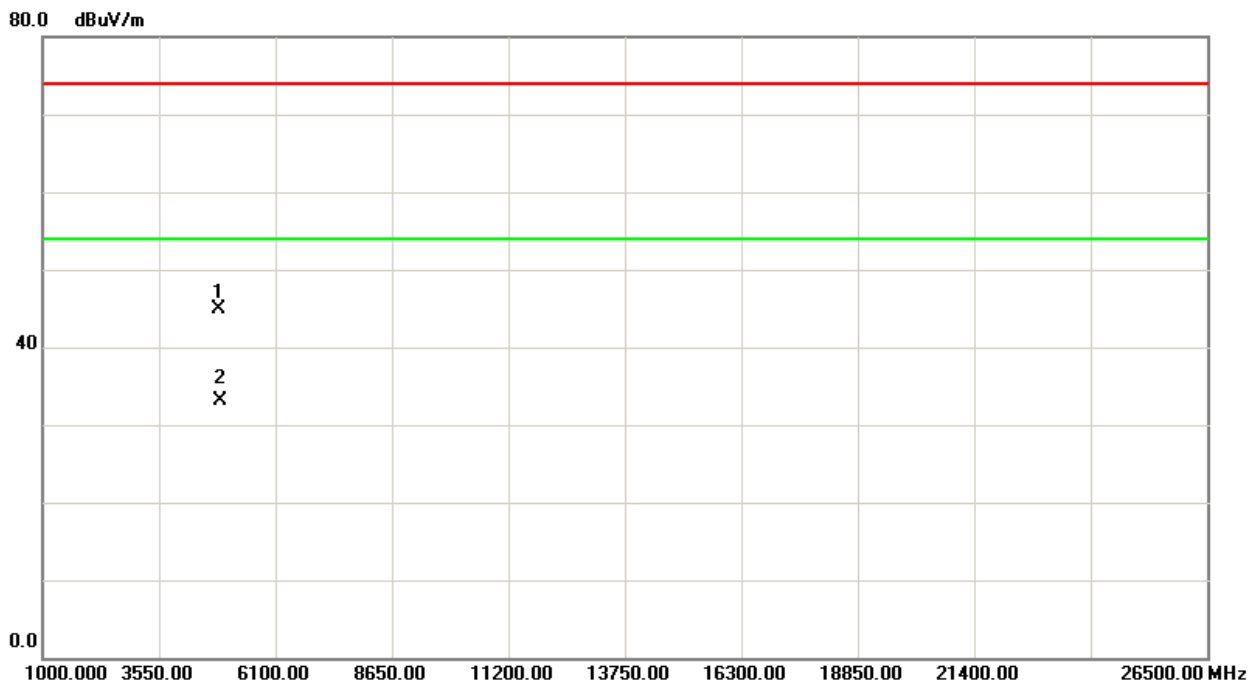
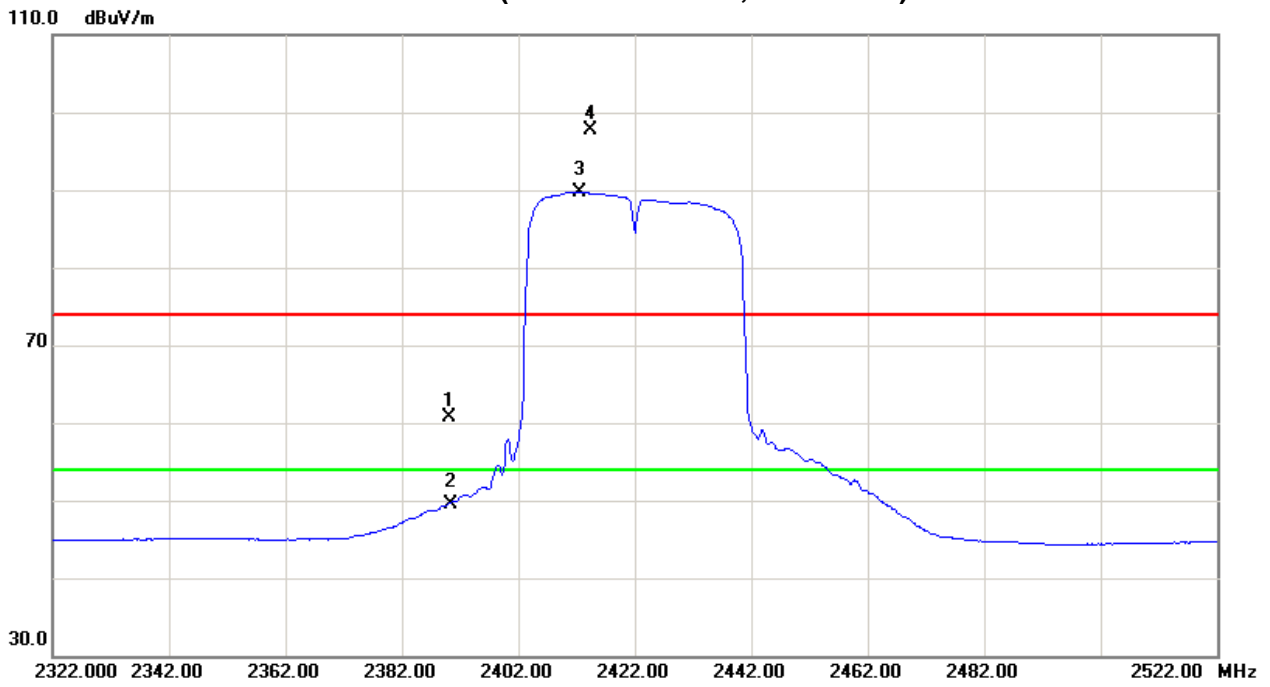
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	28.39	17.28	32.28	60.67	49.56	74.00	54.00	X/E
2412.60	H	65.55	57.53	32.25	97.80	89.78			X/F
4844.12	H	39.56	27.76	5.36	44.92	33.12	74.00	54.00	X/H

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



TX CH03 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2437MHZ-		

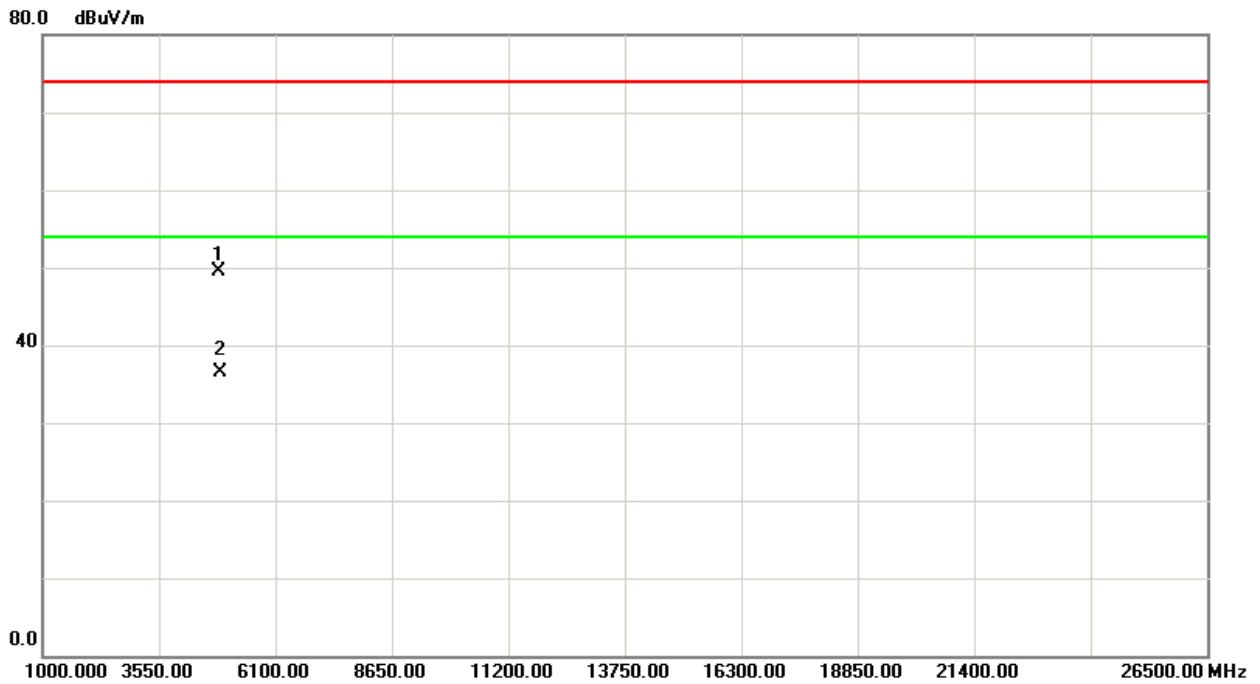
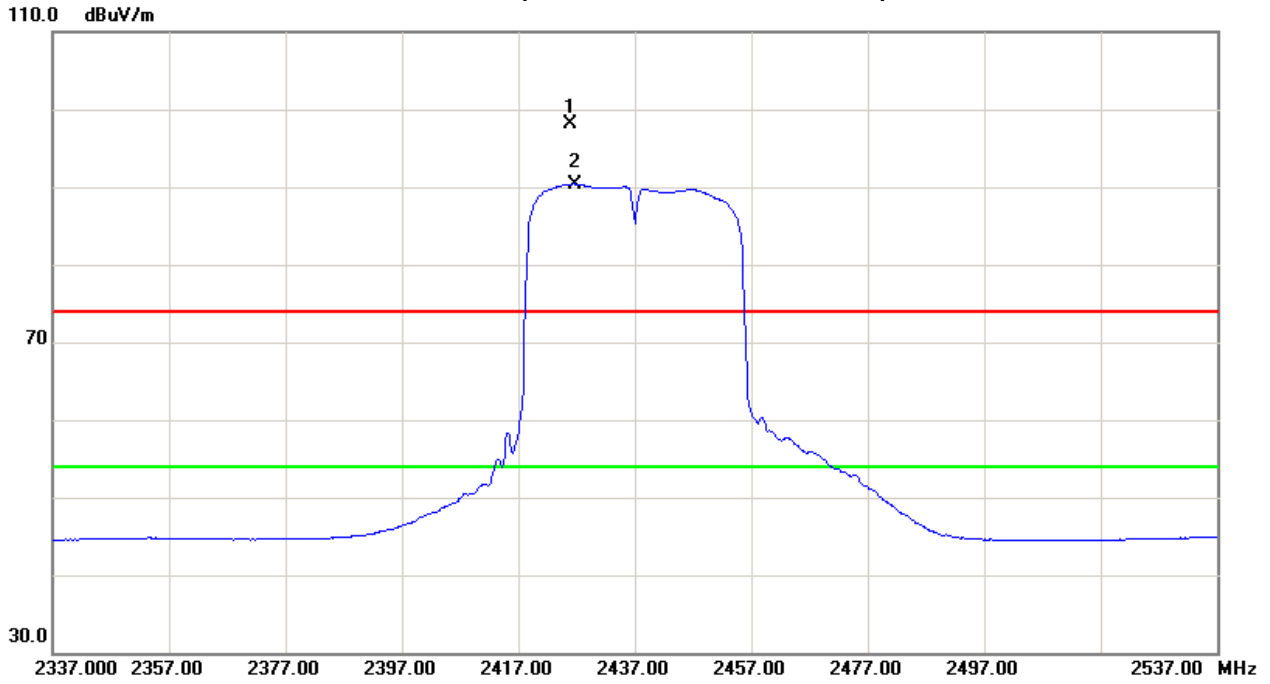
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2426.00	V	65.96	58.16	32.24	98.20	90.40			X/F
4873.97	V	44.05	31.02	5.47	49.52	36.49	74.00	54.00	X/H

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



TX CH06 (Above 1000 MHz, Vertical)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2437MHZ		

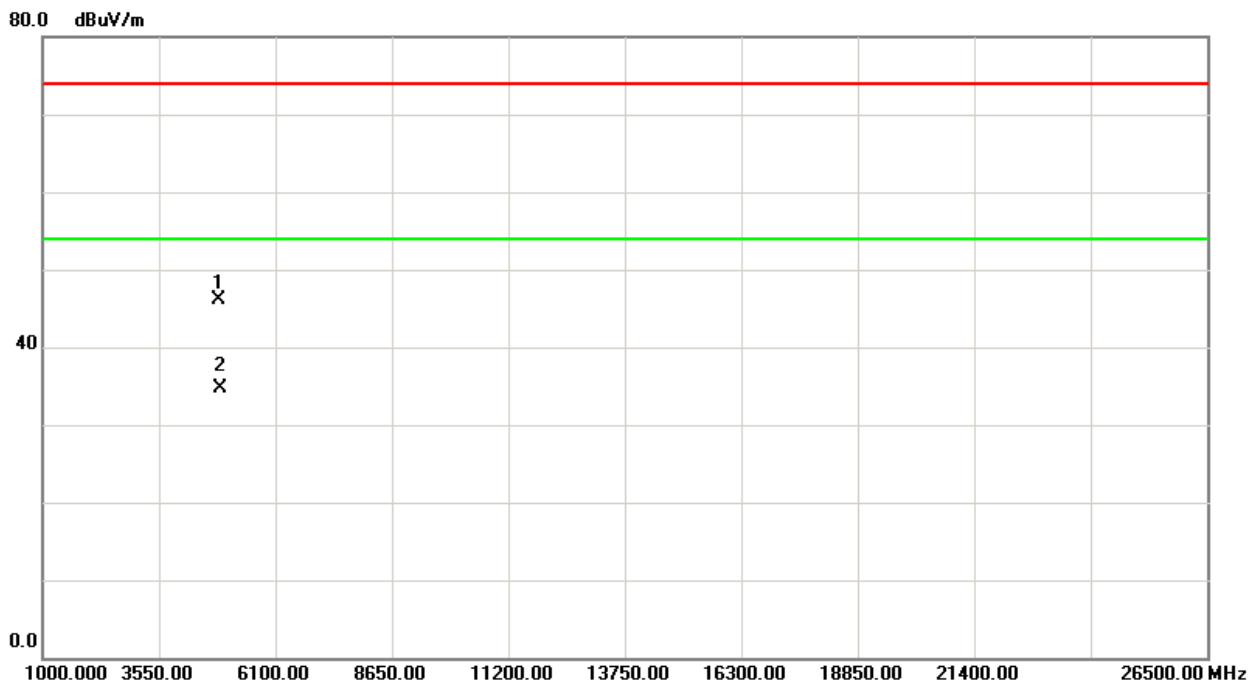
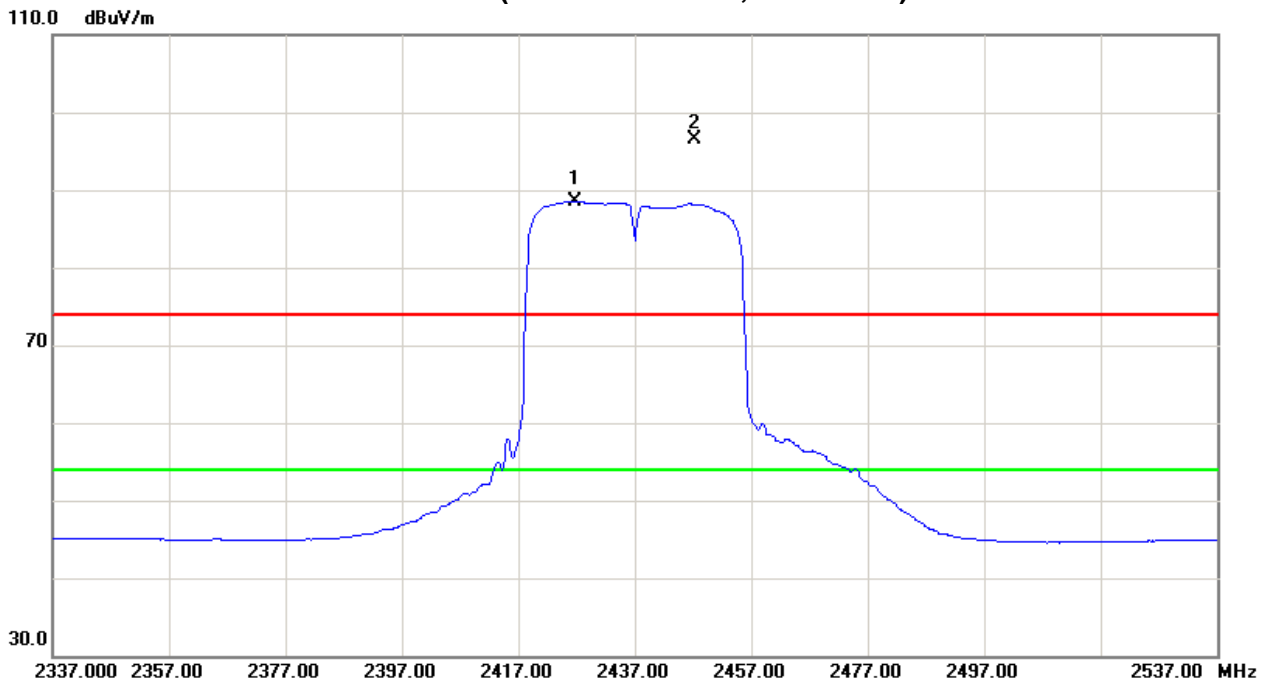
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2426.60	H	64.28	56.31	32.24	96.52	88.55			X/F
4874.02	H	40.59	29.32	5.47	46.06	34.79	74.00	54.00	X/H

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



TX CH06 (Above 1000 MHz, Horizontal)





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2452MHz		

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)	
2449.80	V	65.51	57.21	32.21	97.72	89.42			X/F
2483.50	V	32.32	19.50	32.17	64.49	51.67	74.00	54.00	X/E
4904.12	V	43.46	30.89	5.58	49.04	36.47	74.00	54.00	X/H

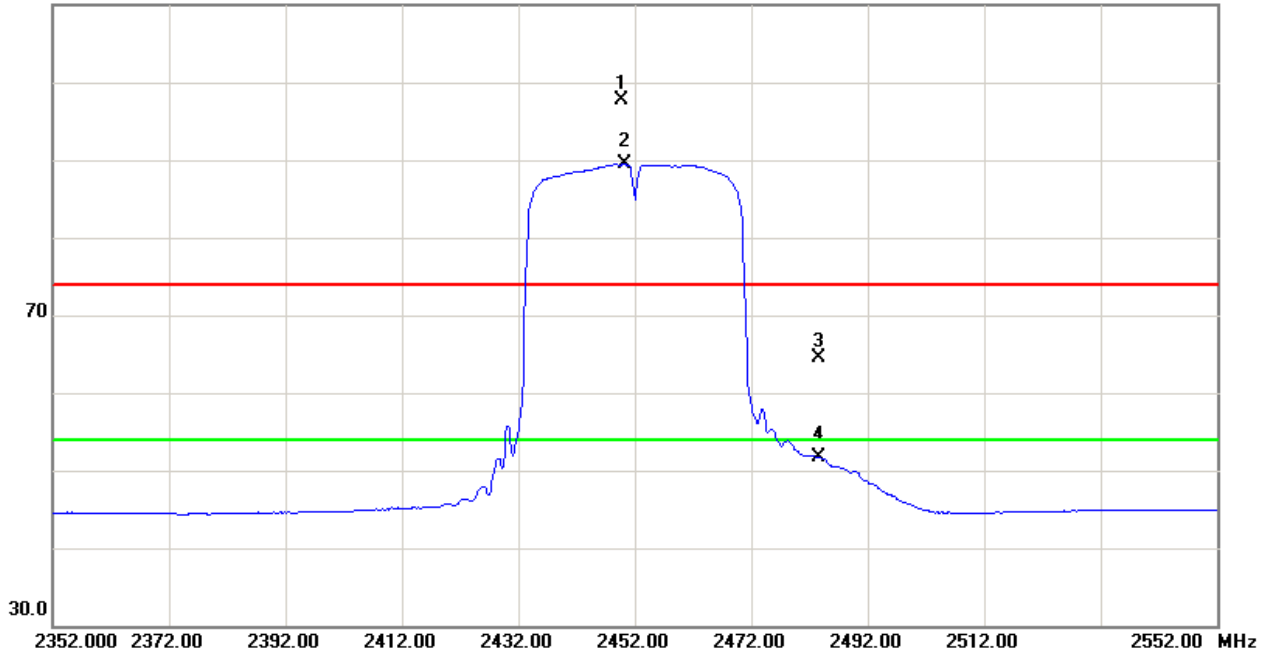
Remark :

- (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

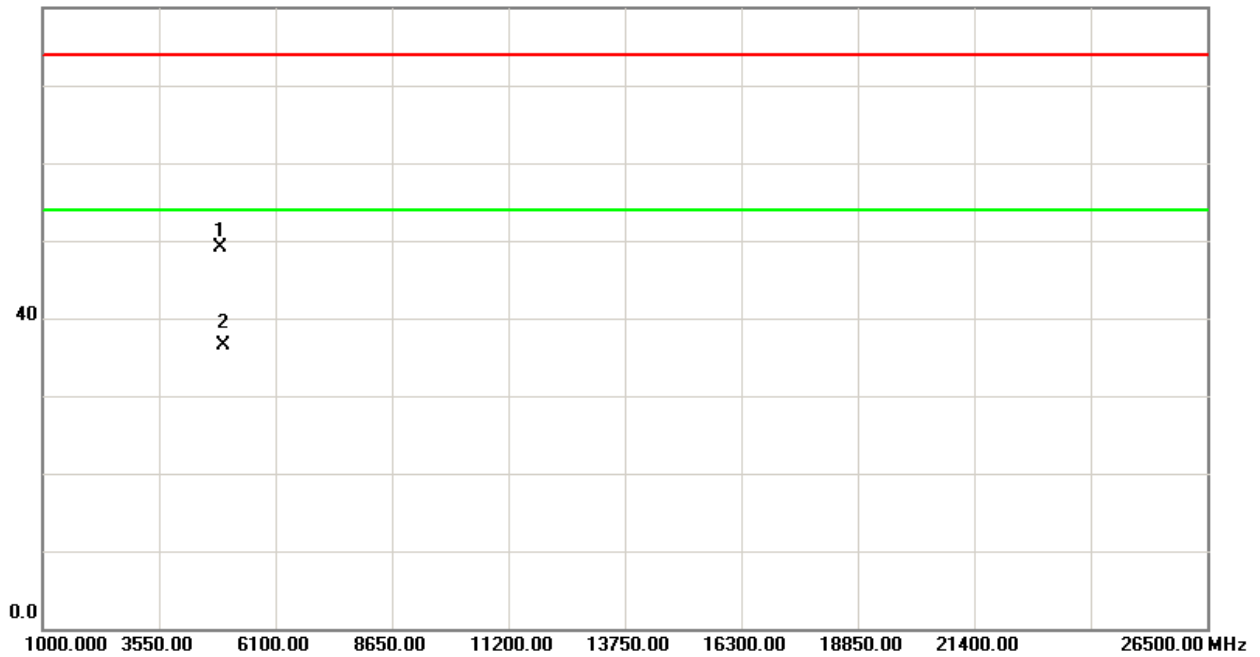


TX CH09 (Above 1000 MHz, Vertical)

110.0 dBuV/m



80.0 dBuV/m





EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	25 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE 2452MHz		

