RF TEST REPORT

FCC ID: 2A7OH-EA-XRN-7B004

Test Report No……..:	RF250530006-01-001
Product(s) Name……...:	Industrial touch all-in-one PC
Model(s)……..:	EA-XRN-7B004, EA-XRN-7B006
Trade Mark……....:	N/A
Applicant……..:	Shenzhen Tengtek Technology Co., Ltd
Address……..…...:	Room 1202, Building 160, East Lisongkuang Community, Gongming Street, Guangming District, Shenzhen, China 518106
Receipt Date……..:	2025.06.04
Test Date……....:	2025.06.06
Issued Date……..…:	2025.06.11
Standards……..:	47 CFR FCC Part 15, Subpart C(Section 15.247); ANSI C63.10:2013
Testing Laboratory……:	Shenzhen Haiyun Standard Technical Co., Ltd.

Prepared By:	Checked By:	Approved By:	
Albert Fan	Black Ding	Tim Zhang	
Albert Fan	Black Ding	Tim.zhang	

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History of this test report

Amendment Report Issue Date: 2025.06.11

○ No additional attachment

● Additional attachments were issued following record

Attachment No.	Issue Date	Description
RF240314002-03-001	2024.04.15	Original report
RF250530006-01-001	2025.06.11	Add the mode name, change the power supply, PCB position, modify the sample appearance and the antenna type. Therefore, the AC power line conducted emission, radiated emission and band edge were tested with reference to the original report, while the rest remained unchanged.

1. General Information

1.1 Applicant

Shenzhen Tengtek Technology Co., Ltd

Room 1202, Building 160, East Lisongkuang Community, Gongming Street, Guangming District, Shenzhen, China 518106

1.2 Manufacturer

Shenzhen Tengtek Technology Co., Ltd

Room 1202, Building 160, East Lisongkuang Community, Gongming Street, Guangming District, Shenzhen, China 518106

1.3 Basic Description of Equipment Under Test

Sample No.	POC250530006-S001	
Equipment Name	Industrial touch all-in-one PC	
Model Name	EA-XRN-7B004, EA-XRN-7B006	
Test Model	EA-XRN-7B006	
Model difference	The power supply, model name, PCB position, exterior interfaces and the antenna type are different.	
Trade Mark	N/A	
Power Supply	DC 12V from adapter	
Adapter Information	For EA-XRN-7B004 Model: HKA09012070-7U Input: 100-240V~, 50/60Hz 1.5A Output: 12V⎓7.0A, 84.0W For EA-XRN-7B006 Model: HKA09012070-7U Input: 100-240V~, 50/60Hz 2.0A Output: 12V⎓12.5A, 150.0W	
Operate temperature	0℃-45℃	
EUT Stage	○ Product Unit	● Final-Sample
Operating Band and Conducted Output Power (Max power)	2400MHz ~ 2483.5MHz	●IEEE 802.11g:14.39dBm(0.027W)
Product Type	IEEE 802.11b: WLAN (SISO) IEEE 802.11g: WLAN(SISO) IEEE 802.11n: WLAN(SISO)	
Nominal Bandwidth	20MHz	
Modulation	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM	
Data Rate (Mbps)	IEEE 802.11b mode : 1/2/5.5/11 IEEE 802.11g mode : 6/9/12/18/24/36/48/54 IEEE 802.11n mode : up to 72.2	
Antenna gain	2.86dBi	
Antenna type	FPC Antenna	

Eleven channels are provided for 802.11b, 802.11g, 802.11n (20MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400MHz ~ 2483.5 MHz	01	2412MHz	07	2442MHz
	02	2417MHz	08	2447MHz
	03	2422MHz	09	2452MHz
	04	2427MHz	10	2457MHz
	05	2432MHz	11	2462MHz
	06	2437MHz	/	/

1.4 Transmit Operating Mode

Transmit Operating Mode							Transmit Multiple Antennas					
●	Operating mode 1 (single antenna)						●	1TX				
○	Operating mode 2 (multiple antenna, no beam forming)						○	2TX	○	3TX	○	4TX
○	Operating mode 3 (multiple antenna, with beam forming)						○	2TX	○	3TX	○	4TX
●	802.11b	Operating mode	●	1TX	○	2TX	○	3TX				
●	802.11g	Operating mode	●	1TX	○	2TX	○	3TX				
●	802.11n(20MHz)	Operating mode	●	1TX	○	2TX	○	3TX				

2. Summary of Test Results

2.1 Summary of Test Items

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Test item	FCC Clause	Results	Remarks
AC Power Conducted Emission	15.207	PASS	Compliance
Radiated Emission and Band Edge Measurement	15.205/15.209 /15.247(d)	PASS	Compliance
Spurious Emission at Antenna Port	15.247(d)	PASS	Note2
6dB Bandwidth	15.247(a)(2)	PASS	Note2
Maximum Conducted Power	15.247(b)	PASS	Note2
Power Spectral Density	15.247(e)	PASS	Note2
Antenna Requirements	15.203	Compliance	Note

Note: 1. The EUT has a FPC antenna arrangement which was permanently attached.

2. For test data, please refer to the report RF240314002-03-001.

3. Add the mode name, change the power supply, PCB position, modify the sample appearance and the antenna type. Therefore, the AC power line conducted emission, radiated emission and band edge were tested with reference to the original report, while the rest remained unchanged.

2.2 Application of Standard

47 CFR FCC Part 15, Subpart C (Section 15.247)

KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10:2013

2.3 Test Instruments

Radiated Emission							
No.	Name of Equipment	Manufacturer	Model Number	Serial Number	Inventory No.	Last Calibration	Due Calibration
1	Test receiver	Rohde&Schwarz	ESU	100184	JLE011	2025/3/1	2026/2/28
2	Log periodic antenna	Schwarzbeck	VULB 9168	1151	JLE012	2025/4/12	2026/4/11
3	Low frequency amplifier	/	LNA 0920N	2014	JLE023	2025/3/1	2026/2/28
4	High frequency amplifier	Schwarzbeck	BBV 9718	9718-284	JLE024	2025/3/1	2026/2/28
5	Horn Antenna	SCHWARZBECK	BBHA 9120 D	02670	JLE028	2025/4/12	2026/4/11
6	Temp&Humidity Recorder	Meideshi	JR900	/	JLE021	2025/4/15	2026/4/14
7	Horn Antenna	SCHWARZBECK	BBHA 9170	9170#685	JLE029	2024/7/15	2025/7/14
8	Loop Antenna	SCHWARZBECK	FMZB1519B	00029	JLE030	2024/7/15	2025/7/14
9	Broadband preamplifier	Schwarzbeck	BBV9721	9721-019	JLE025	2025/3/1	2026/2/28
10	Test software	Farad Technology Co., Ltd	EZ-EMC Ver.TW-03A2				
Conducted Emission							
1	LISN	Rohde&Schwarz	ENV216	100075	JLE002	2025/3/1	2026/2/28
2	ISN	Schwarzbeck	CATE 5 8158	#171	JLE003	2025/2/21	2026/2/20
3	ISN	Schwarzbeck	CAT 3 8158	00187	JLE032	2025/2/21	2026/2/20
4	Test receiver	Rohde&Schwarz	ESCI	100718	JLE010	2025/3/1	2026/2/28
5	Pulse limiter	Rohde&Schwarz	ESH3-Z2	102299	JLE047	2025/3/1	2026/2/28
6	Temp&Humidity Recorder	Meideshi	JR900	/	JLE020	2025/4/15	2026/4/14
7	Test software	Farad Technology Co., Ltd	EZ-EMC Ver.TW-03A2				