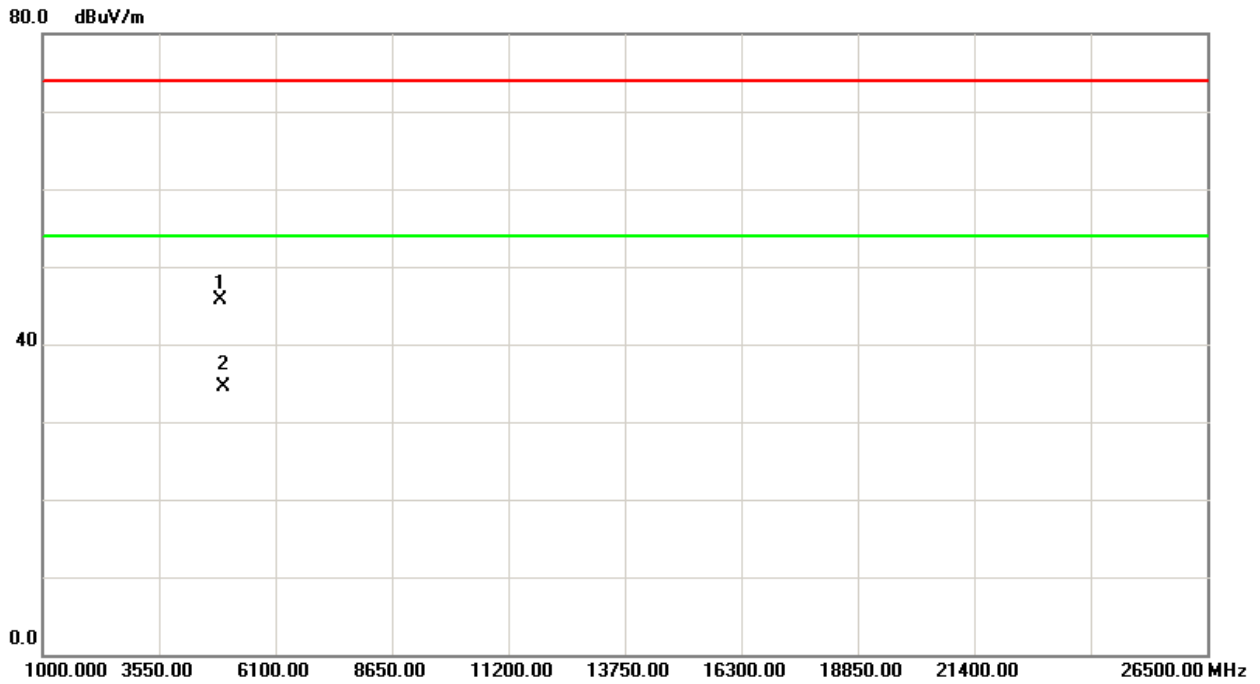
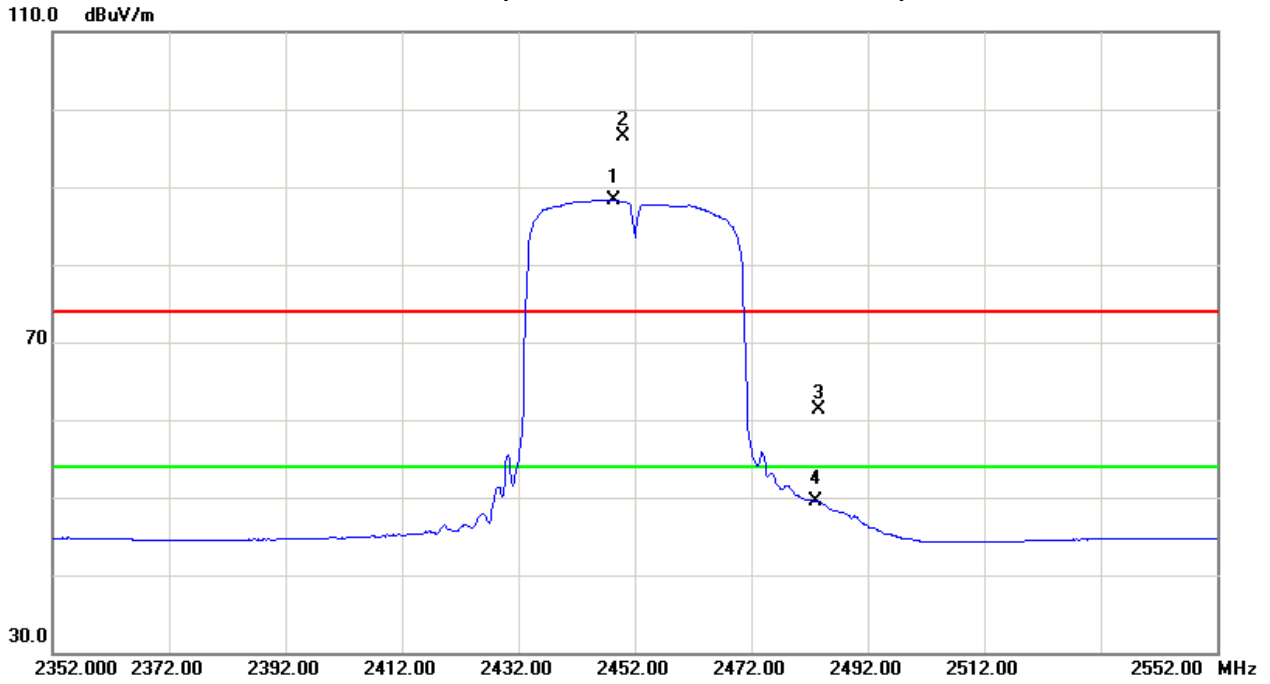
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
448.40	H	64.23	56.18	32.21	96.44	88.39			X/F
2483.50	H	29.06	17.30	32.17	61.23	49.47	74.00	54.00	X/E
4903.96	H	40.16	29.02	5.58	45.74	34.60	74.00	54.00	X/H

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



TX CH09 (Above 1000 MHz, Horizontal)





5. BANDWIDTH TEST

5.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	2400-2483.5	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 17.2012	Nov. 16.2013

Remark: "N/A" denotes no model name, serial no. or calibration specified.

5.1.2 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=300KHz, Sweep time = 2.5 ms.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



5.1.5 EUT OPERATION CONDITIONS

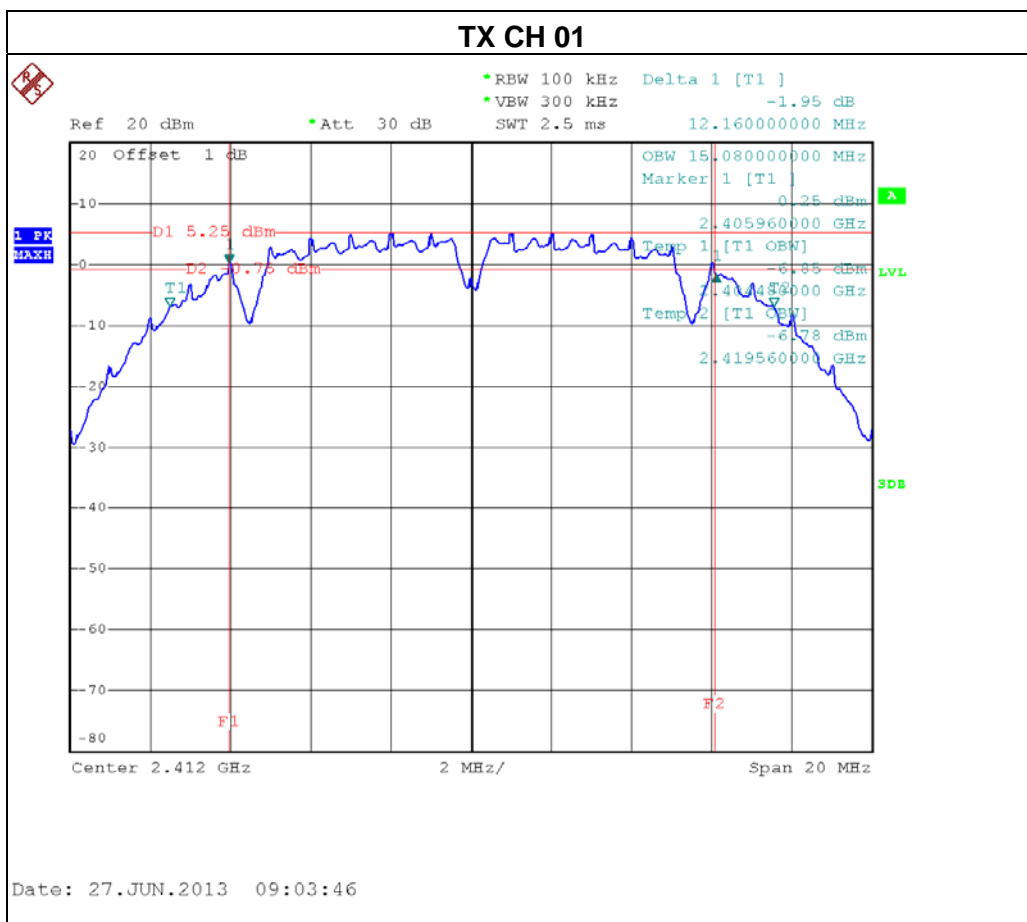
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

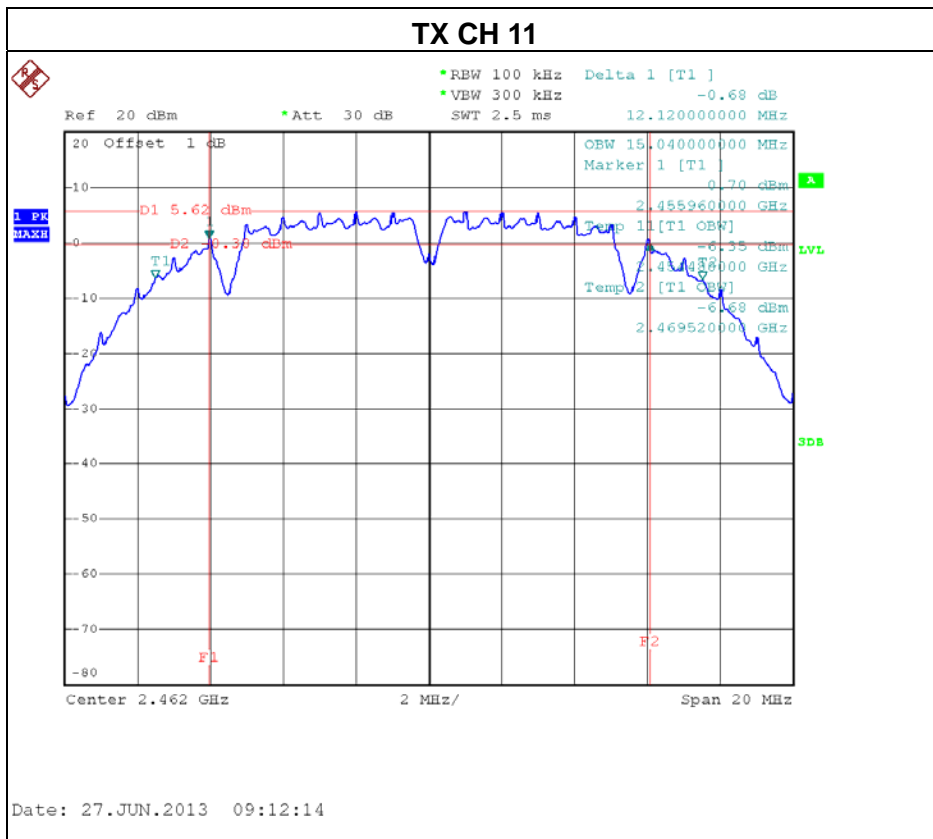
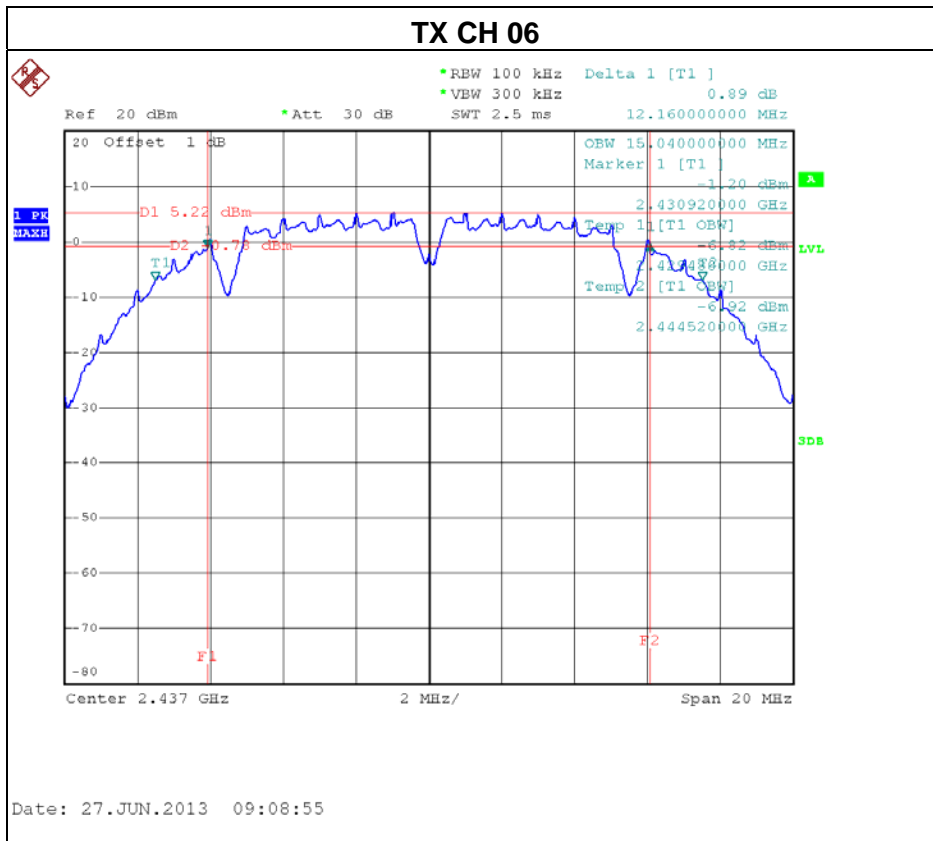


5.1.6 TEST RESULTS

EUT :	WIFI dongle for USB storage and Power Bank	Model Name. :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Bandwidth (MHz)
CH01	2412	12.16
CH06	2437	12.16
CH11	2462	12.12

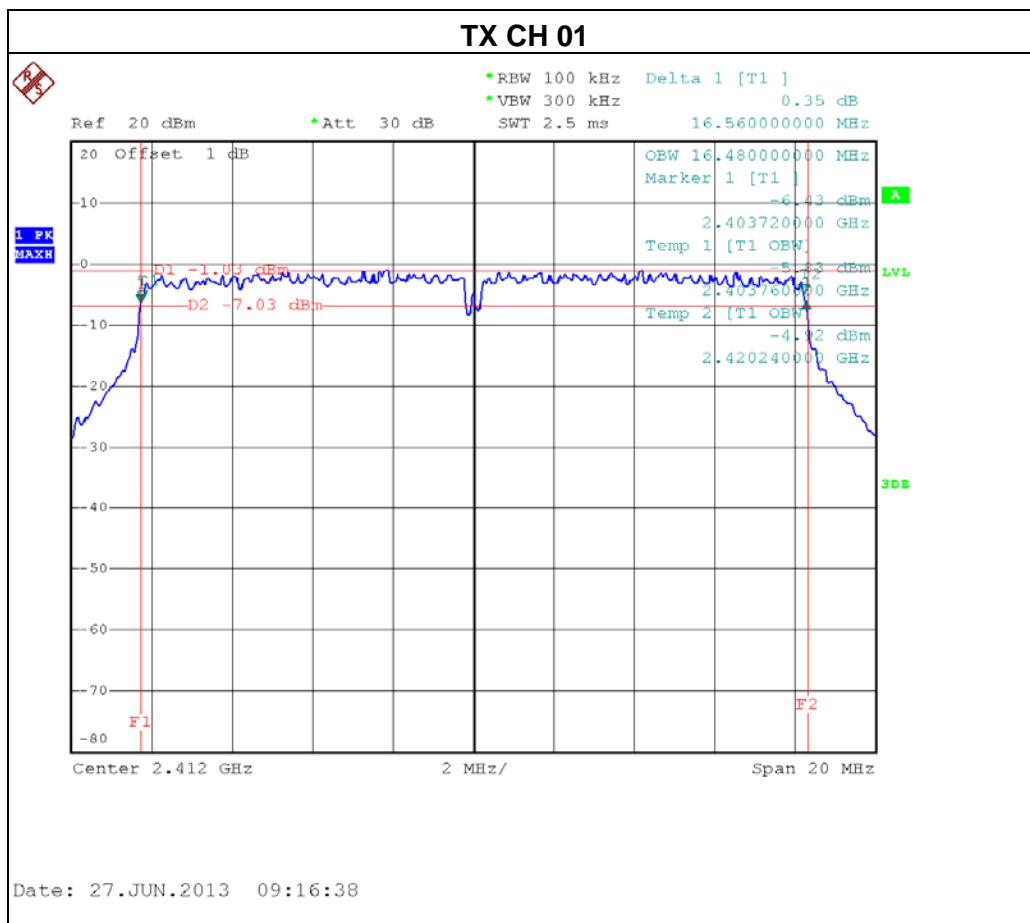


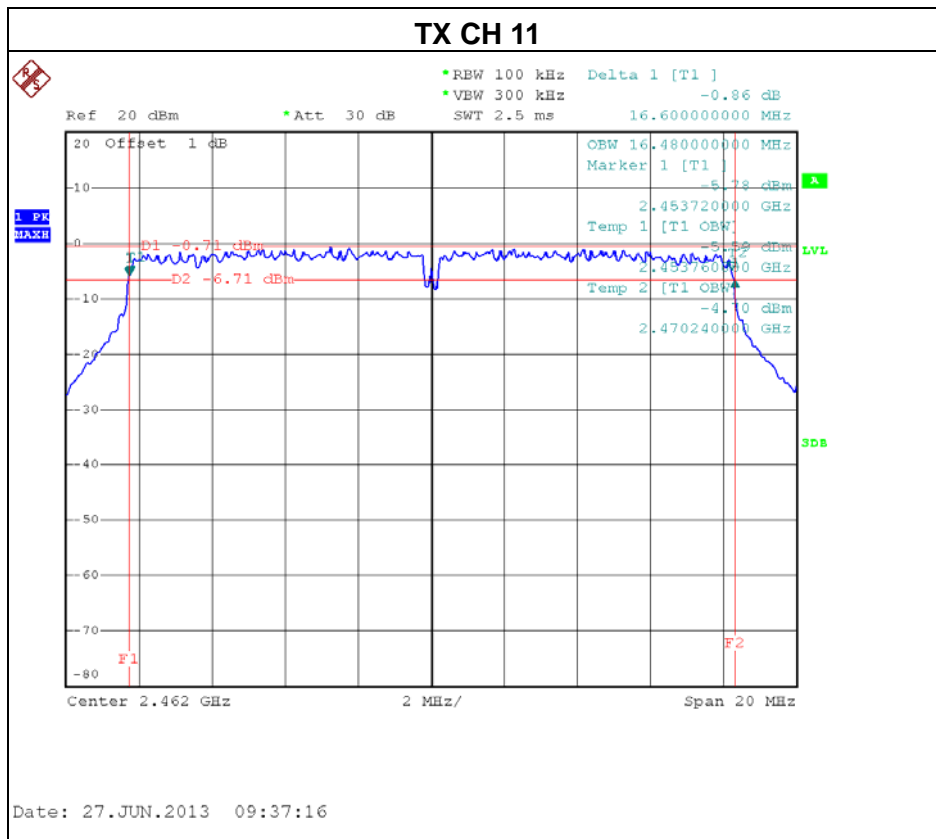
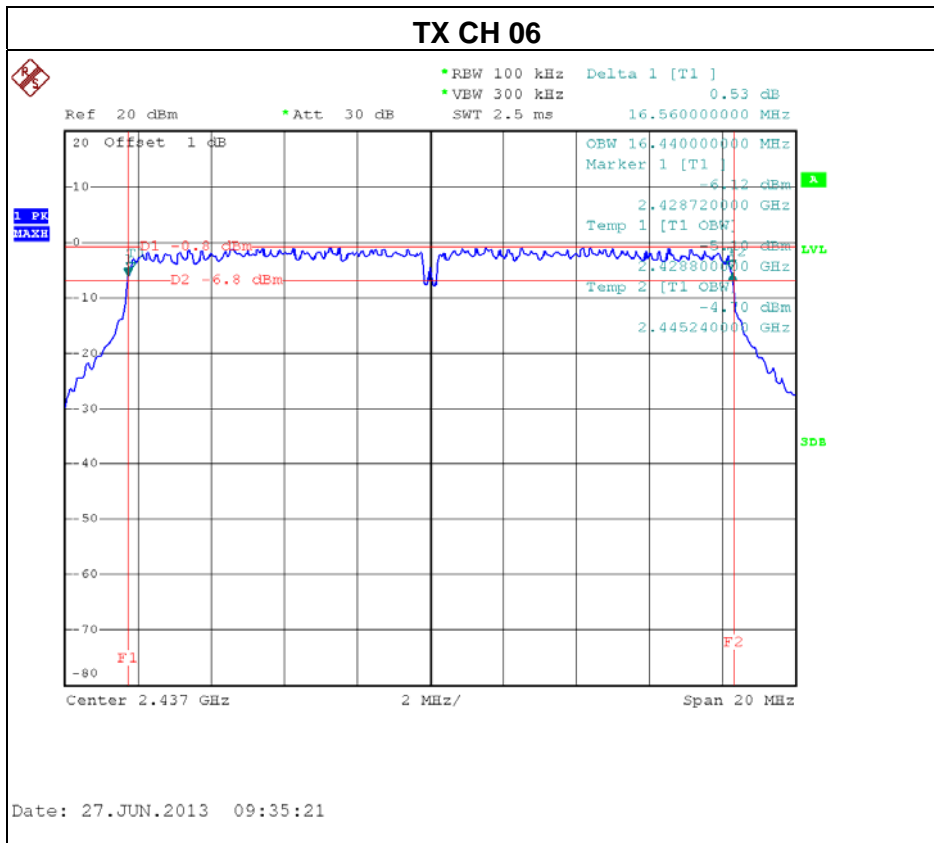




EUT :	WiFi dongle for USB storage and Power Bank	Model Name. :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Bandwidth (MHz)
CH01	2412	16.56
CH06	2437	16.56
CH11	2462	16.60