RF Conducted Emissions(SRD, BT WIFI test syetem)							
No.	Equipment	Manufacturer	Type No.	Serial No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal. Due date (yyyy/mm/dd)
1	MXA Signal Analyzer	Keysight	N9021B	MY60080169	JLE050	2025/3/1	2026/2/28
2	RF Control Unit	dsusoft	JS0806-2	21G8060449	JLE053	2025/3/1	2026/2/28
3	power supply unit	dsusoft	JS0806-4ADC	N/A	JLE055	2025/3/1	2026/2/28
4	VXG Signal Generator	Keysight	M9384B	MY61270787	JLE051	2025/4/20	2026/4/19
5	EXG Analog Signal Generator	Keysight	N5173B	MY59101282	JLE052	2025/3/1	2026/2/28
6	Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	1201.0002K50-116064-Dt	JLE054	2025/3/1	2026/2/28
7	Test software	dsusoft	JS1120-3 Ver.3.2.22.0				

2.4 Test Mode

Test Items	Mode	Data Rate	Channel
AC Power Conducted Emission	802.11g	6Mbps	11
Radiated Emission and Band Edge Measurement	802.11b	1Mbps	01/06/11
	802.11g	6Mbps	01/06/11
	802.11n20SISO	MCS0	01/06/11
Spurious Emission at Antenna Port	802.11b	1Mbps	01/06/11
	802.11g	6Mbps	01/06/11
	802.11n20SISO	MCS0	01/06/11
6dB Bandwidth	802.11b	1Mbps	01/06/11
	802.11g	6Mbps	01/06/11
	802.11n20SISO	MCS0	01/06/11
Maximum Conducted Power	802.11b	1Mbps	01/06/11
	802.11g	6Mbps	01/06/11
	802.11n20SISO	MCS0	01/06/11
Power Spectral Density	802.11b	1Mbps	01/06/11
	802.11g	6Mbps	01/06/11
	802.11n20SISO	MCS0	01/06/11

Note: For AC Power Conducted Emission and Radiated Emission below 1GHz, only worst case was recorded.

2.5 Test Condition

Applicable to	Environmental conditions	Input Power	Tested by
AC Power Conducted Emission	24.8°C, 48% RH	AC 120V/60Hz	Freedom Zhuo
Radiated Emission and Band Edge Measurement	23.6C, 56% RH	AC 120V/60Hz	Freedom Zhuo

Note: Adapter supply voltage AC 120V/60Hz.
The applicant declare the operating environment of EUT as below:
Normal conditions: 12V DC, 0~45°C

2.6 Duty Cycle of Test Signal

Note: For test data, please refer to test report no: RF240314002-03-001.

2.7 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT.
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±102kHz
Power Spectral Density	±0.243dB
Conducted Spurious Emission	±1.328dB
RF power conducted	±0.743dB
Conducted emission(9kHz~30MHz) AC main	±2.68dB
Radiated emission(9kHz~30MHz)	±3.50dB
Radiated emission (30MHz~1GHz)	±4.20dB
Radiated emission (1GHz~18GHz)	±5.10dB
Radiated emission (18GHz~40GHz)	±5.26dB

2.8 Test Location

Company:	Shenzhen Haiyun Standard Technical CO., Ltd.
Address:	No. 110-113, 115, 116, Block B, Jinyuan Business Building, Bao'an District, Shenzhen, China
CNAS Registration Number:	CNAS L18252
CAB identifier	CN0145
A2LA Certificate Number	6823.01
Telephone:	0755-26024411

2.9 Description of Support Units

No.	Equipment	Model	Manufacturer	Series No
1	Displayer	T24S-28	LENOVO	M032004854IT
2	Mouse	DOK-680U	LENOVO	701E8328
3	Earphone	E1	LENOVO	/
4	USB Disk	32GB	Kingston	/
5	Keyboard	SK-8827	LENOVO	21R1ADL

3. Test Procedure And Results

3.1 AC Power Line Conducted Emission

3.1.1 Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.1.2 Test Procedure

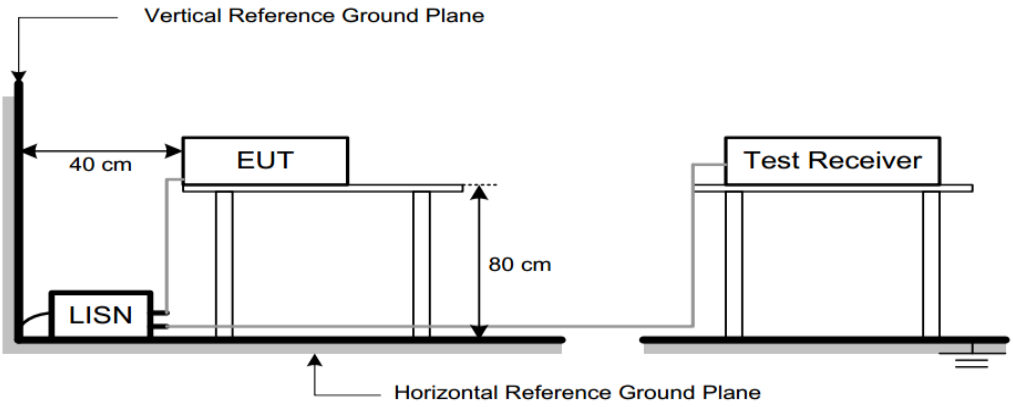
Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
○Lowest, Middle and Highest Channel	○Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c) The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

3.1.3 Test Setup



3.1.4 Test Result

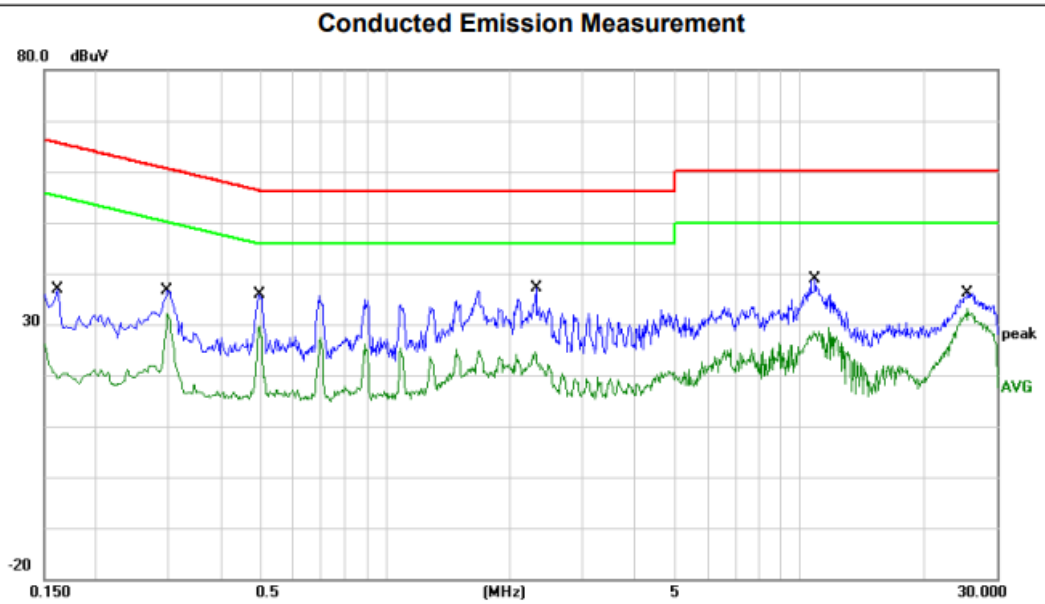
Note:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Measurement = Reading + Correct Factor.
3. Over = Measurement – Limit

We only recorded the data of the worst mode. Please see the following:

150kHz~30MHz	Worst Case Operating Mode: 11G Channel 11

Line

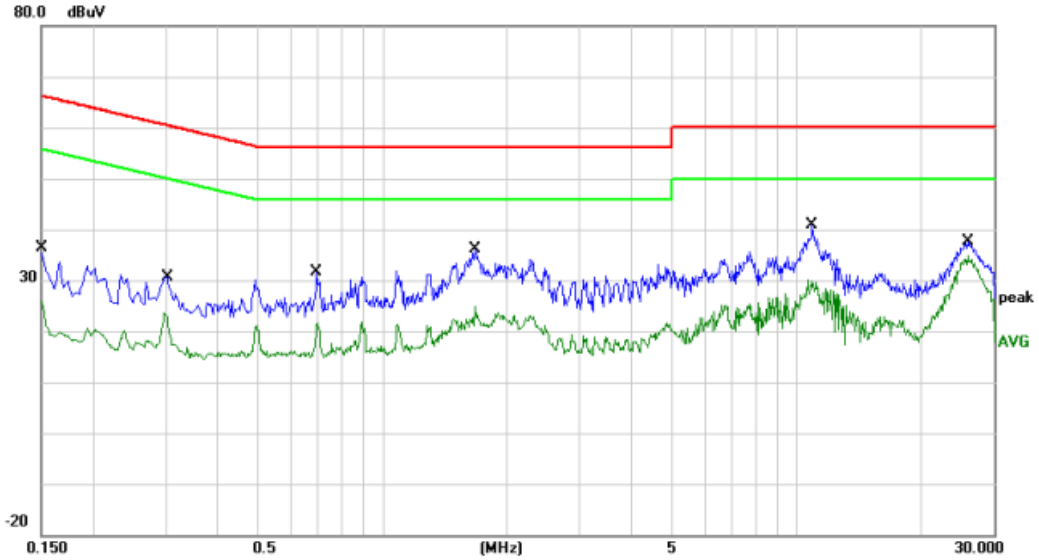


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	5.43	19.50	24.93	65.36	-40.43	QP	
2		0.1620	-0.18	19.50	19.32	55.36	-36.04	AVG	
3		0.2980	14.48	19.51	33.99	60.30	-26.31	QP	
4		0.2980	12.43	19.51	31.94	50.30	-18.36	AVG	
5		0.4980	12.64	19.51	32.15	56.03	-23.88	QP	
6	*	0.4980	9.66	19.51	29.17	46.03	-16.86	AVG	
7		2.3100	9.63	19.70	29.33	56.00	-26.67	QP	
8		2.3100	4.36	19.70	24.06	46.00	-21.94	AVG	
9		10.9060	15.20	20.27	35.47	60.00	-24.53	QP	
10		10.9060	7.87	20.27	28.14	50.00	-21.86	AVG	
11		25.5780	3.72	21.09	24.81	60.00	-35.19	QP	
12		25.5780	-1.25	21.09	19.84	50.00	-30.16	AVG	

150kHz~30MHz	Worst Case Operating Mode: 11G Channel 11

Neutral

Conducted Emission Measurement



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	13.43	19.51	32.94	66.00	-33.06	QP	
2		0.1500	7.56	19.51	27.07	56.00	-28.93	AVG	
3		0.3020	6.26	19.54	25.80	60.19	-34.39	QP	
4		0.3020	2.55	19.54	22.09	50.19	-28.10	AVG	
5		0.6940	5.86	19.45	25.31	56.00	-30.69	QP	
6		0.6940	1.82	19.45	21.27	46.00	-24.73	AVG	
7		1.6780	11.06	19.62	30.68	56.00	-25.32	QP	
8		1.6780	4.04	19.62	23.66	46.00	-22.34	AVG	
9		10.9060	15.03	20.23	35.26	60.00	-24.74	QP	
10	*	10.9060	8.78	20.23	29.01	50.00	-20.99	AVG	
11		25.9860	8.10	21.08	29.18	60.00	-30.82	QP	
12		25.9860	2.82	21.08	23.90	50.00	-26.10	AVG	