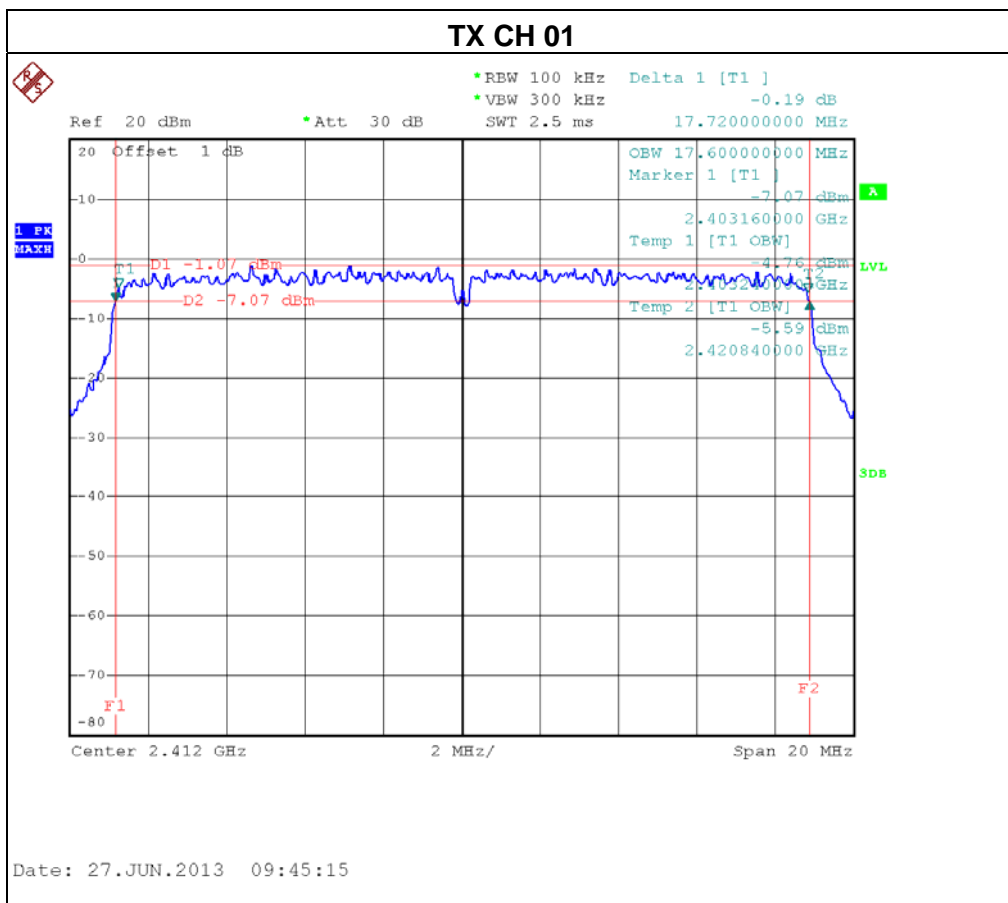


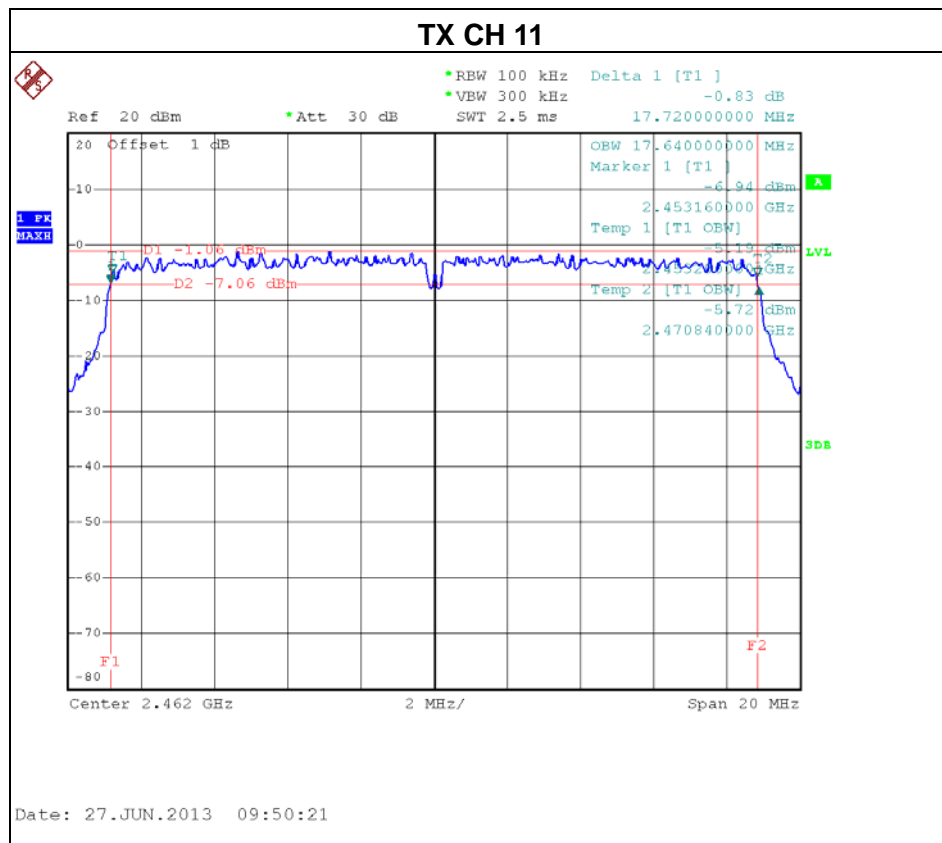
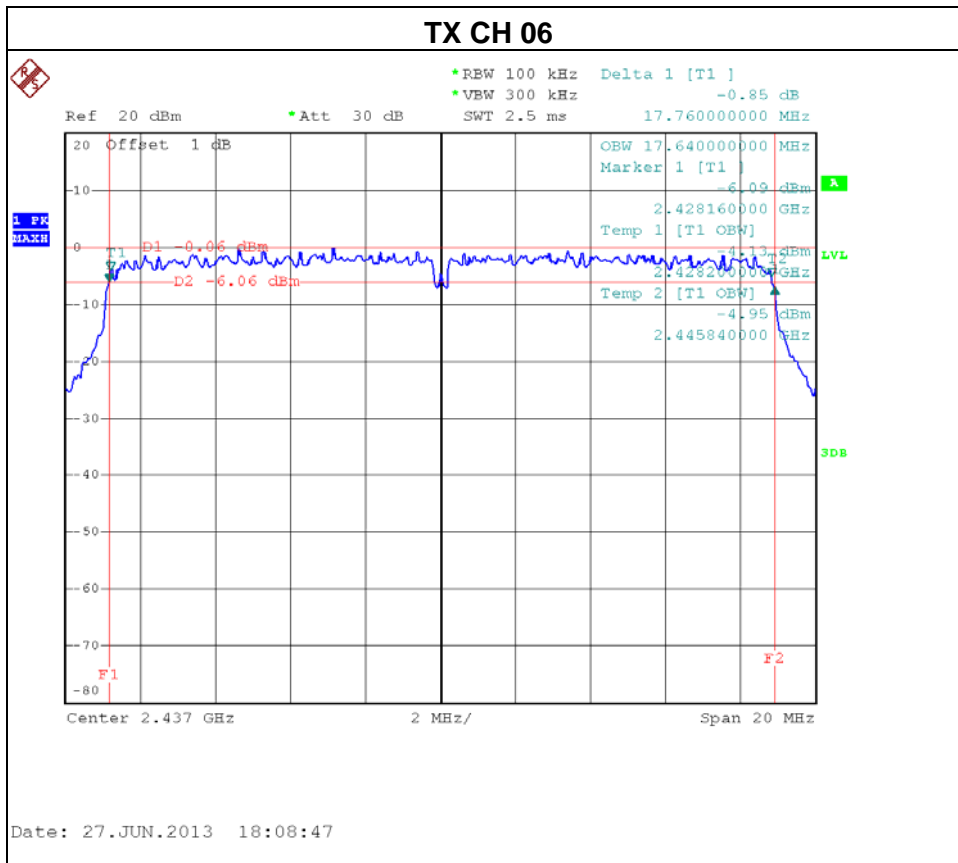




EUT :	WIFI dongle for USB storage and Power Bank	Model Name. :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N MODE -20MHz/ CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Bandwidth (MHz)
CH01	2412	17.72
CH06	2437	17.76
CH11	2462	17.72

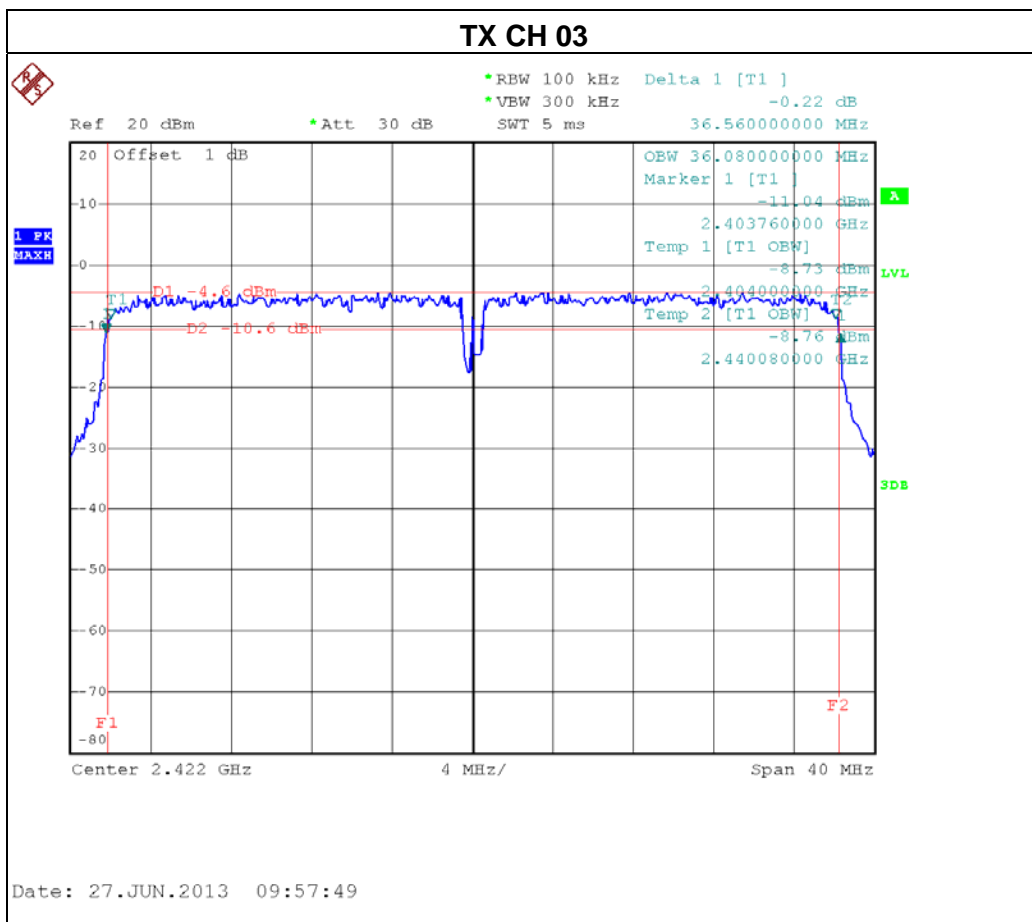


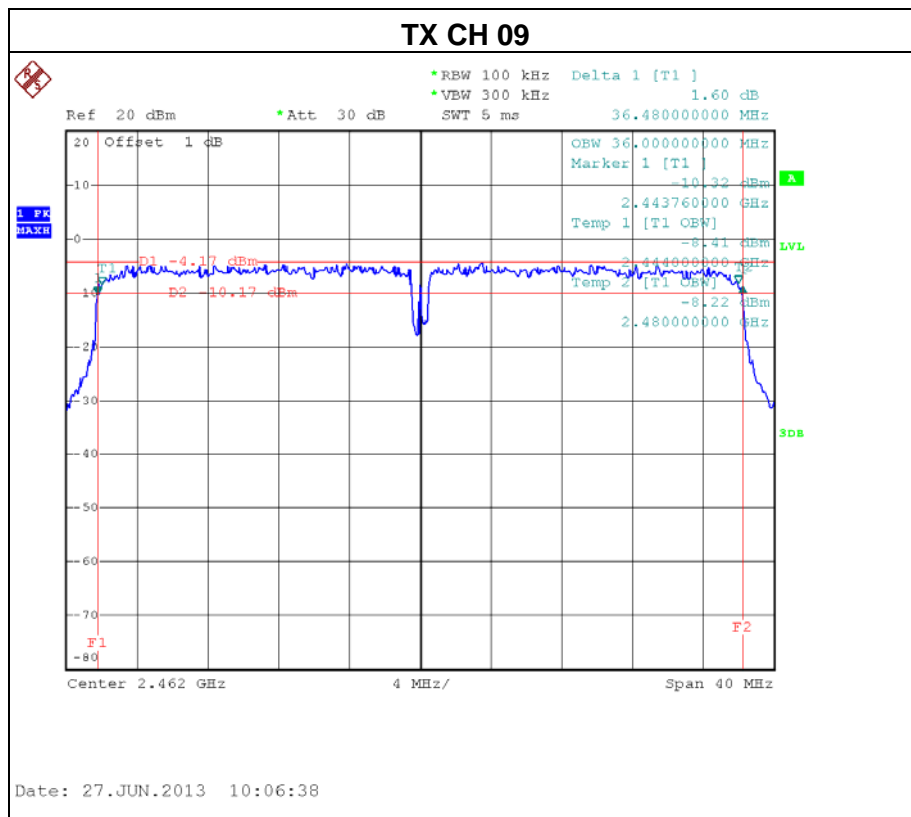
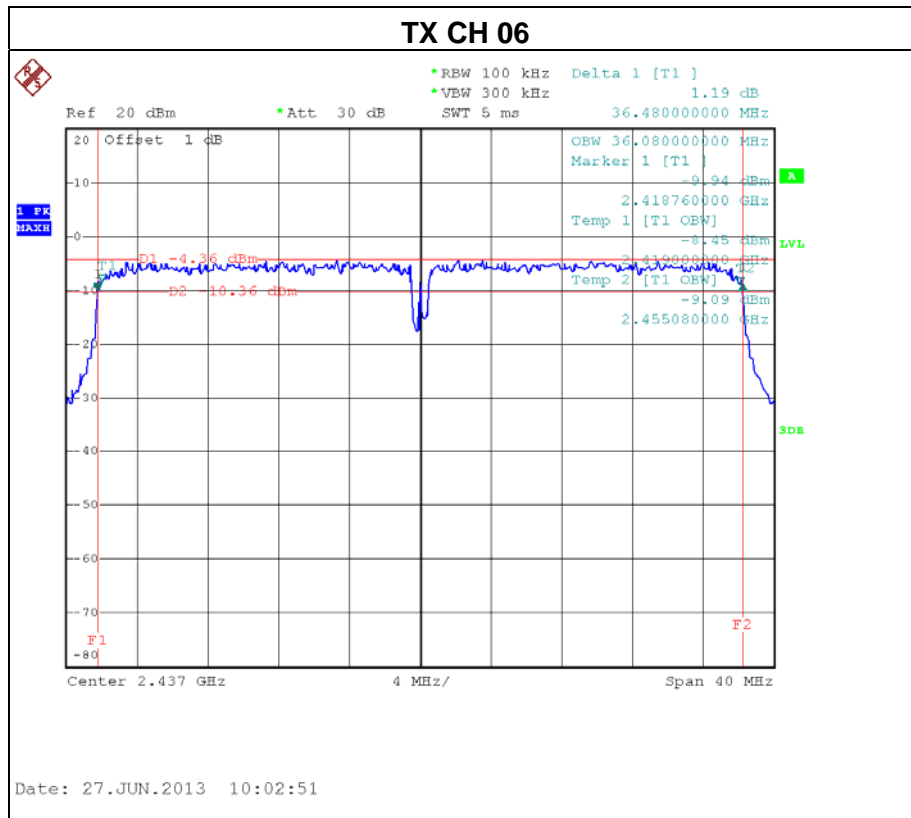




EUT :	WIFI dongle for USB storage and Power Bank	Model Name. :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N MODE -40MHz/ CH03, CH06, CH09		

Test Channel	Frequency (MHz)	Bandwidth (MHz)
CH03	2422	36.56
CH06	2437	36.48
CH09	2452	36.48







6. MAXIMUM OUTPUT POWER TEST

6.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	P-series Power meter	Agilent	N1911A	MY4510047 3	May.04.2013	Apr. 25, 2014
2	Wireband Power sensor	Agilent	N1921A	MY5110004 1	May.04.2013	Apr. 25, 2014

Remark: "N/A" denotes no model name, serial no. or calibration specified.

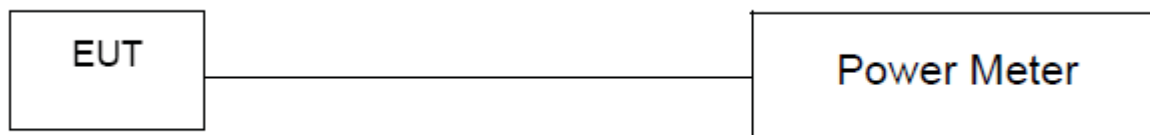
6.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

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. Transmit output power was measured while the host equipment supply voltage was varied from 85 % to 115 % of the nominal rated supply voltage. No change in transmit output power was observed.



6.1.6 TEST RESULTS

EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	18.12	30	1
CH06	2437 MHz	18.04	30	1
CH11	2462 MHz	17.43	30	1

Test Channel	Frequency (MHz)	AVG Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	16.05	30	1
CH06	2437 MHz	16.13	30	1
CH11	2462 MHz	15.44	30	1

EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	21.45	30	1
CH06	2437 MHz	21.35	30	1
CH11	2462 MHz	20.72	30	1

Test Channel	Frequency (MHz)	AVG Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	13.23	30	1
CH06	2437 MHz	13.12	30	1
CH11	2462 MHz	12.83	30	1



EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	21.36	30	1
CH06	2437 MHz	20.94	30	1
CH11	2462 MHz	19.81	30	1

Test Channel	Frequency (MHz)	AVG Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412 MHz	13.01	30	1
CH06	2437 MHz	13.11	30	1
CH11	2462 MHz	12.84	30	1

EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE /CH03, CH06, CH09		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH03	2422 MHz	21.25	30	1
CH06	2437 MHz	21.33	30	1
CH09	2452 MHz	20.54	30	1

Test Channel	Frequency (MHz)	AVG Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH03	2422 MHz	13.35	30	1
CH06	2437 MHz	13.26	30	1
CH09	2452 MHz	12.93	30	1



7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 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

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 17.2012	Nov. 16.2013

Remark: "N/A" denotes no model name, serial no. or calibration specified.

7.1.2 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=300KHz, Sweep time = 10 ms.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

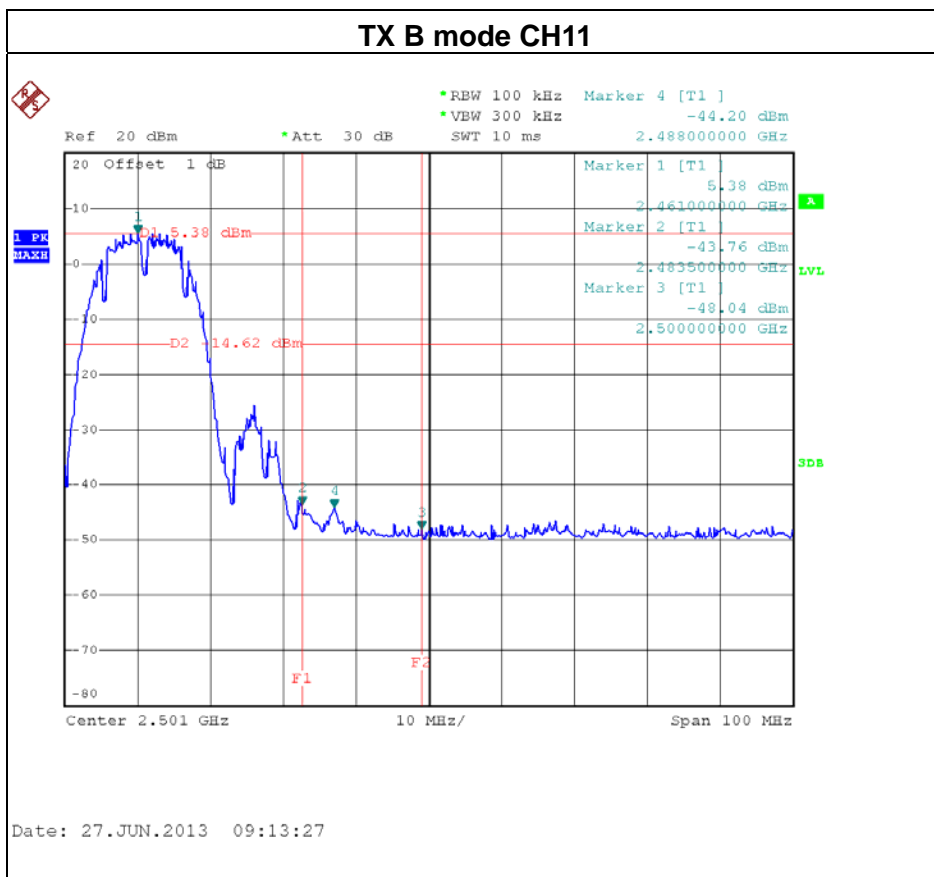
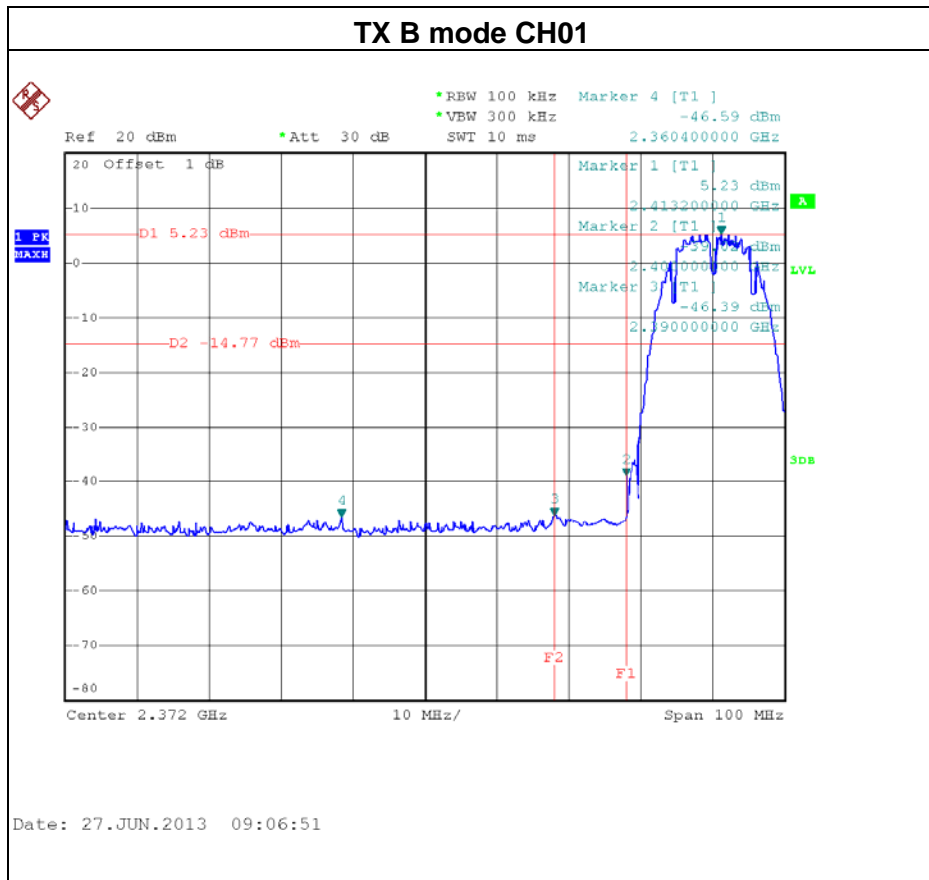
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