3.2 Radiated Emission and Band Edge

3.2.1 Limit

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Distance Meters(m)	Field Strength Limit	
		μV/m	dB(μV)/m
0.009 – 0.49	300	2400/F(kHz)	-
0.490 – 1.705	30	24000/F(kHz)	-
1.705 – 30	30	30	-
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.2.2 Test Procedure

Test Method	
○Conducted Measurement	●Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter 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 1 GHz)

b) The measuring distance of 3 m or 1.5m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)

c) The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; 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) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).

e) The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

f) The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

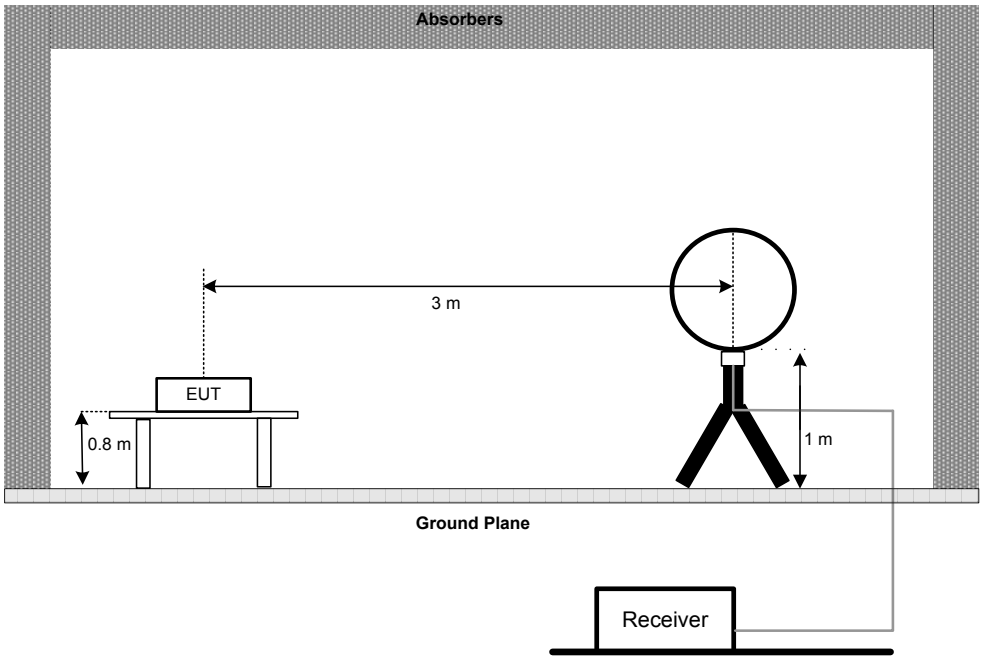
g) All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1 GHz)

h) All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1 GHz)

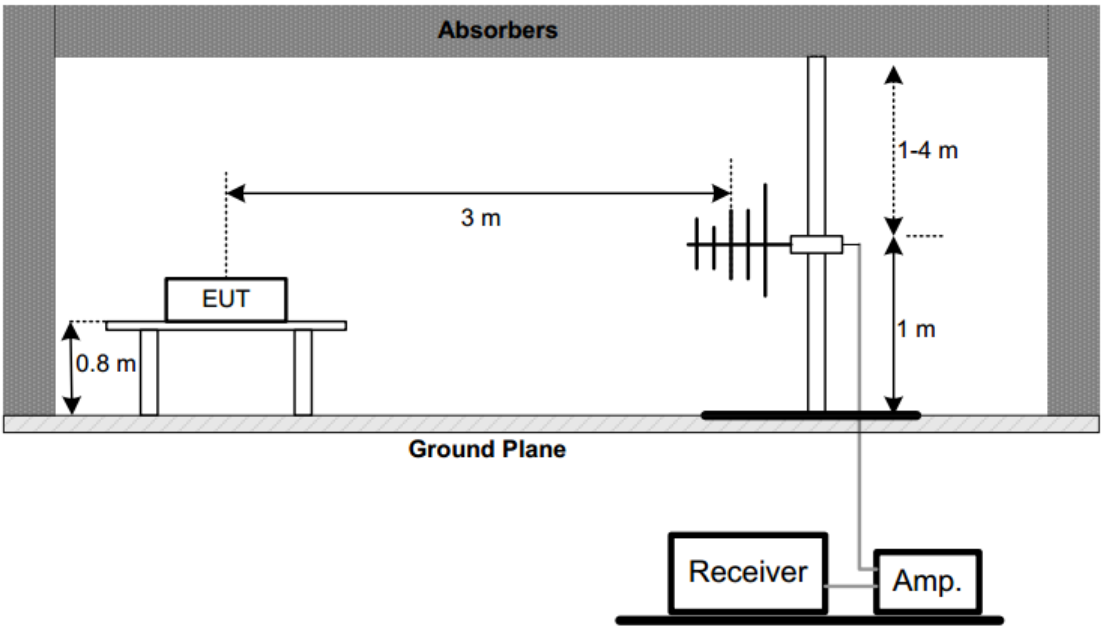
i) For the actual test configuration, please refer to the related Item -EUT Test Photos.