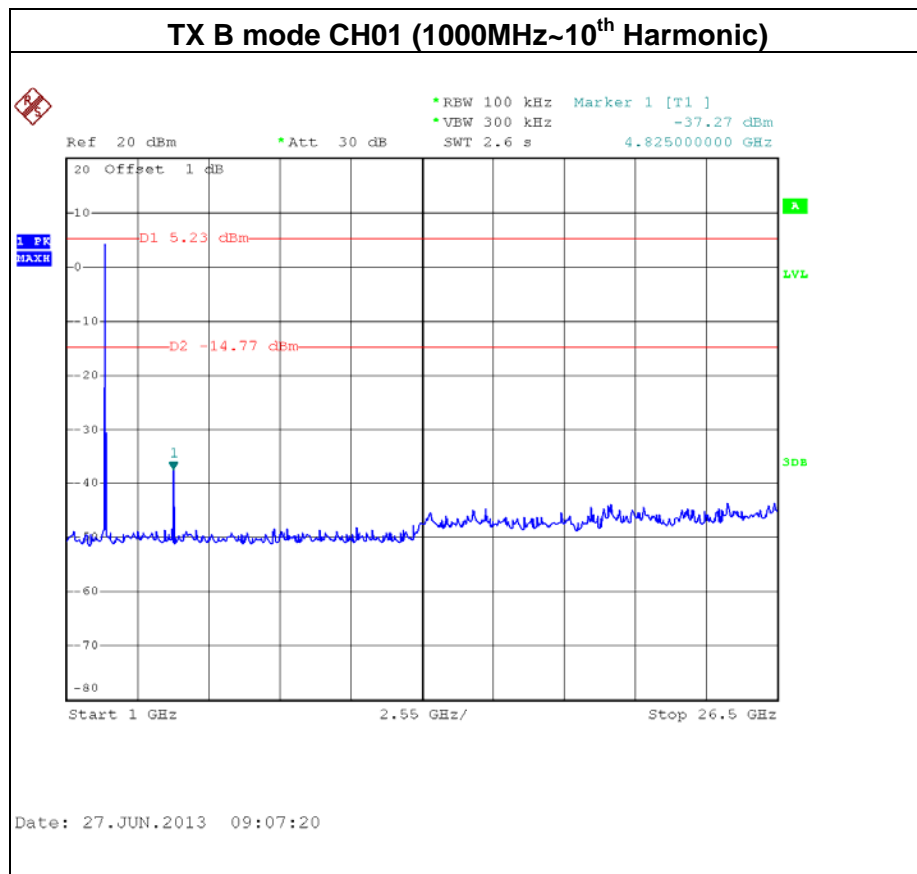
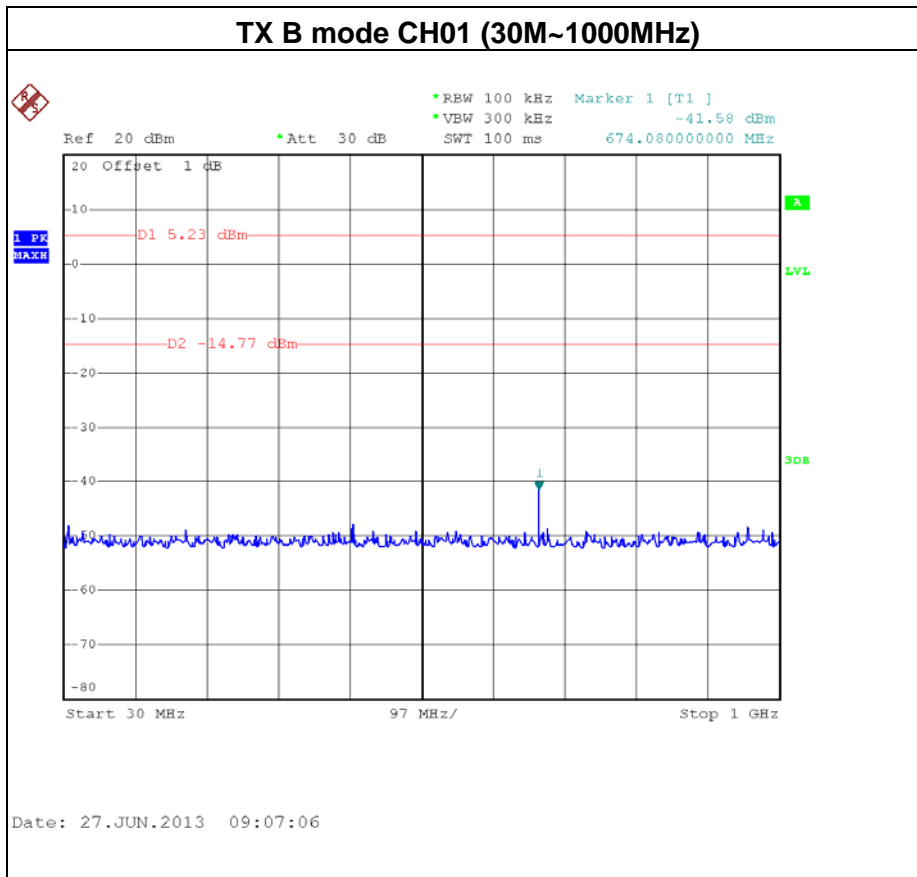


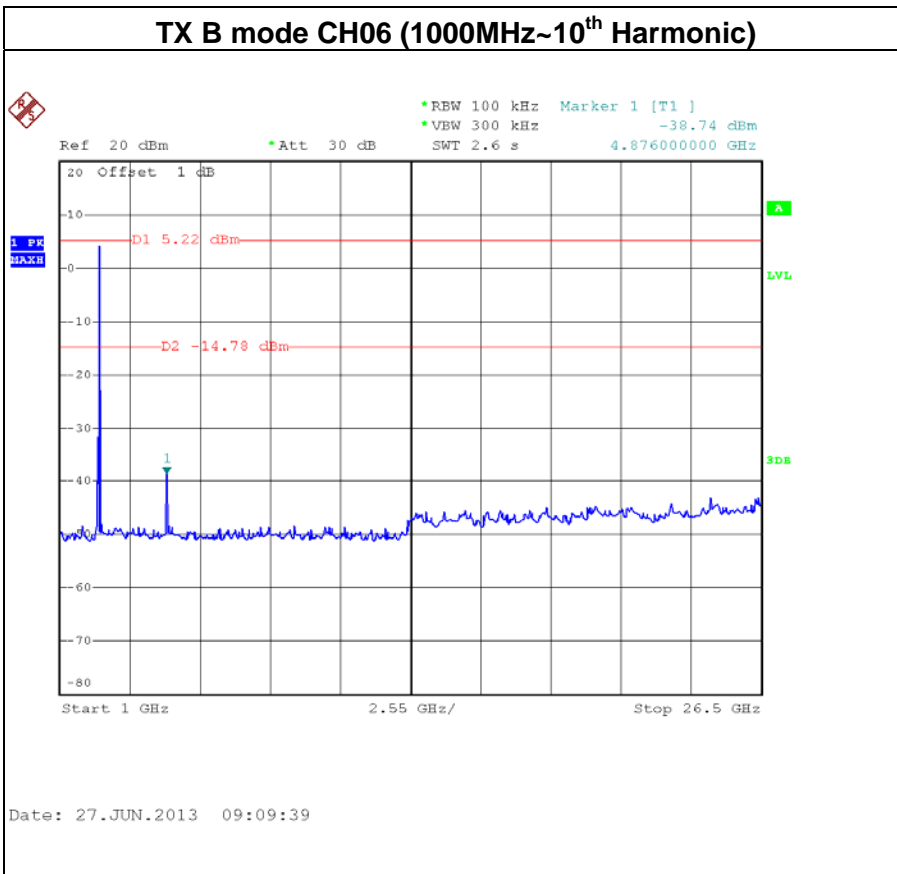
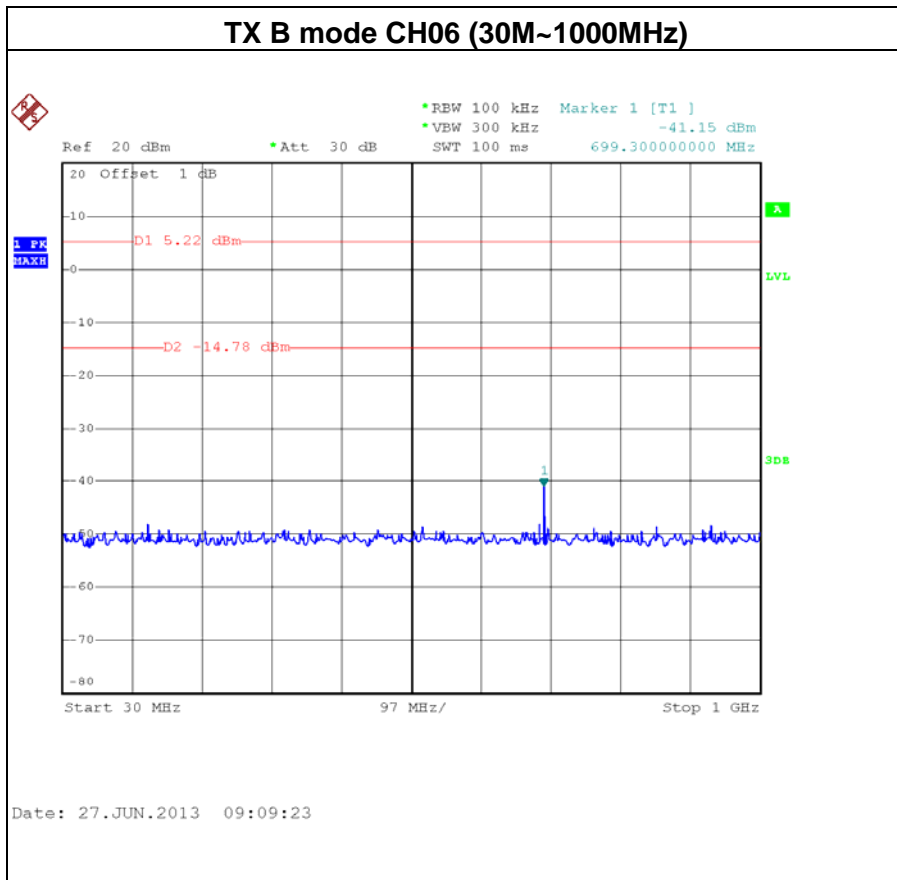
7.1.6 TEST RESULTS

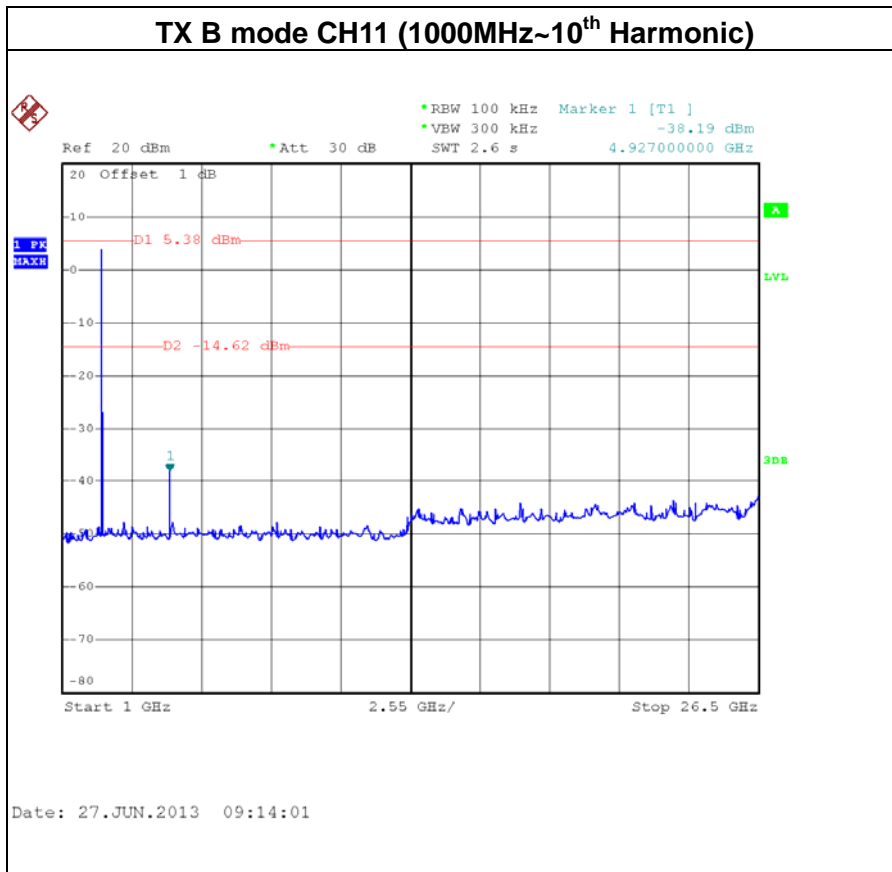
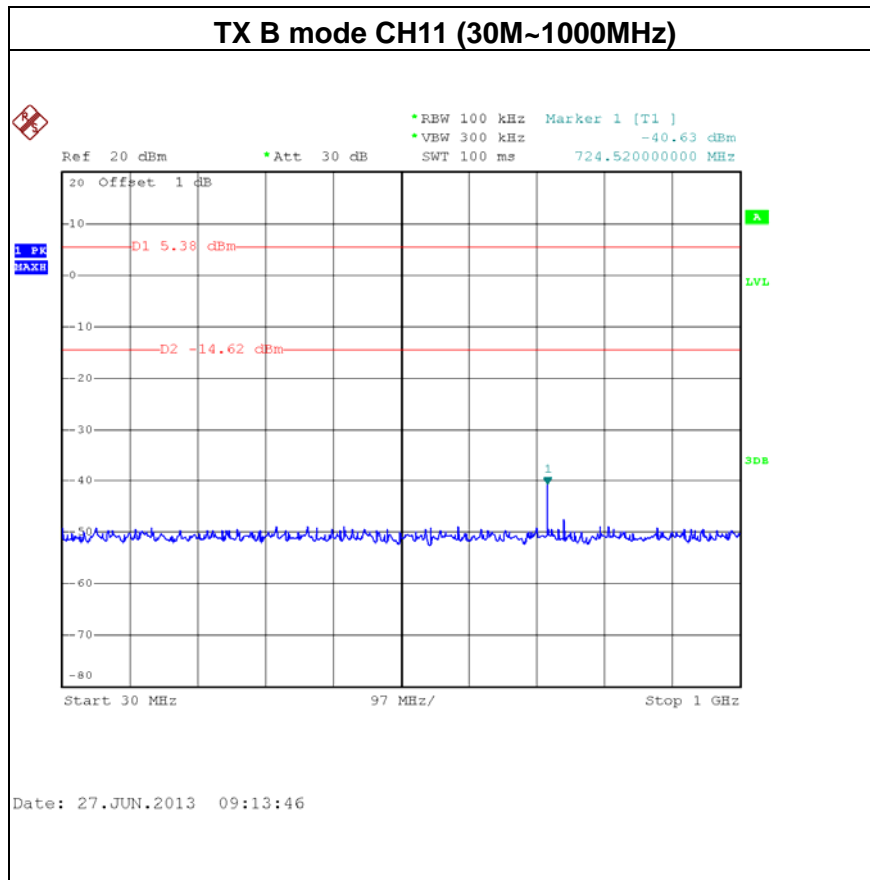
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE /CH01, CH06 , CH11		

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	-39.02	2483.50	-43.76
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			









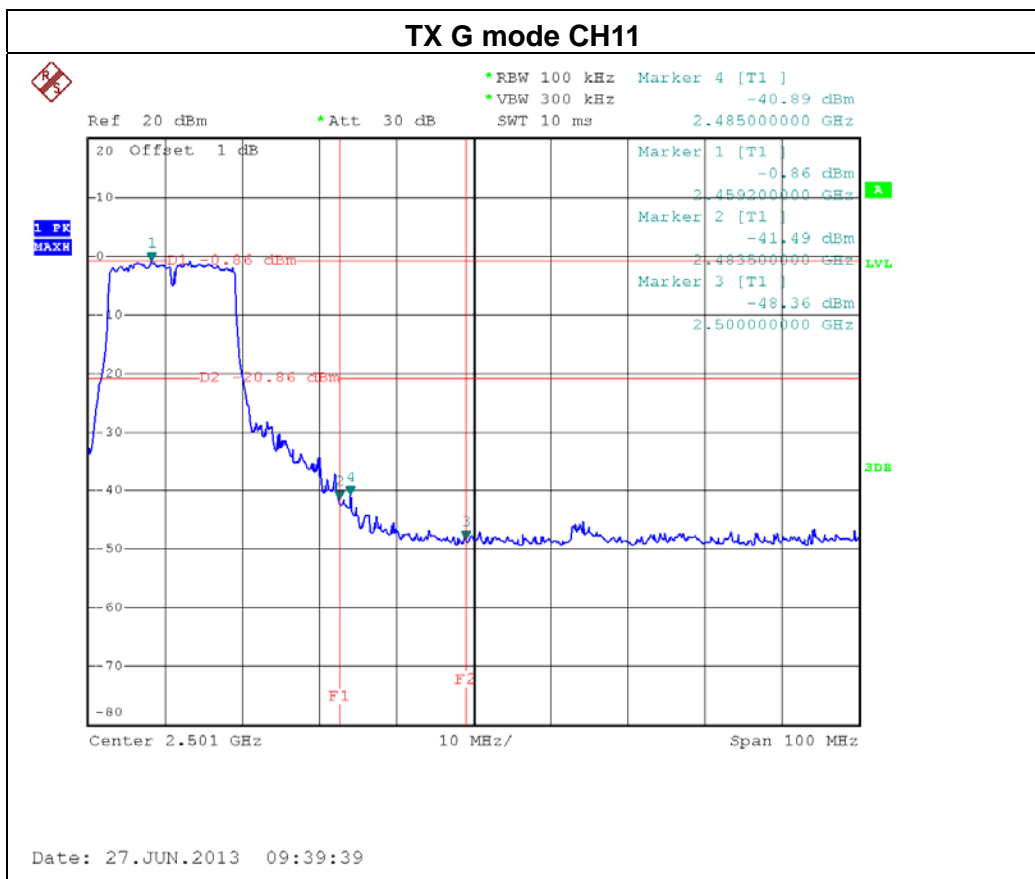
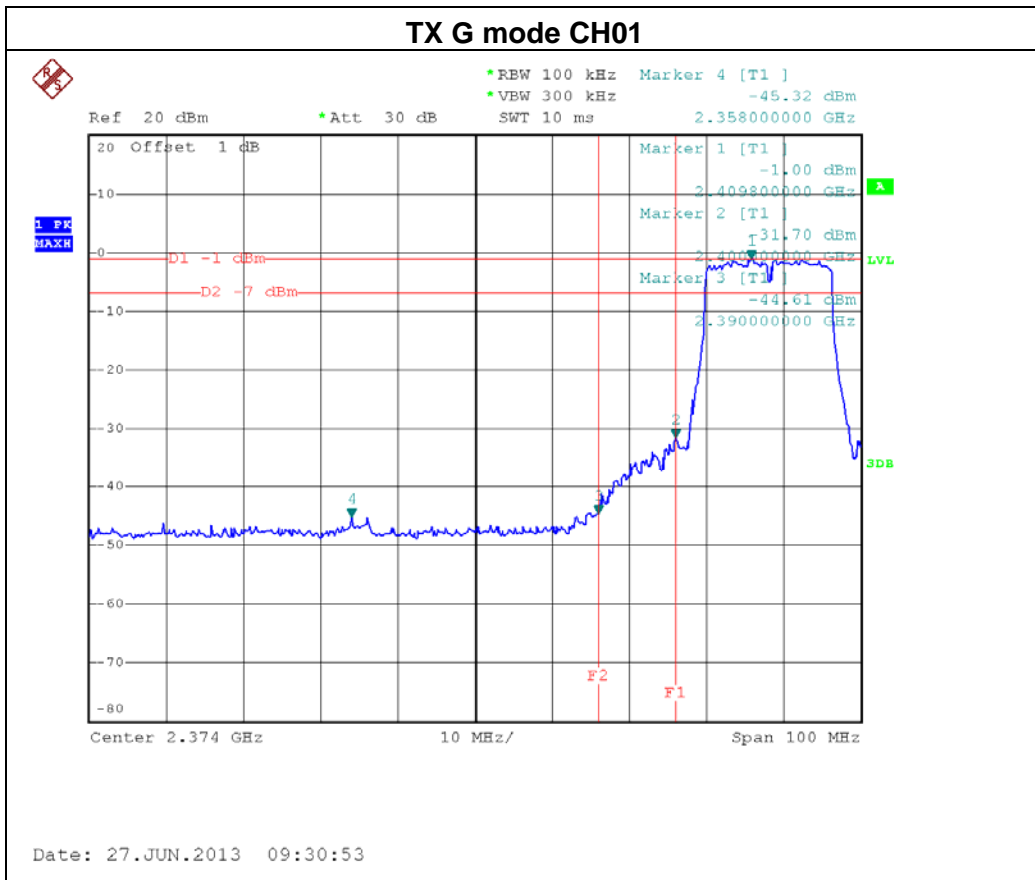


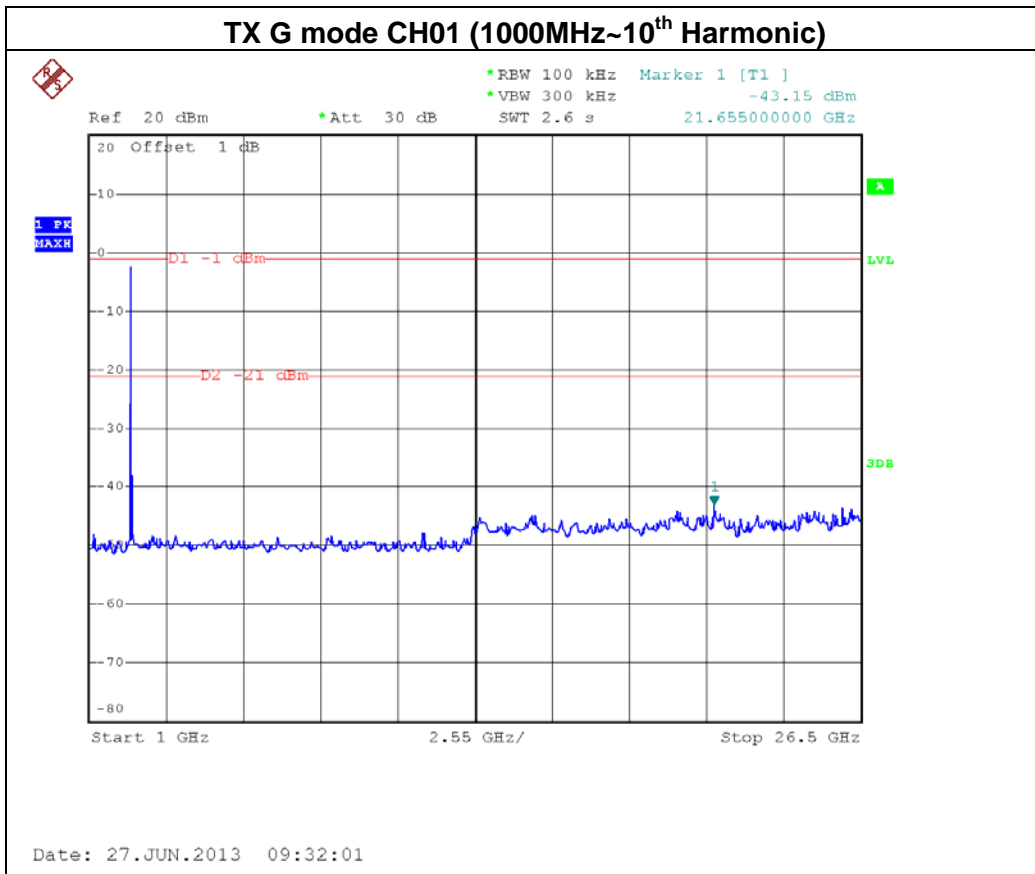
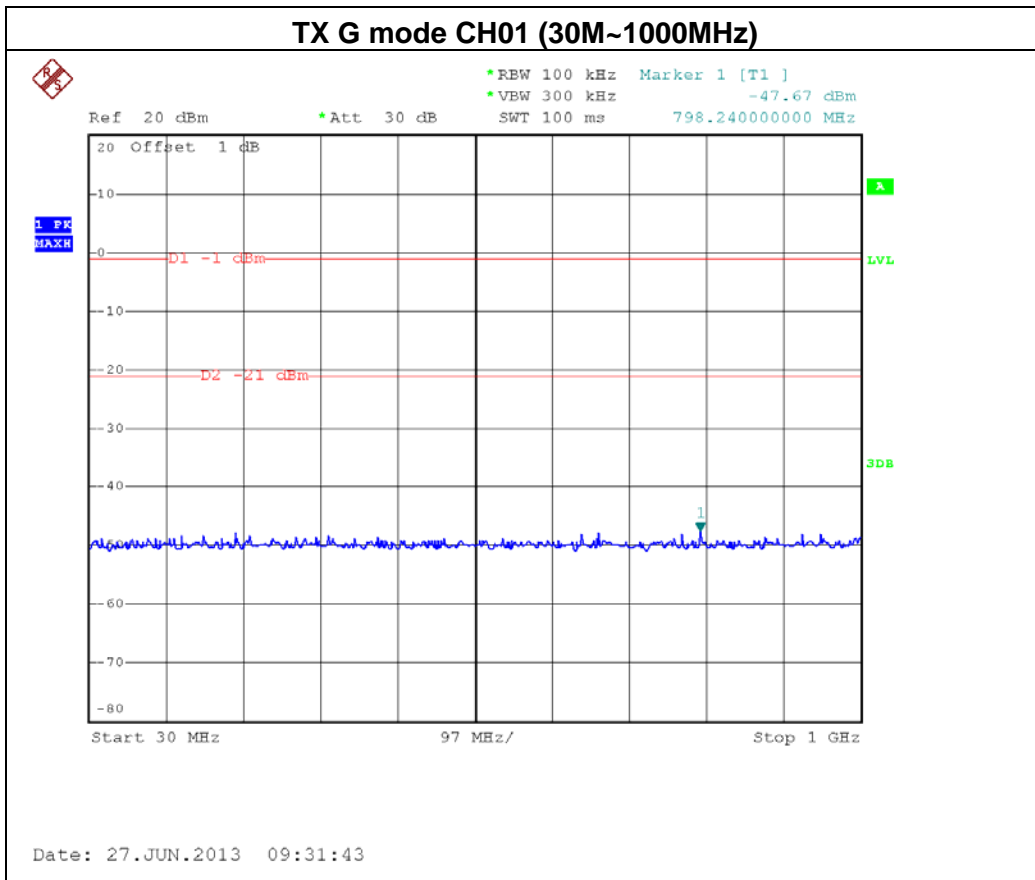
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE / CH01, CH06 , CH11		