3.2.3 Test Setup

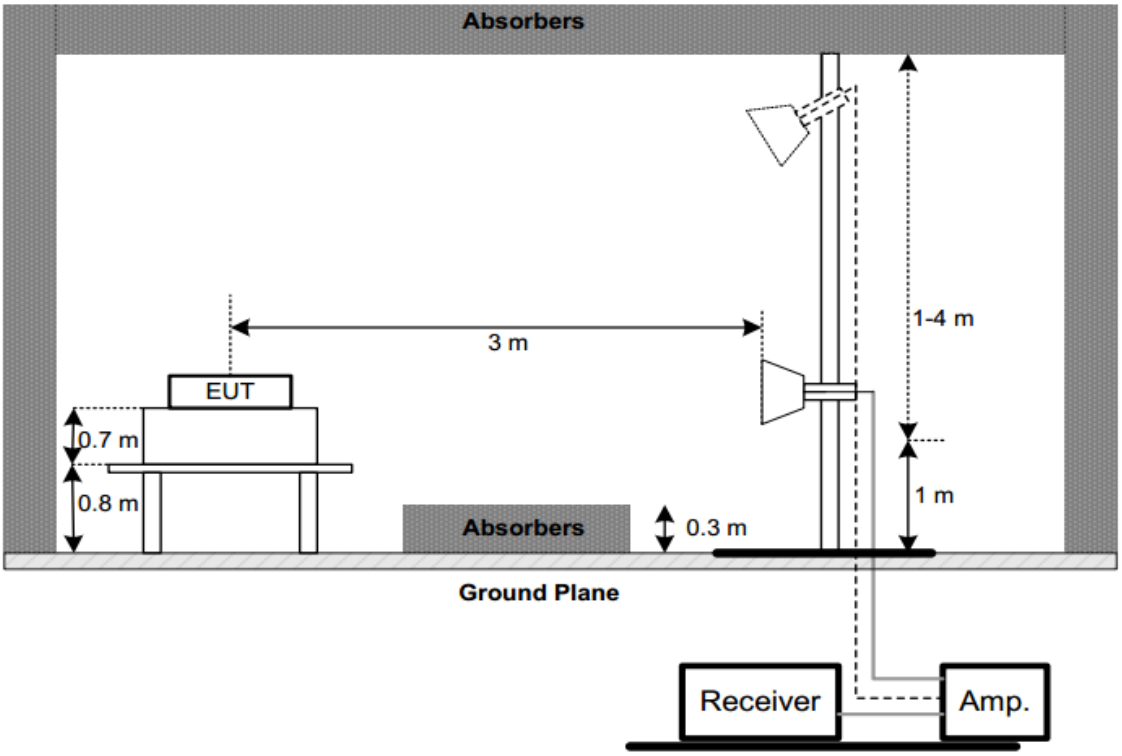
(A) Radiated Emission Test Set-Up Frequency Below 30 MHz



(B) Radiated Emission Test Set-Up Frequency 30 MHz-1000 MHz



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



3.2.4 Test Result

1) Radiated emission: 9kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not recorded in this report.