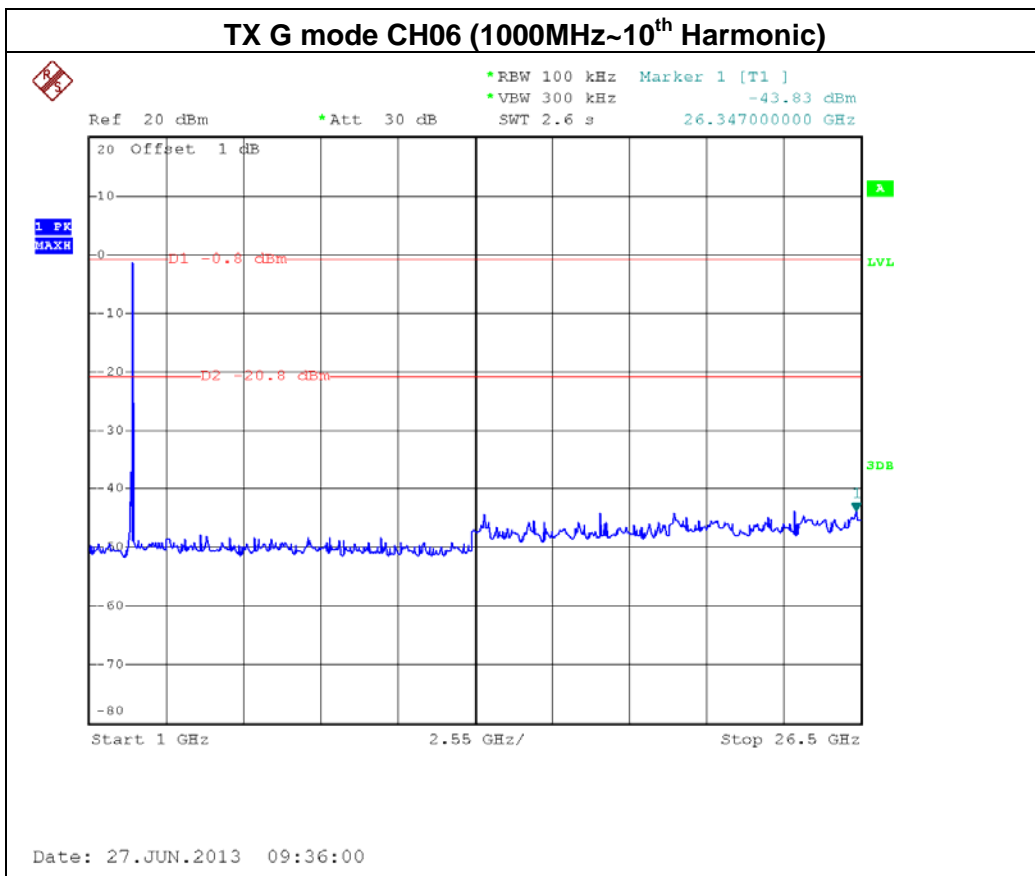
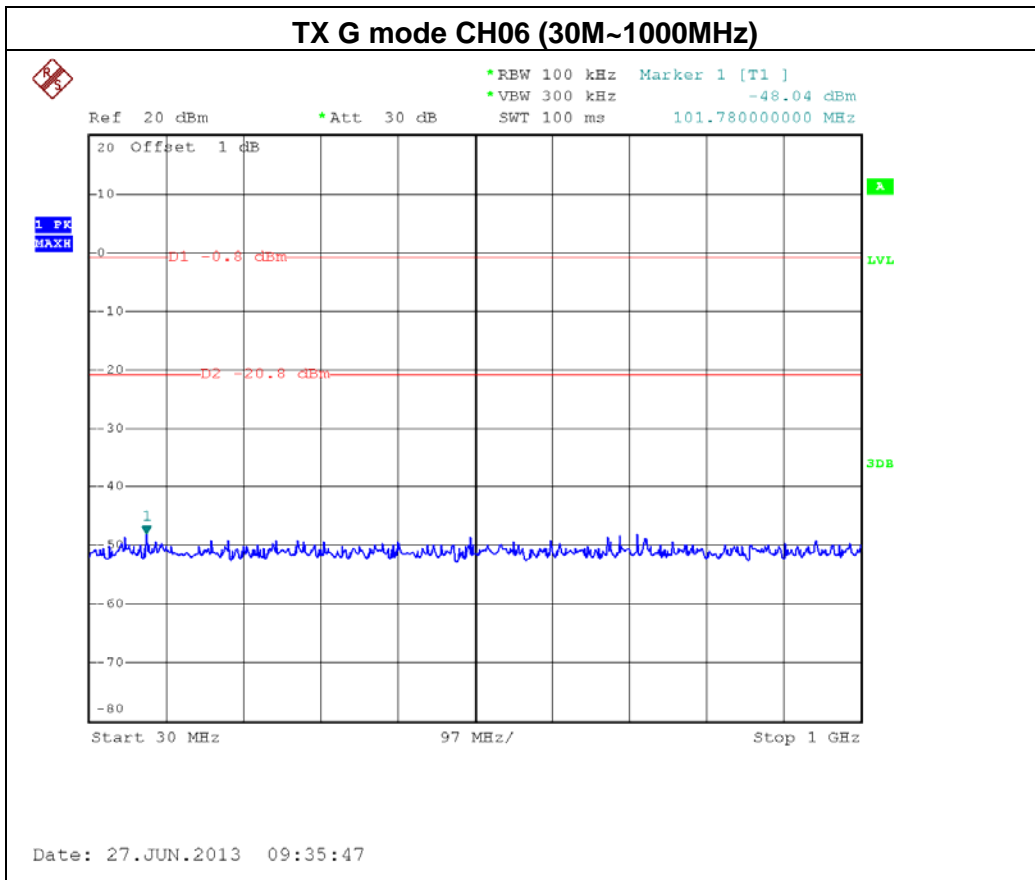
Channel of Worst Data: CH011			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-31.70	2485.00	-40.89

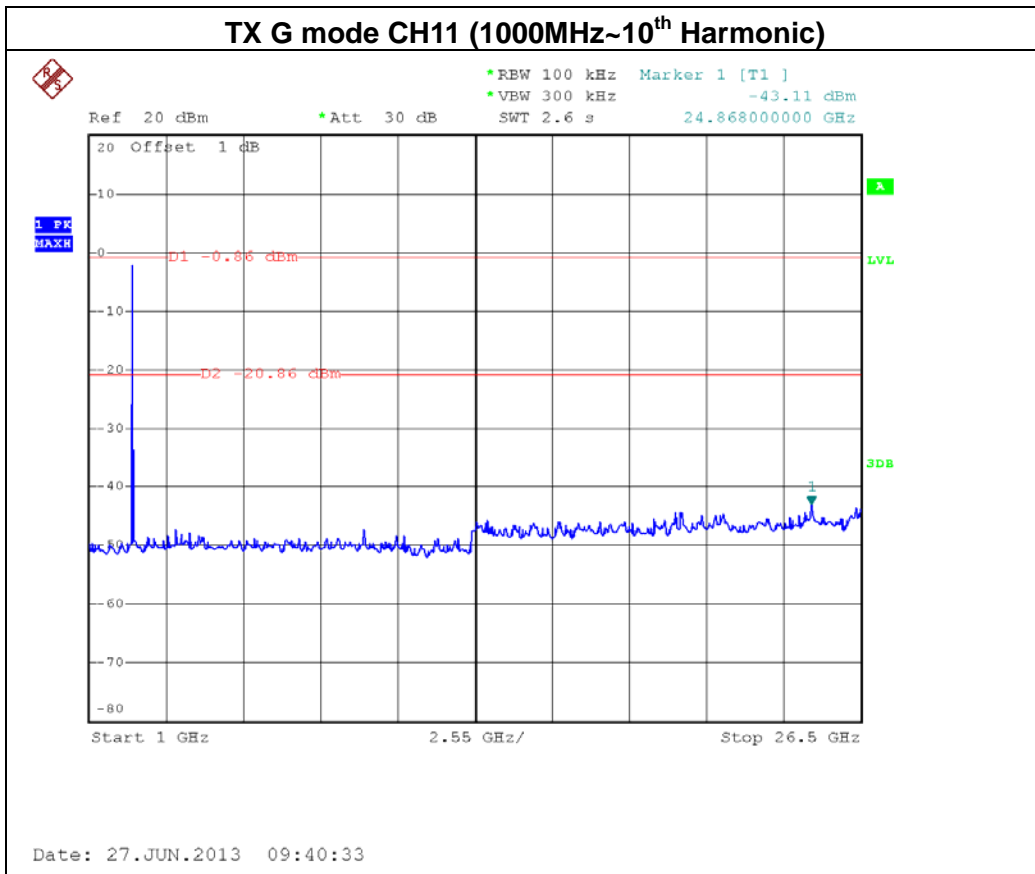
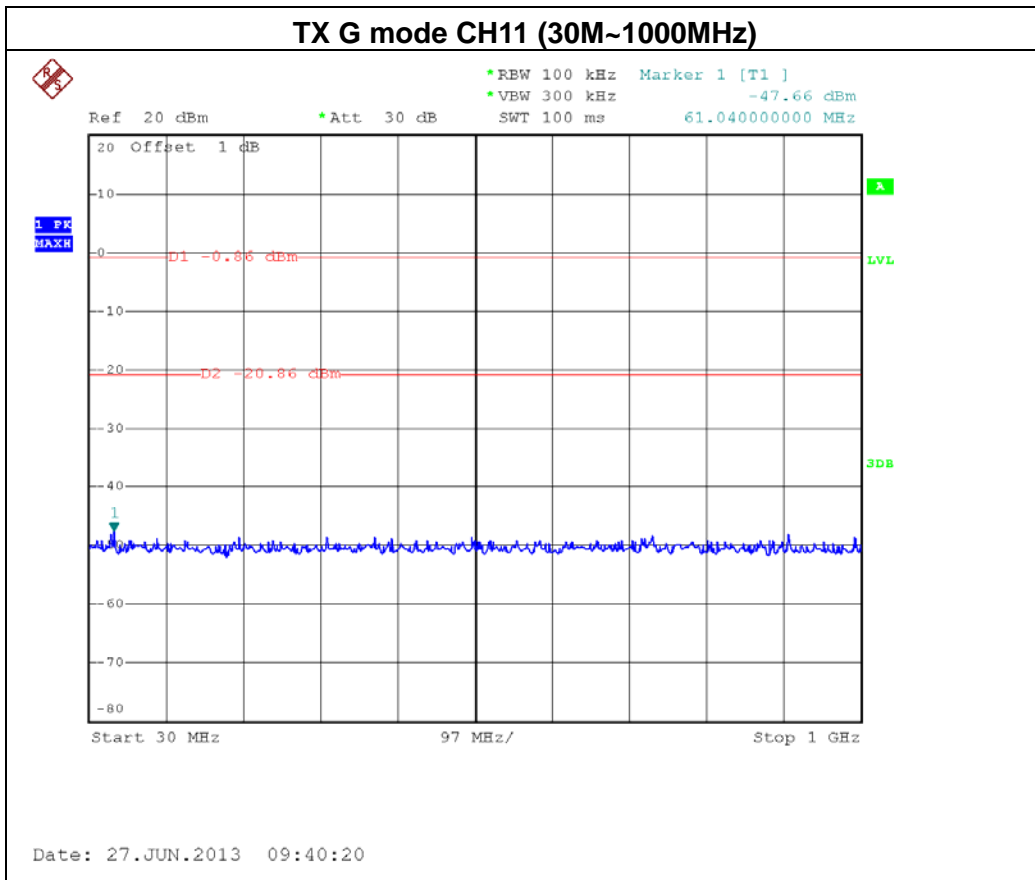
Result

In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.





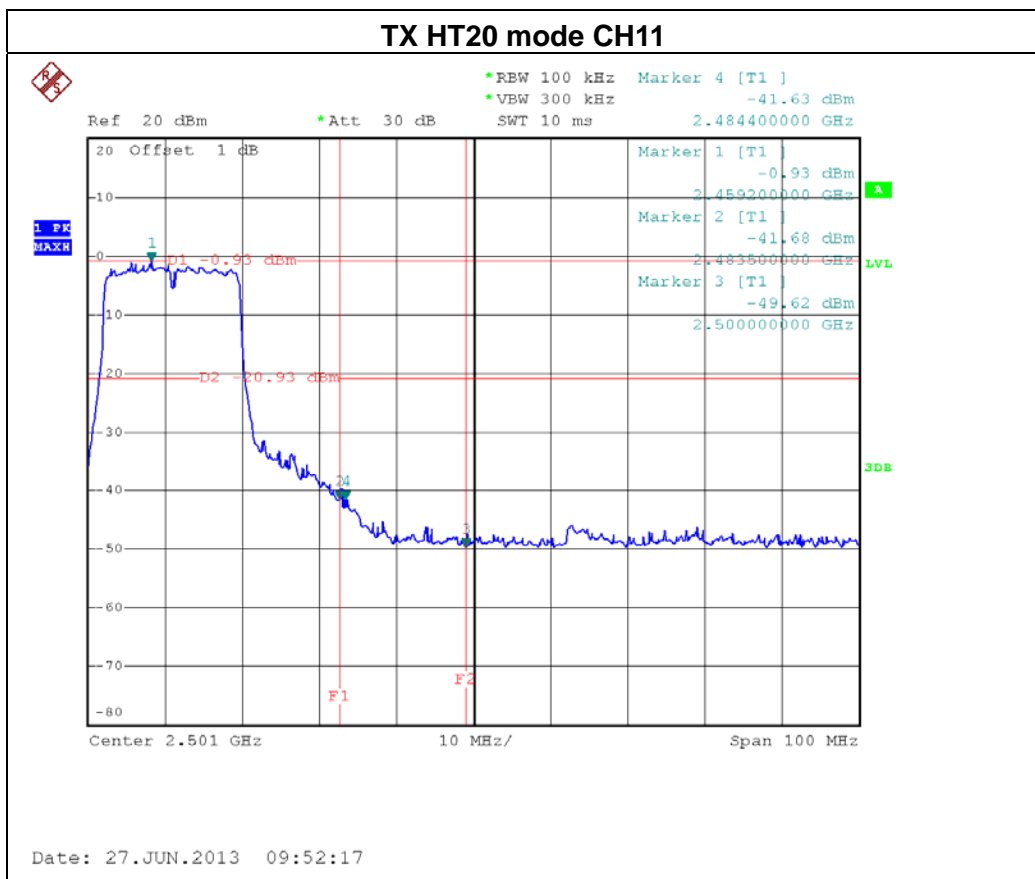
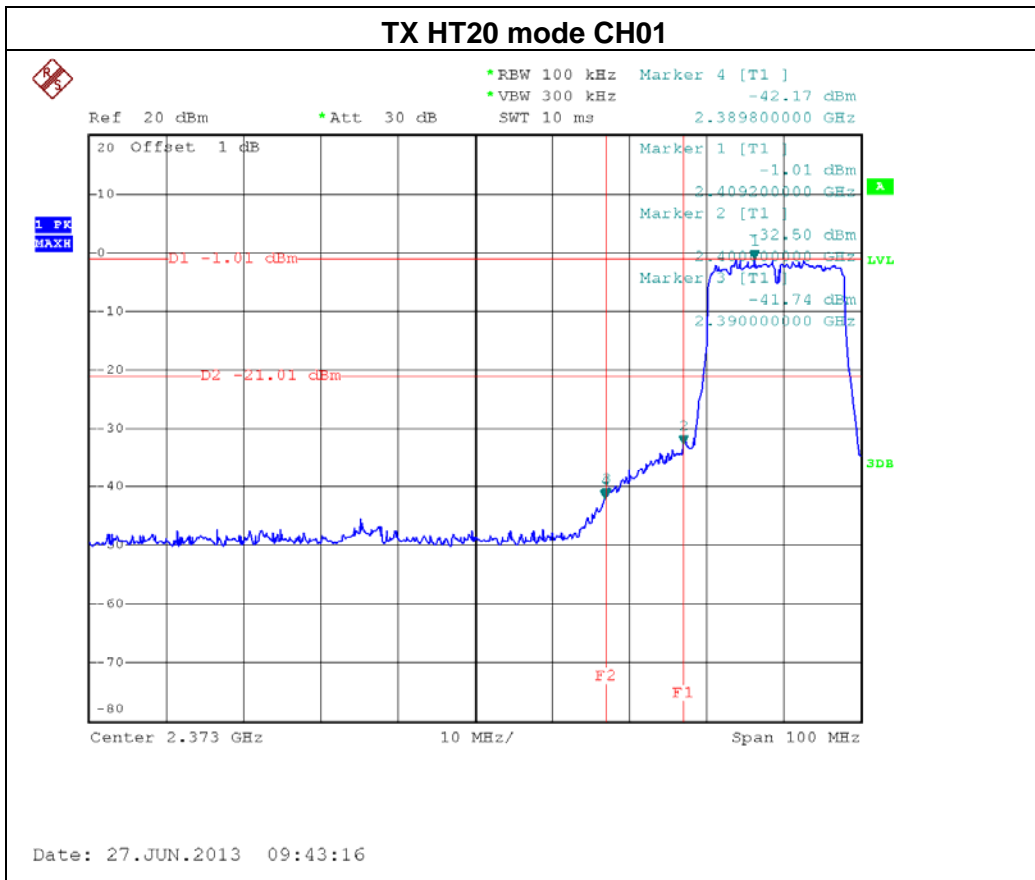


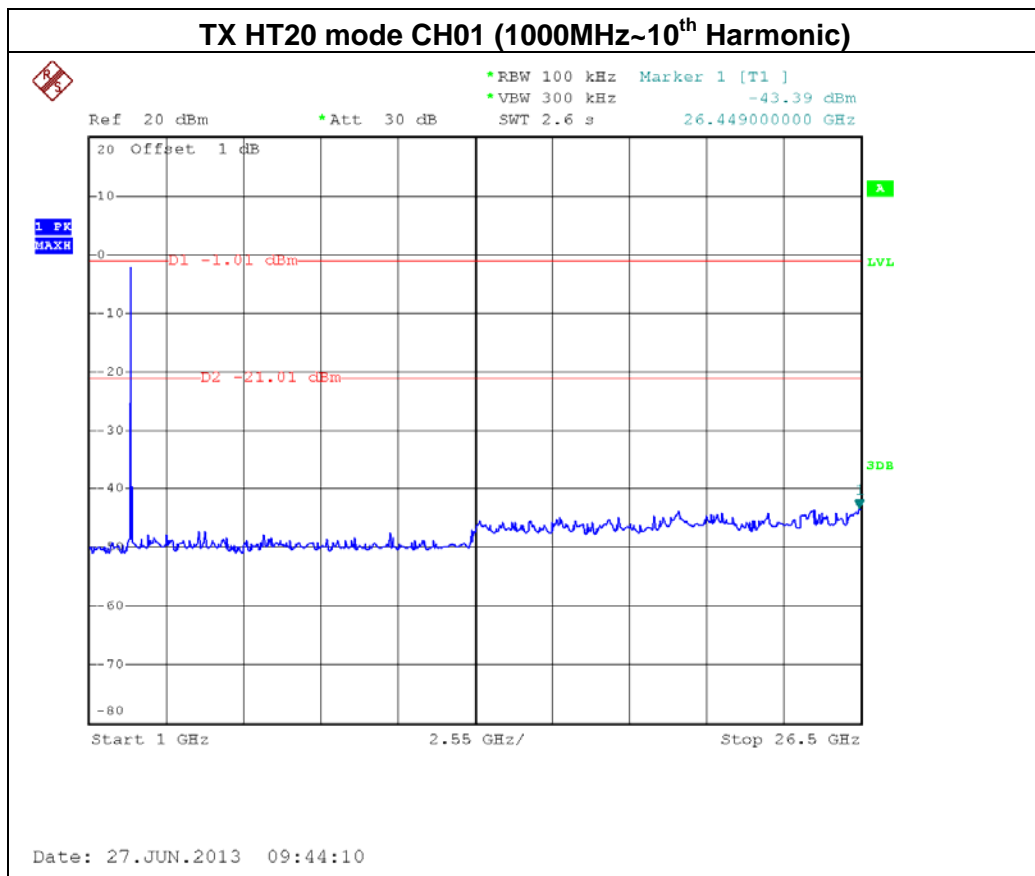
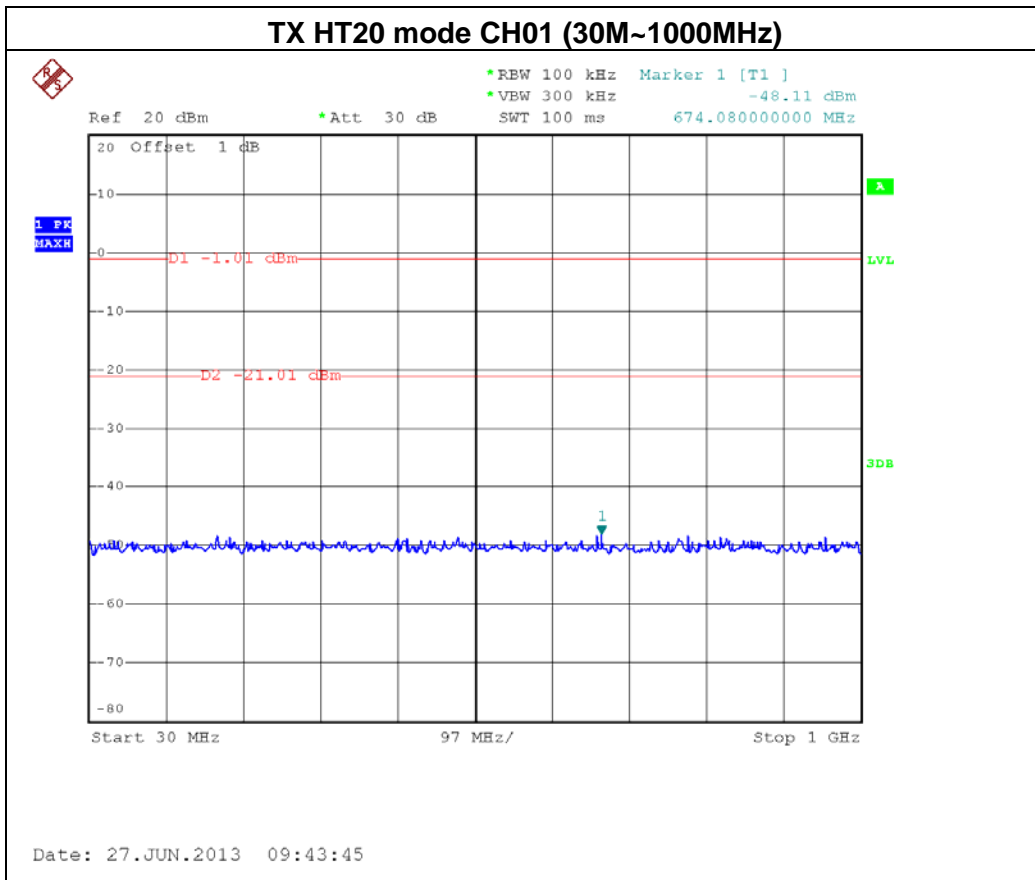


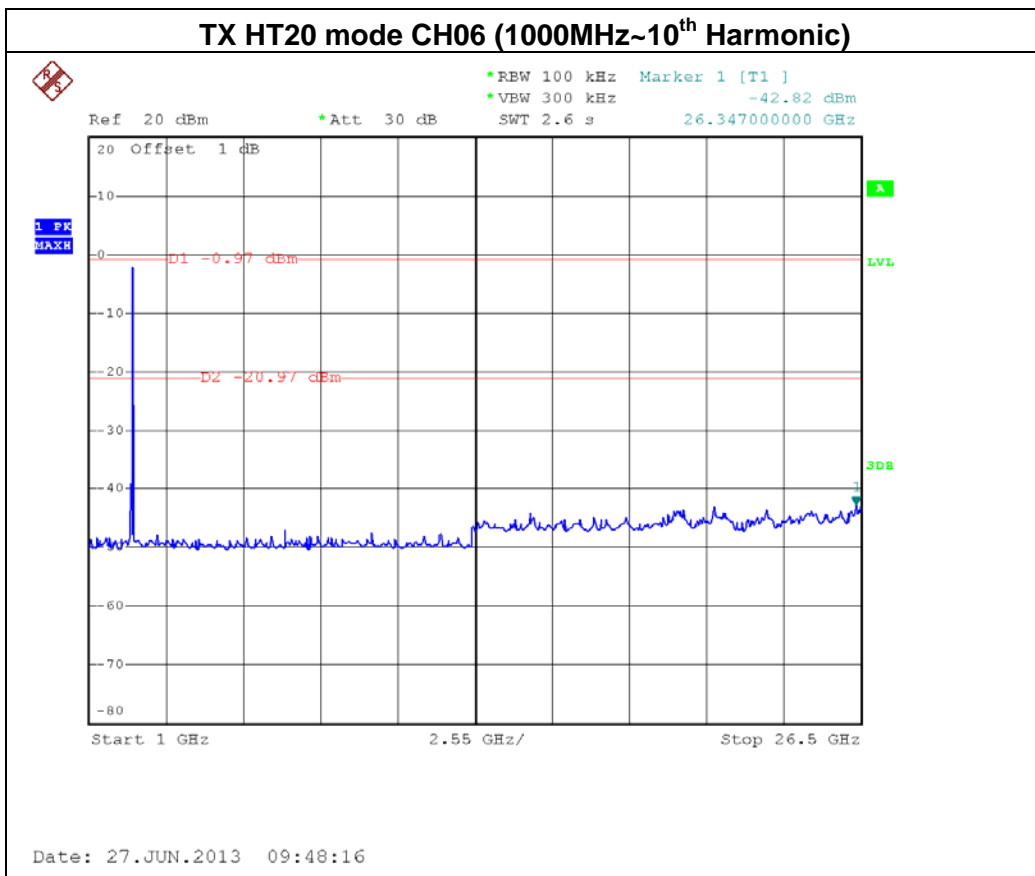
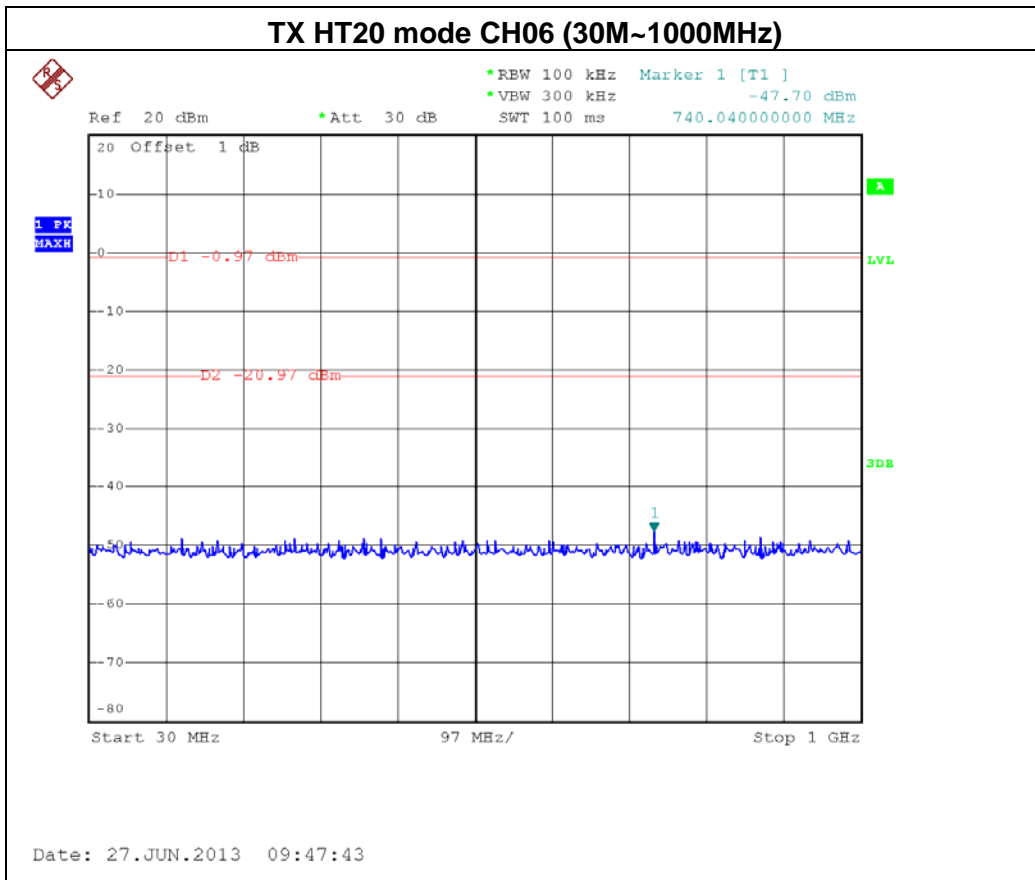


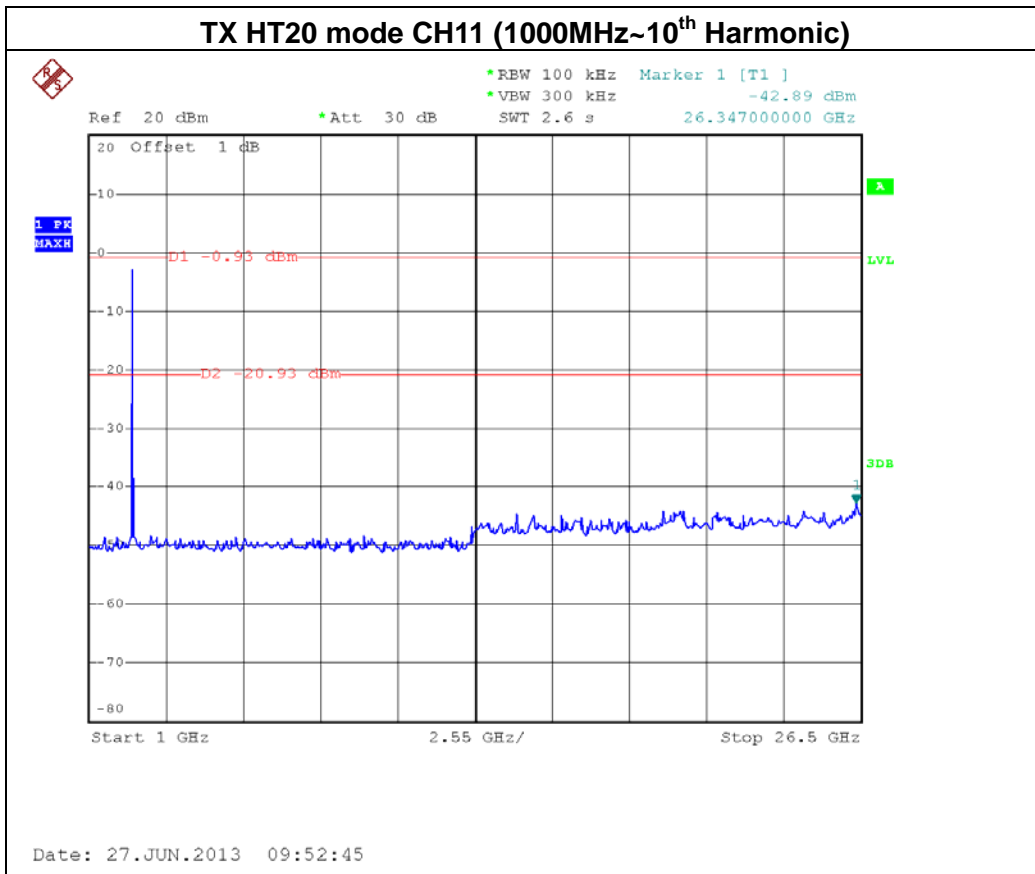
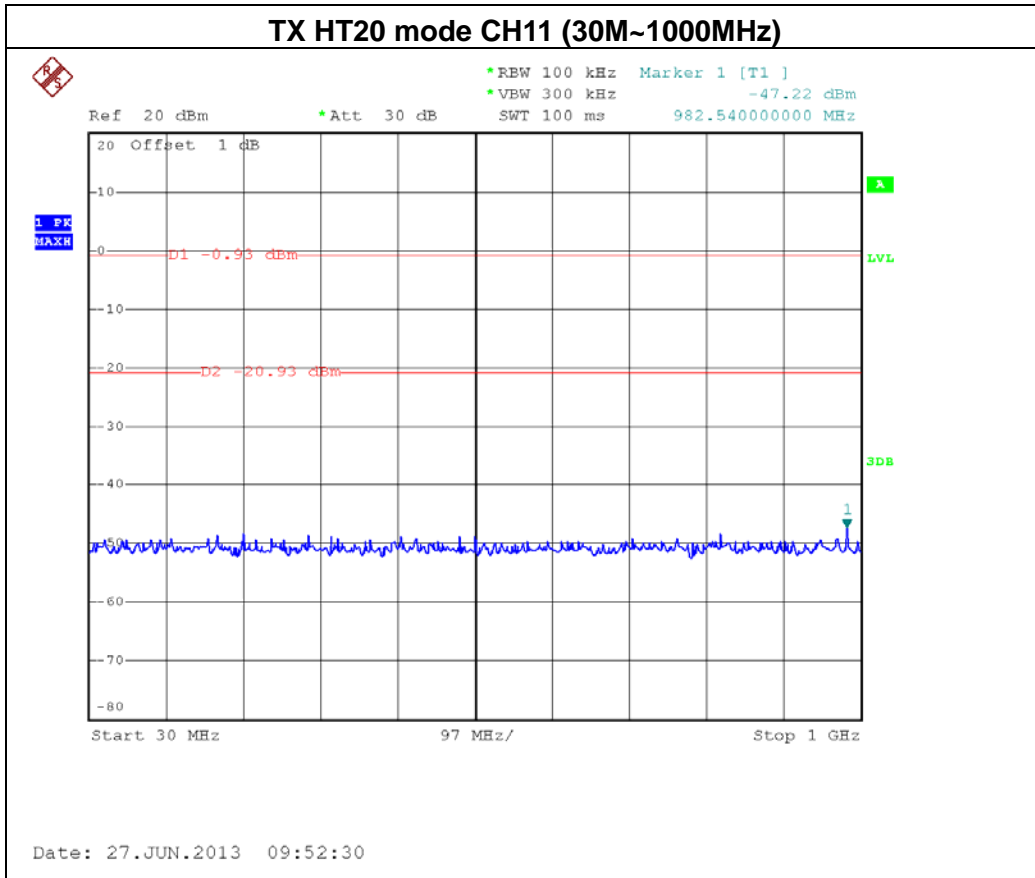
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-20M MODE / CH01, CH06 , CH11		

Channel of Worst Data: CH011			
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	-32.50	2484.40	-41.63
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			









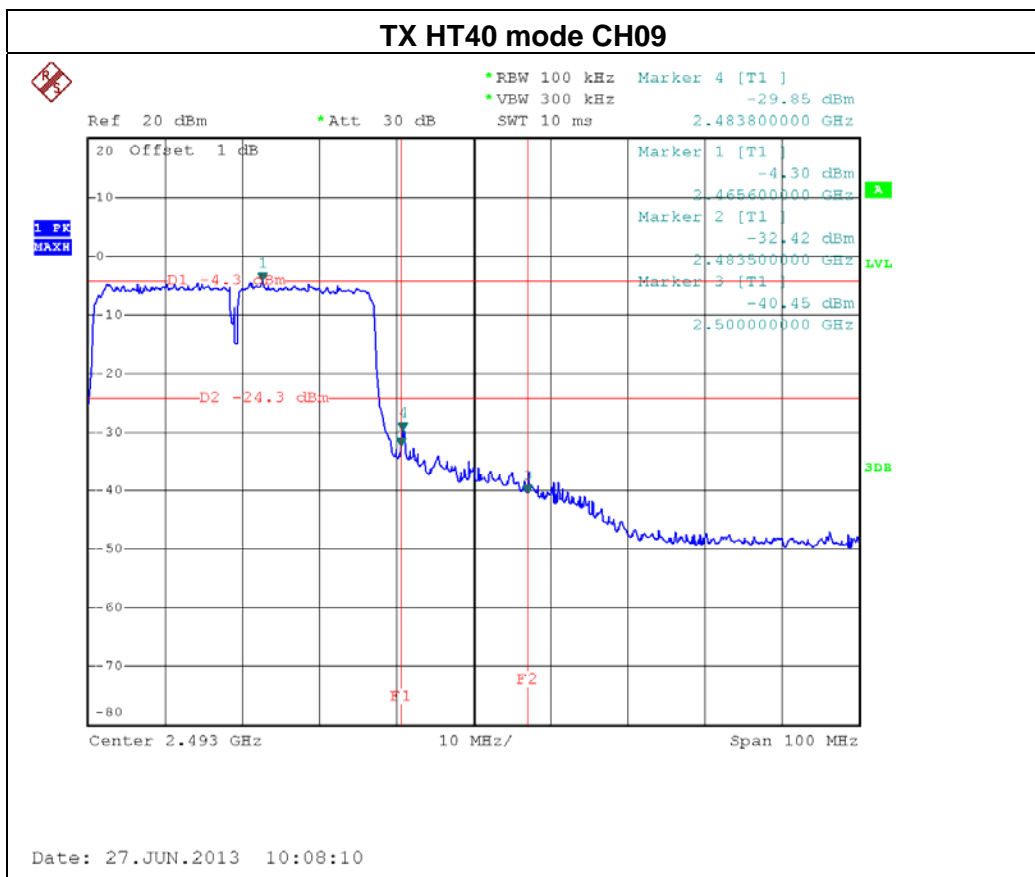
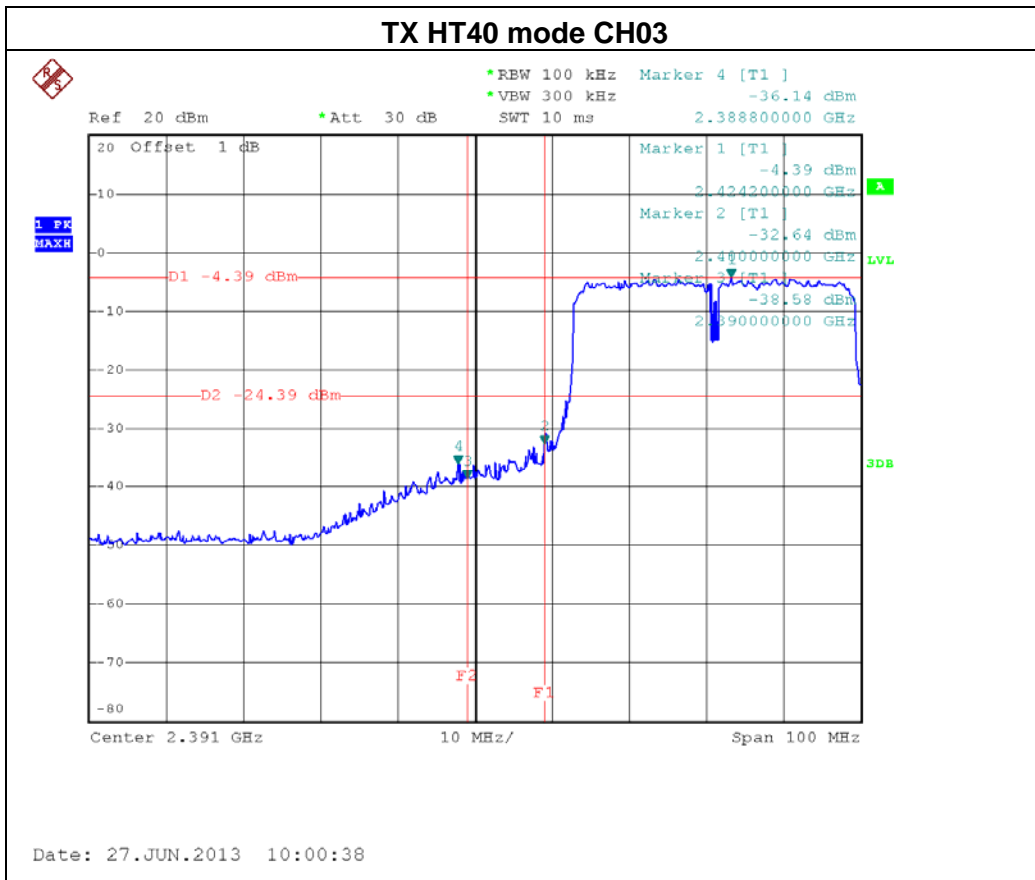


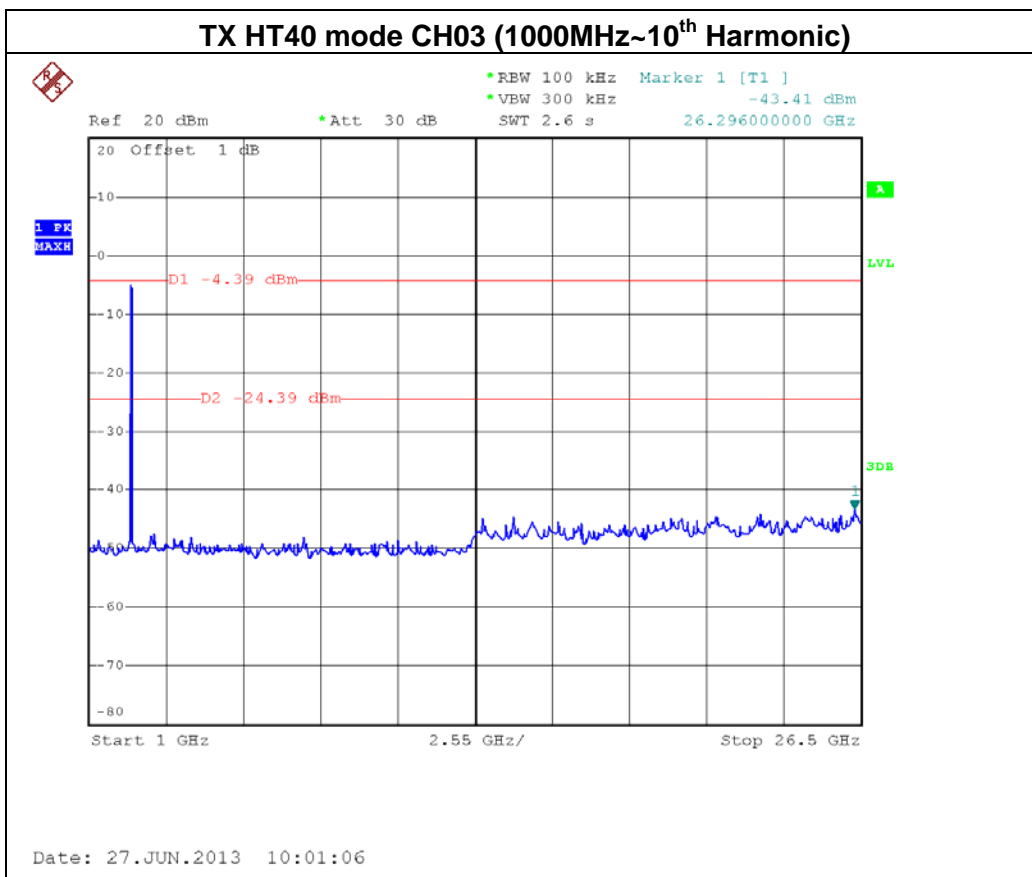
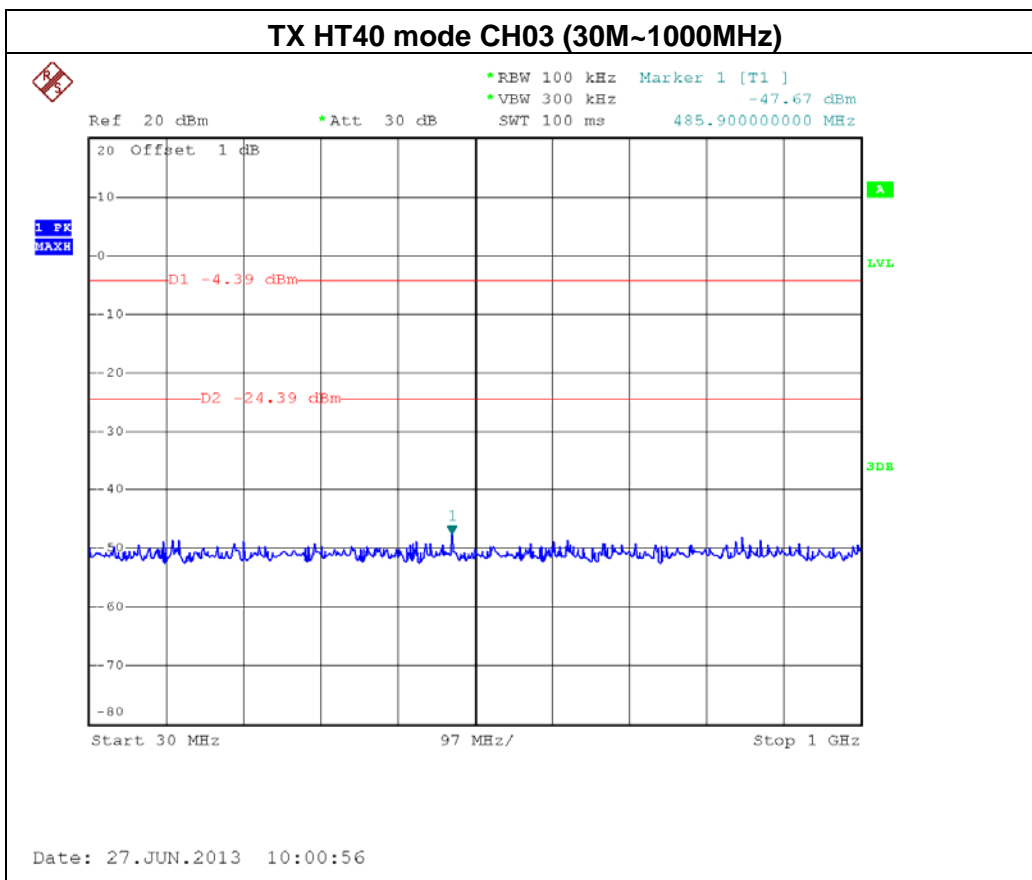
EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N-40M MODE /CH03, CH06, CH09		

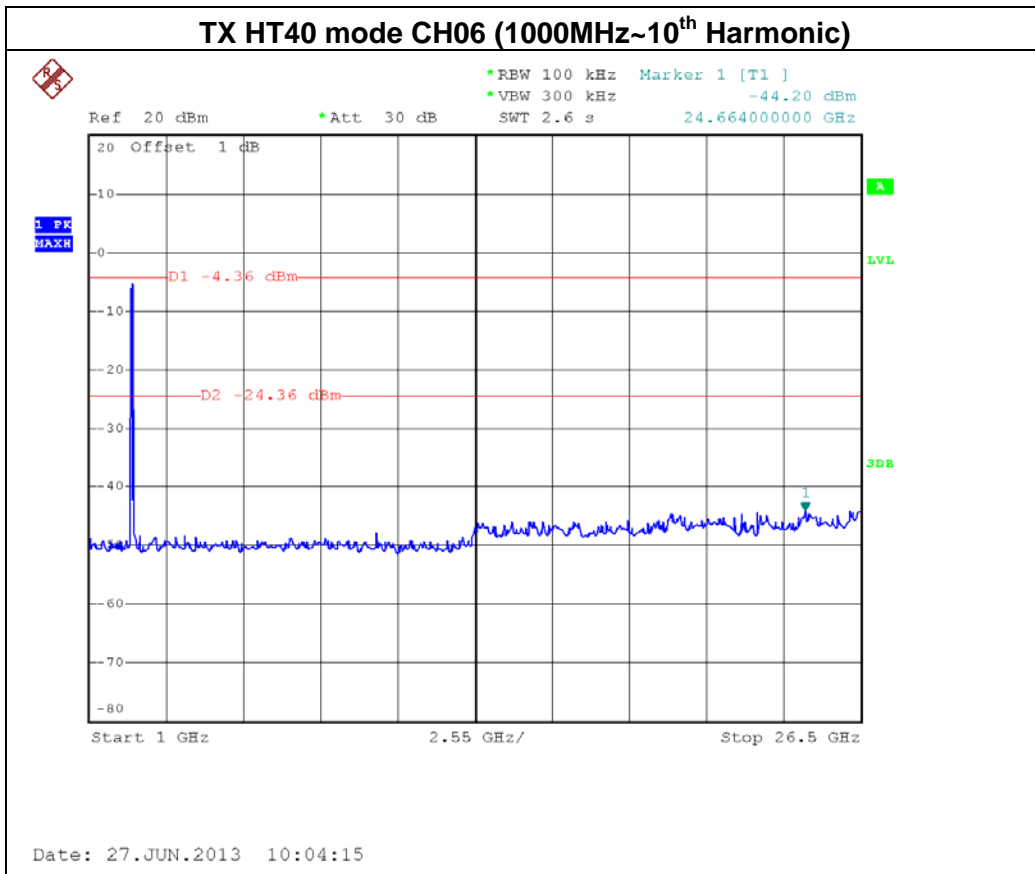
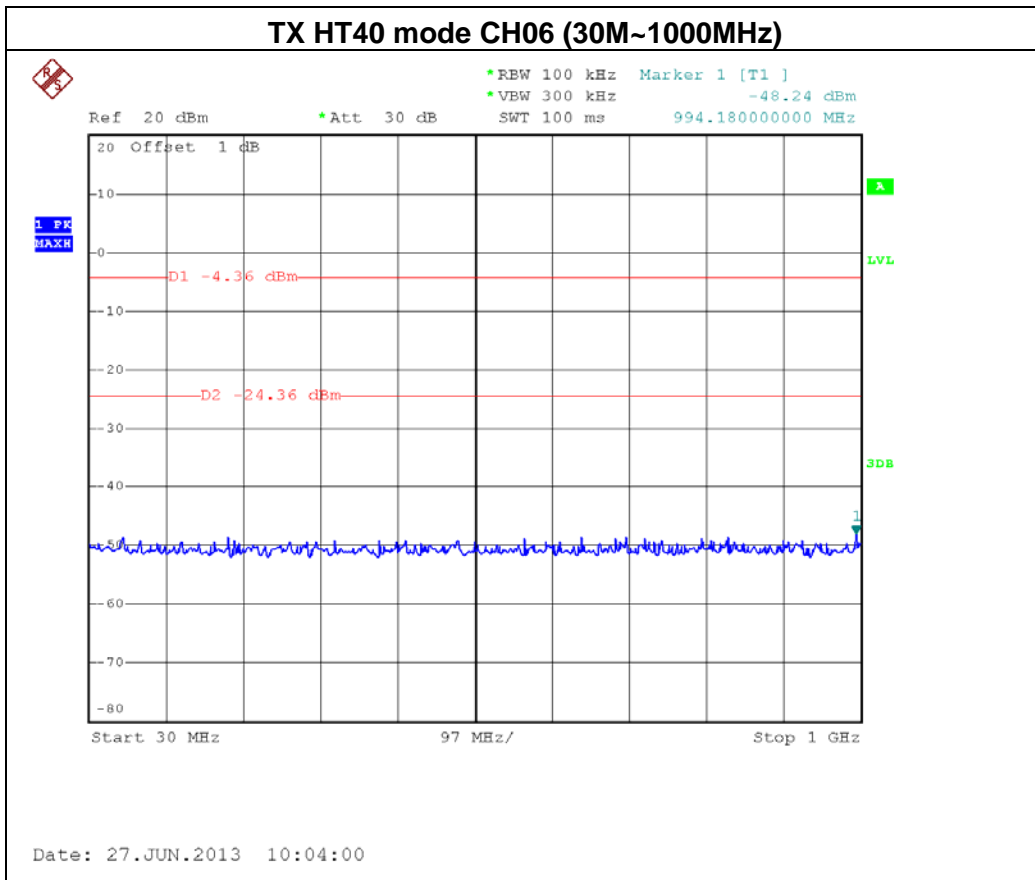
Channel of Worst Data: CH09			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-32.64	2483.80	-29.85

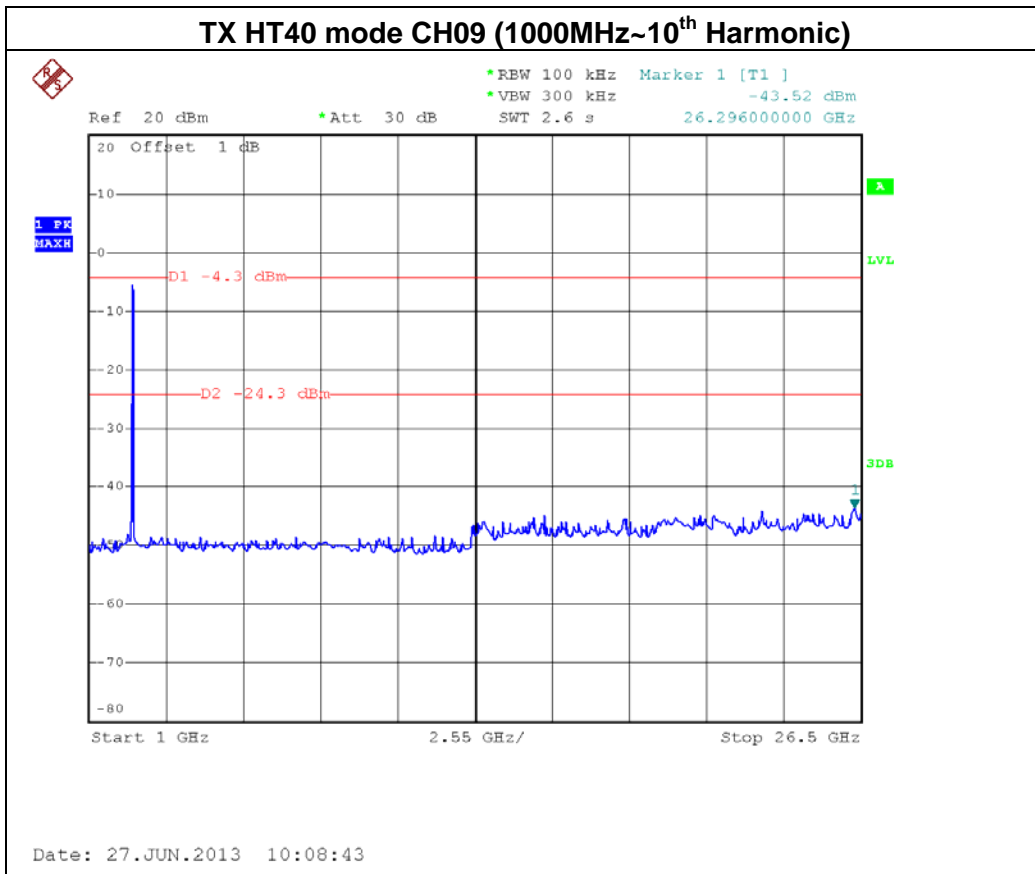
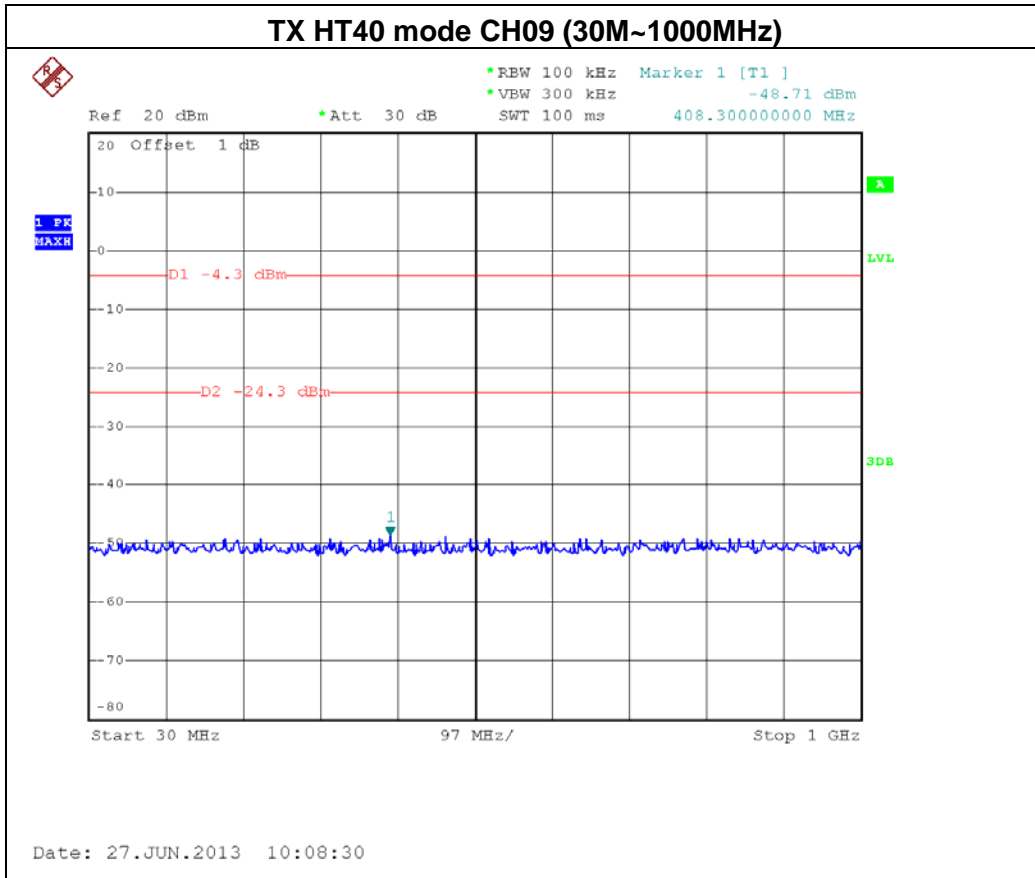
Result

In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.











8. POWER SPECTRAL DENSITY TEST

8.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100185	Nov. 17.2012	Nov. 16.2013

Remark: "N/A" denotes no model name, serial no. or calibration specified.

8.1.2 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=3KHz, VBW=10KHz, Sweep time = 2.5ms.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

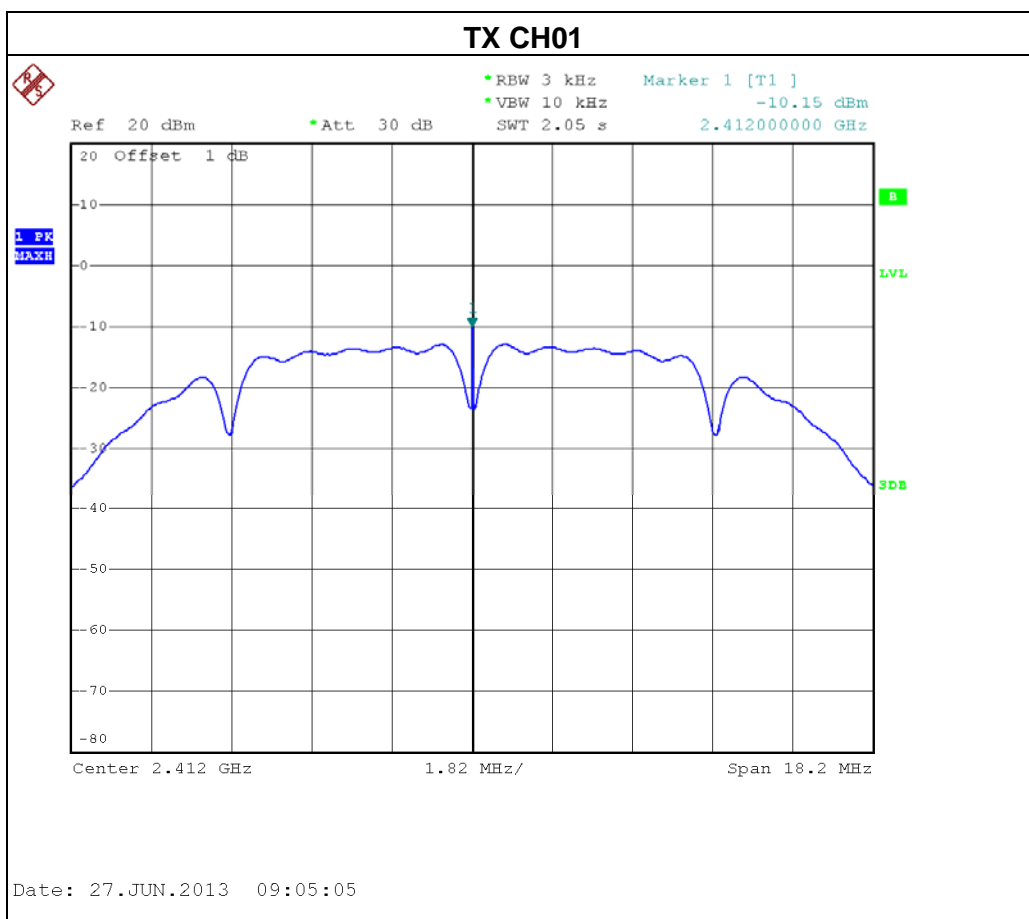
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

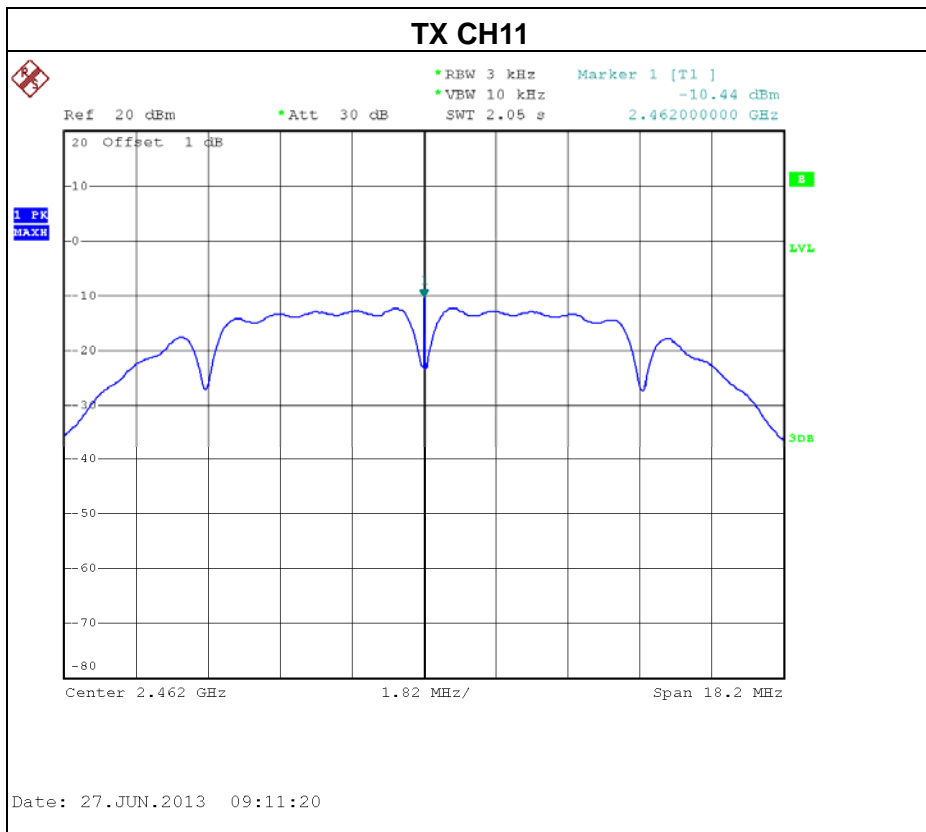
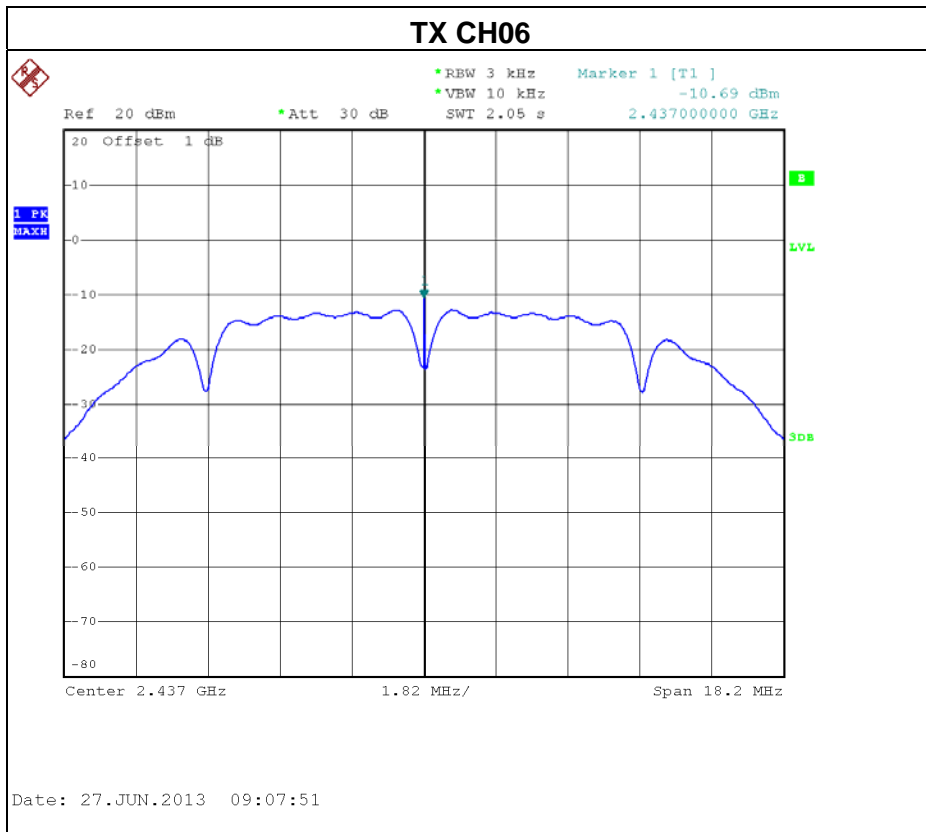


8.1.6 TEST RESULTS

EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412 MHz	-10.15	8
CH06	2437 MHz	-10.69	8
CH11	2462 MHz	-10.44	8

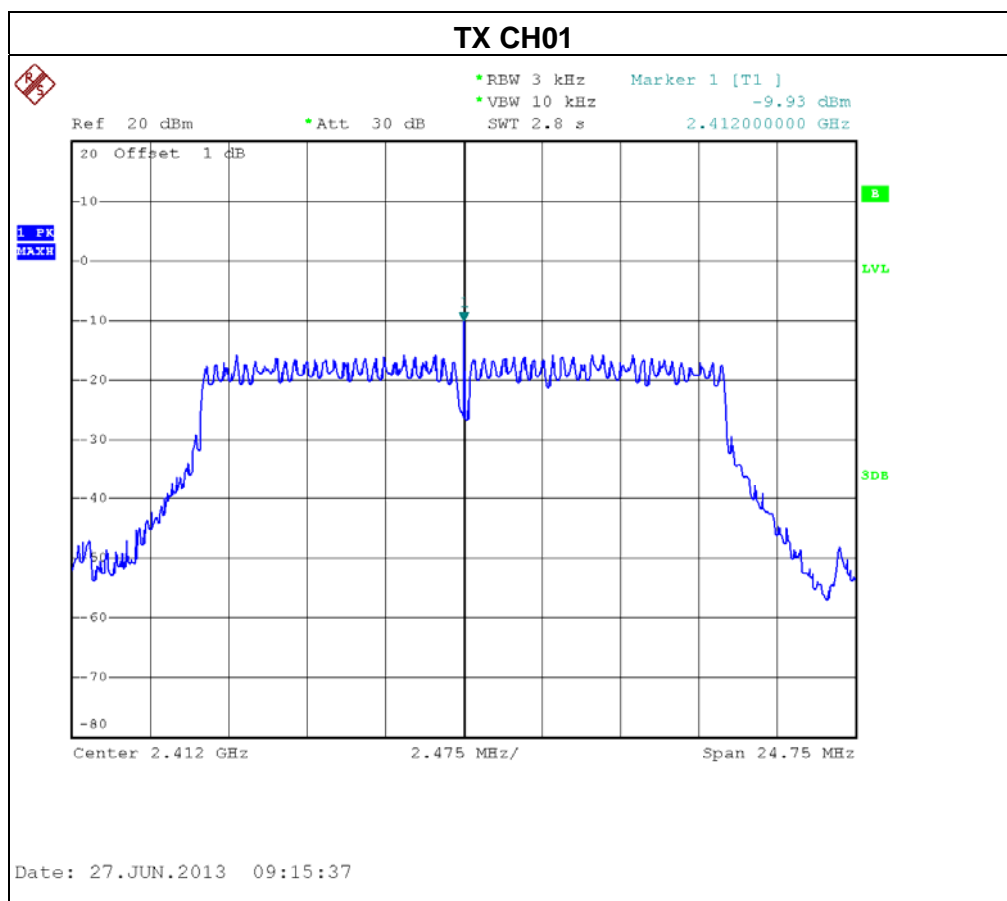


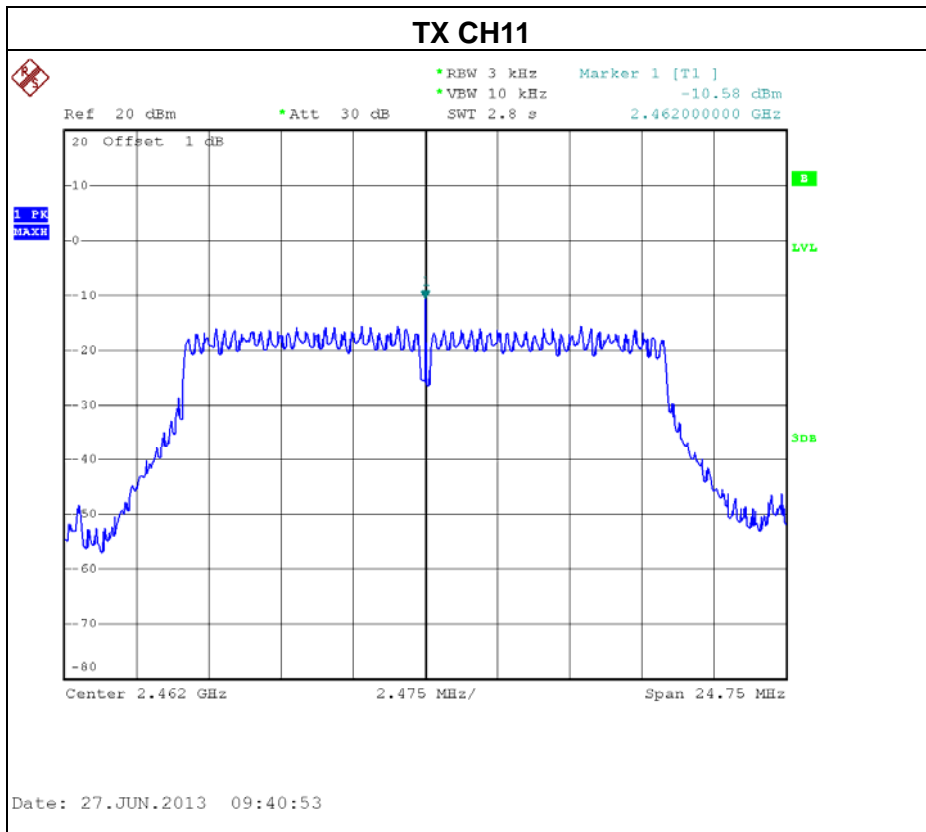
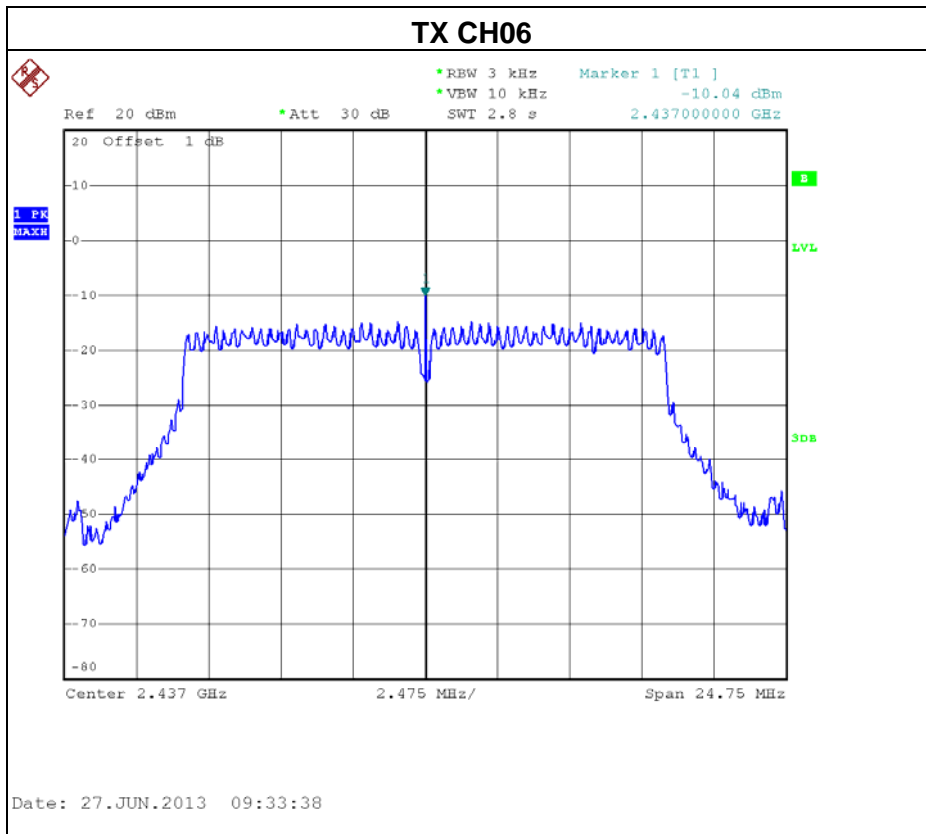




EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX G MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412 MHz	-9.93	8
CH06	2437 MHz	-10.04	8
CH11	2462 MHz	-10.58	8

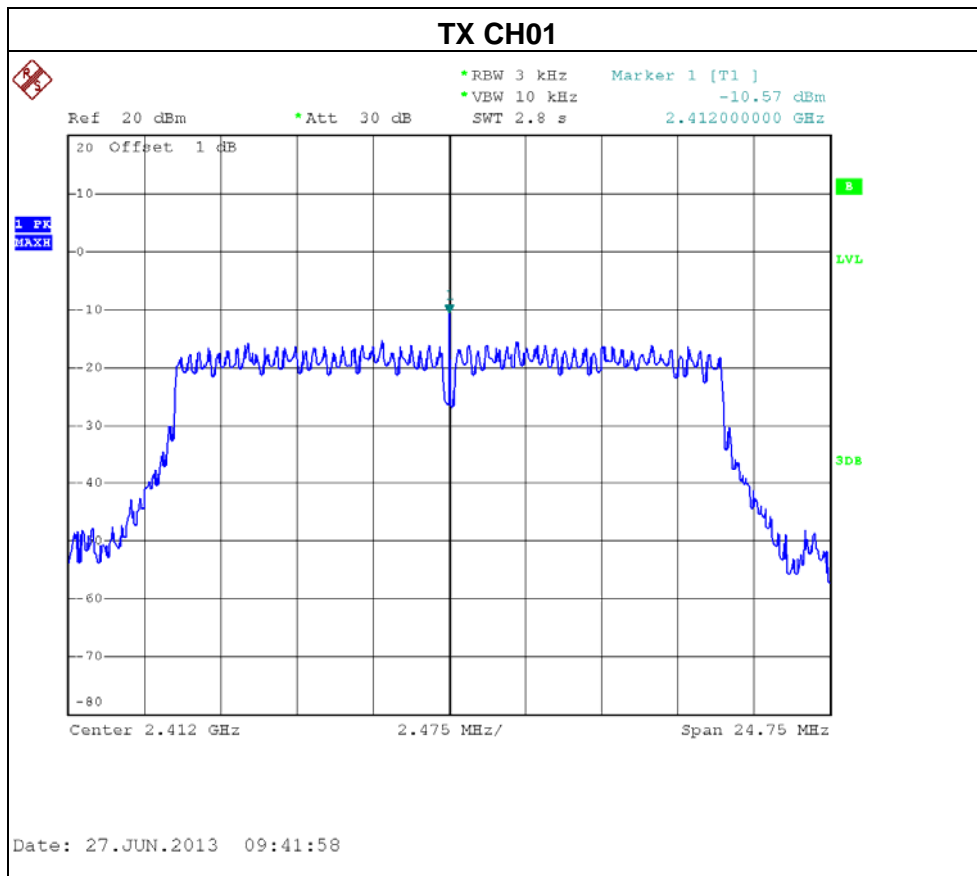


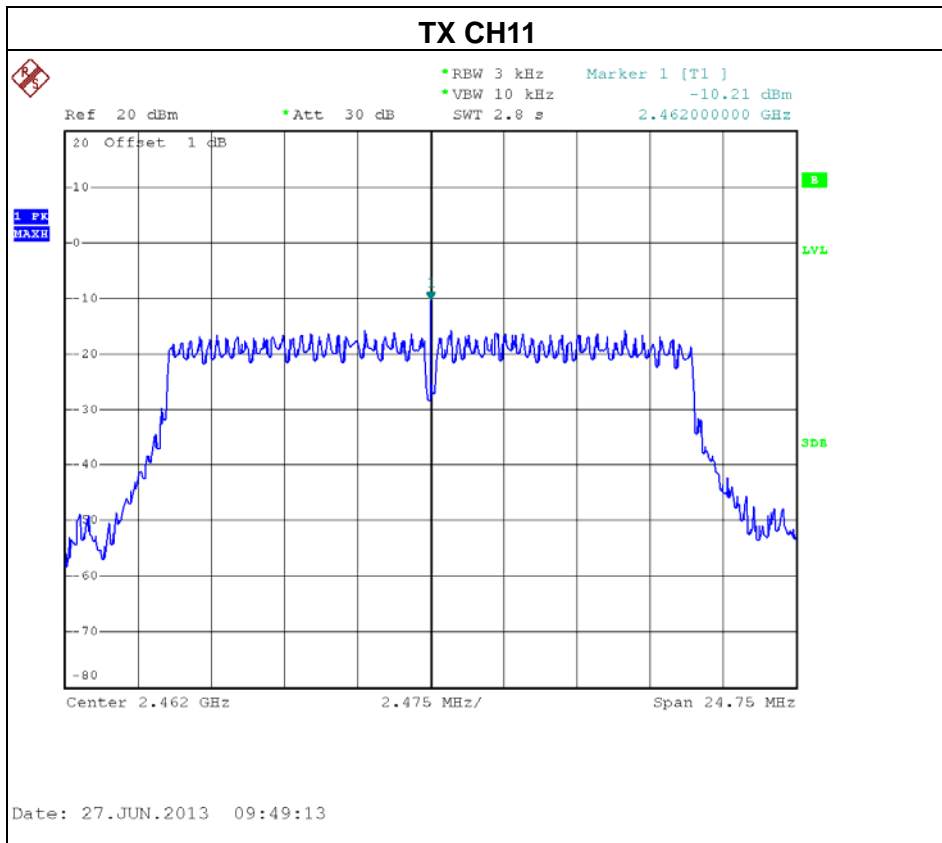
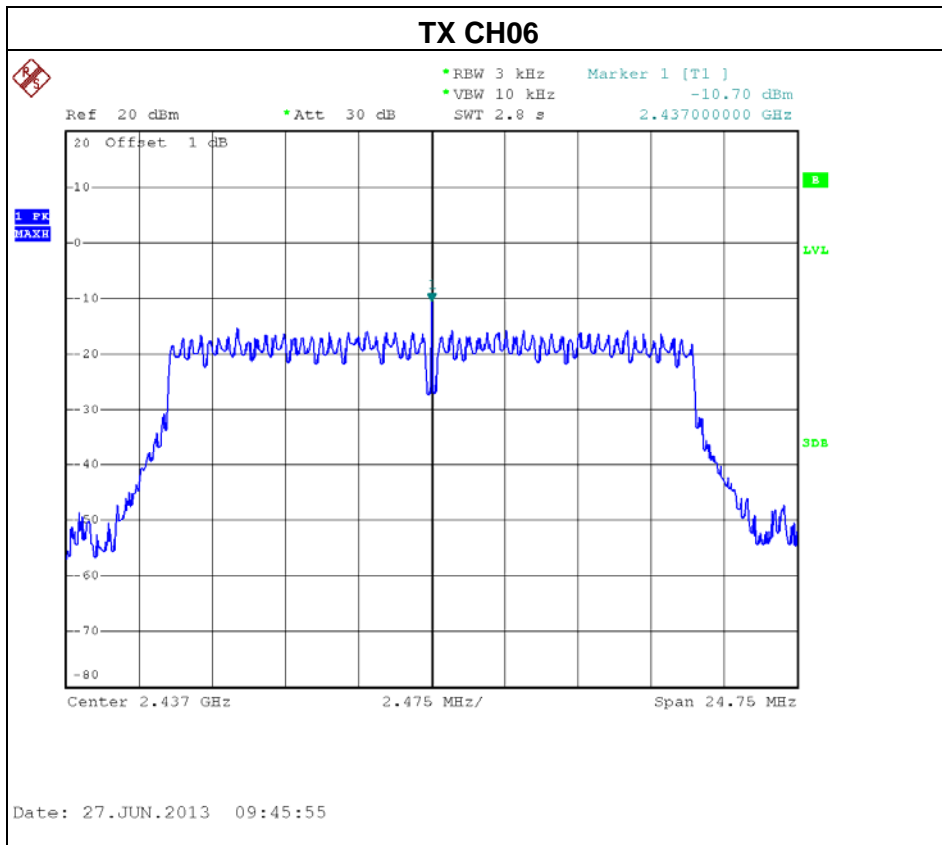




EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N MODE-20MHz /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412 MHz	-10.57	8
CH06	2437 MHz	-10.70	8
CH11	2462 MHz	-10.21	8

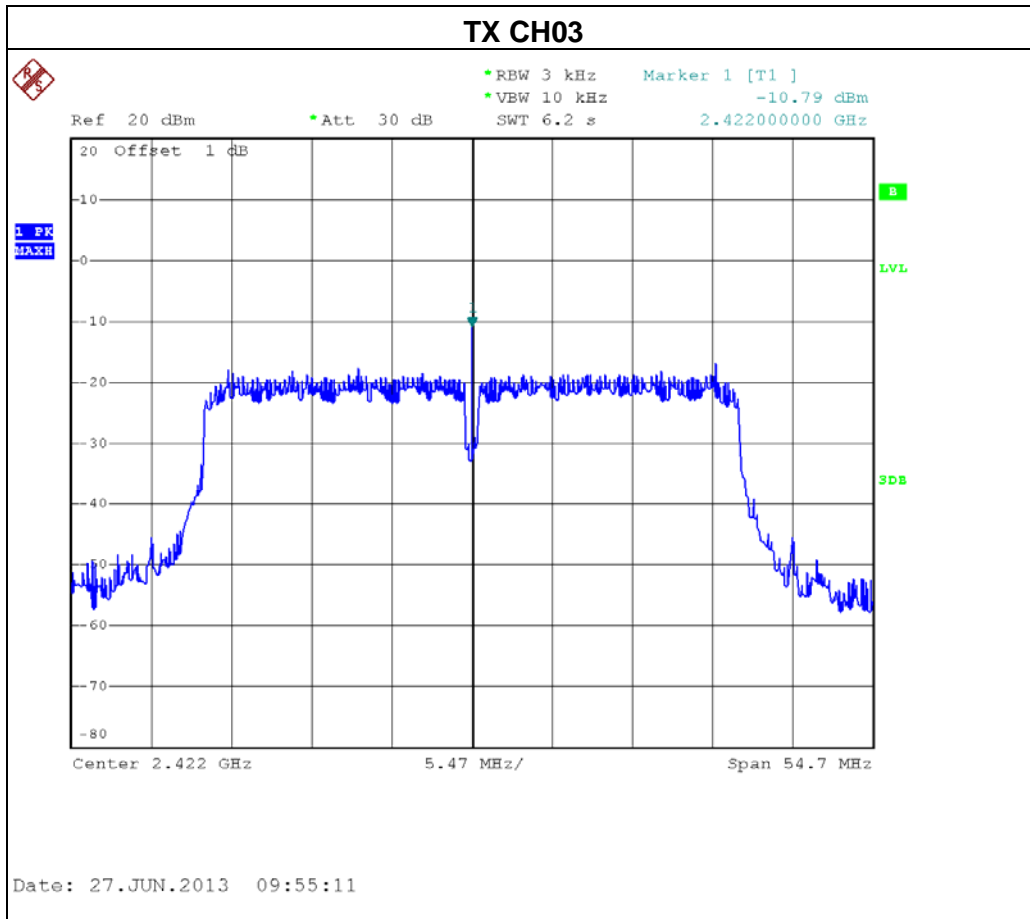


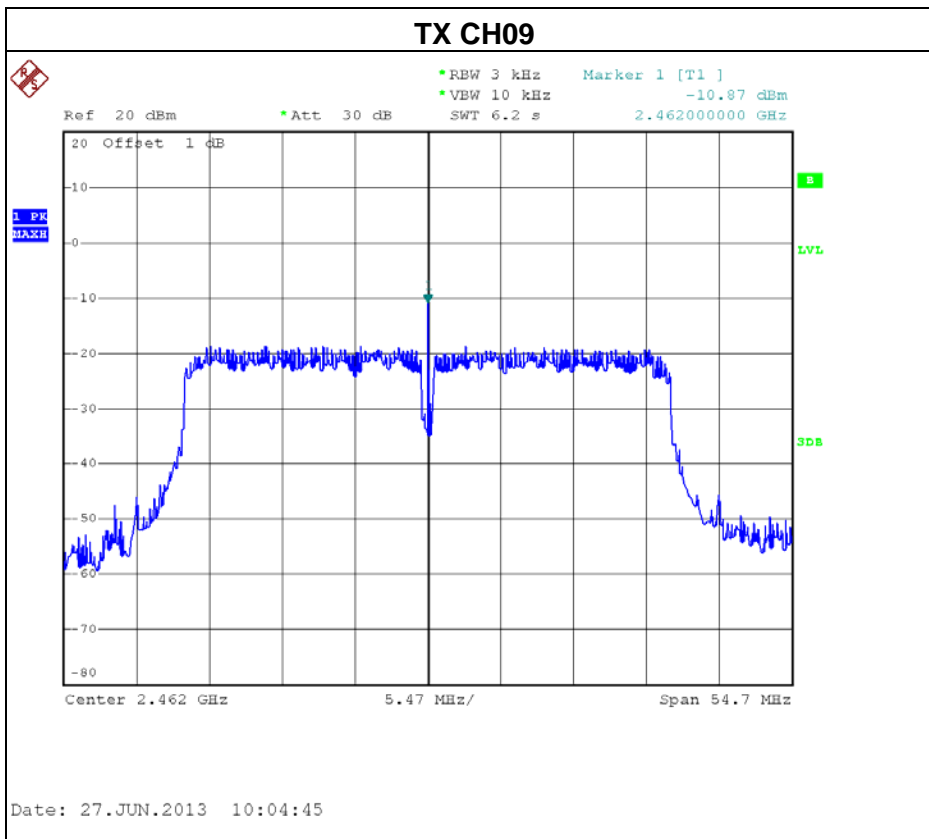
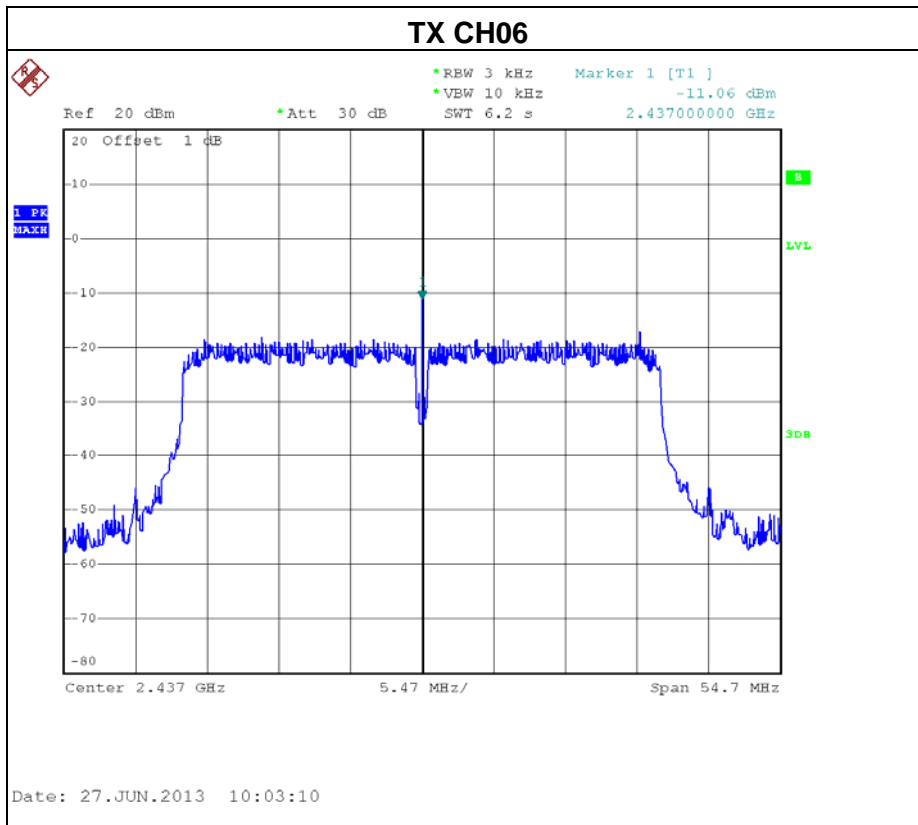




EUT :	WIFI dongle for USB storage and Power Bank	Model Name :	SPA-WIFI-USB
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1016 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX N MODE-40MHz /CH03, CH06, CH09		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH03	2422 MHz	-10.79	8
CH06	2437 MHz	-11.06	8
CH09	2462 MHz	-10.87	8







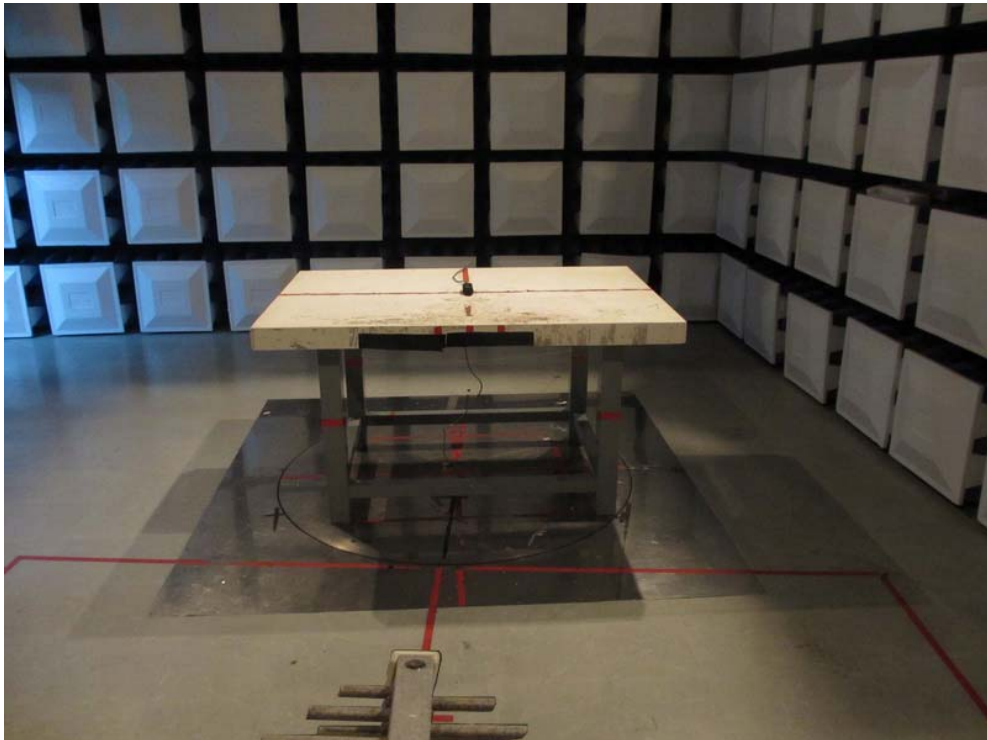
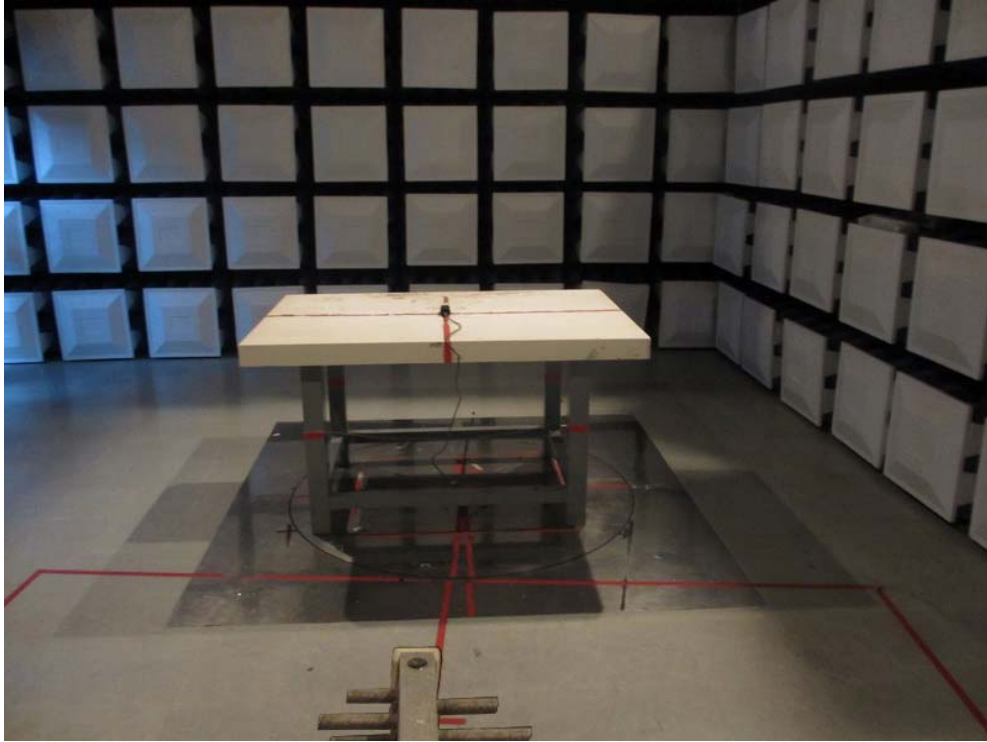
9. EUT TEST PHOTO

Conducted Measurement Photos





**Radiated Measurement Photos
30-1000MHZ**





**Radiated Measurement Photos
Above 1000MHZ**