2) Radiated emission: 30MHz-1G

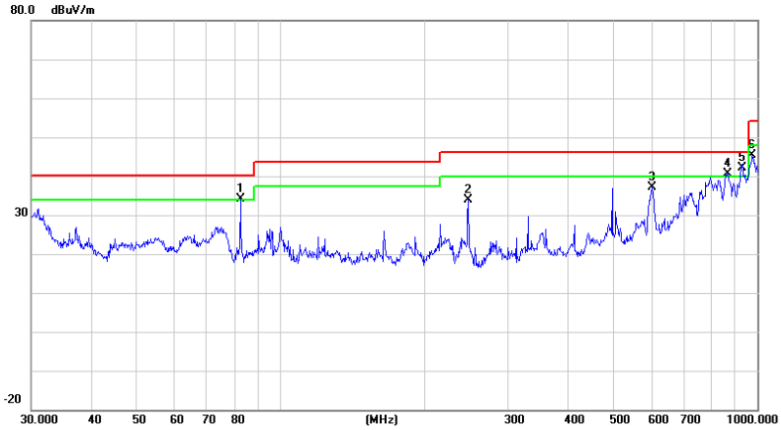
Note:

1. Measurement = Reading + Correct Factor.
2. Over = Measurement – Limit

We only recorded the data of the worst mode. Please see the following:

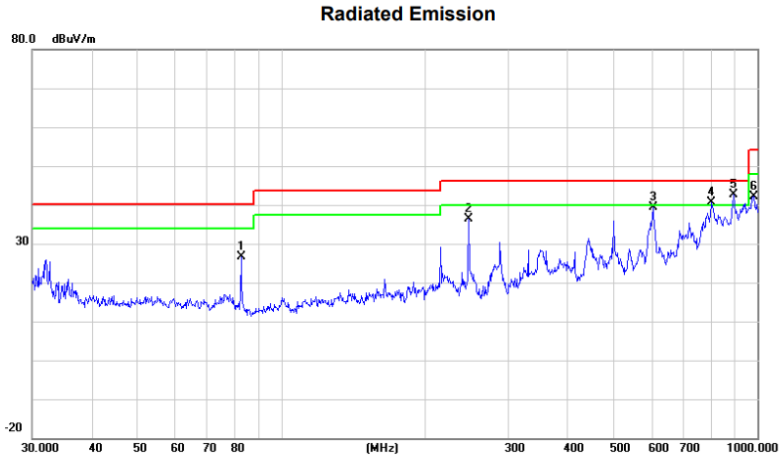
Below 1G (30MHz~1GHz)	Worst Case Operating Mode: 11G Channel 11

VERTICAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	82.3588	48.91	-14.79	34.12	40.00	-5.88	peak			
2		247.6820	46.38	-12.54	33.84	46.00	-12.16	peak			
3		601.4265	39.49	-2.47	37.02	46.00	-8.98	peak			
4	!	866.0880	41.13	-0.38	40.75	46.00	-5.25	peak			
5	*	929.0082	41.02	1.08	42.10	46.00	-3.90	QP			
6		975.7530	43.32	2.16	45.48	54.00	-8.52	peak			

HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		82.3588	41.52	-14.79	26.73	40.00	-13.27	peak			
2		247.6820	48.87	-12.54	36.33	46.00	-9.67	peak			
3		603.5392	41.99	-2.58	39.41	46.00	-6.59	peak			
4	!	801.7863	41.04	-0.53	40.51	46.00	-5.49	peak			
5	*	890.7278	41.37	1.20	42.57	46.00	-3.43	peak			
6		982.6200	40.67	1.53	42.20	54.00	-11.80	peak			

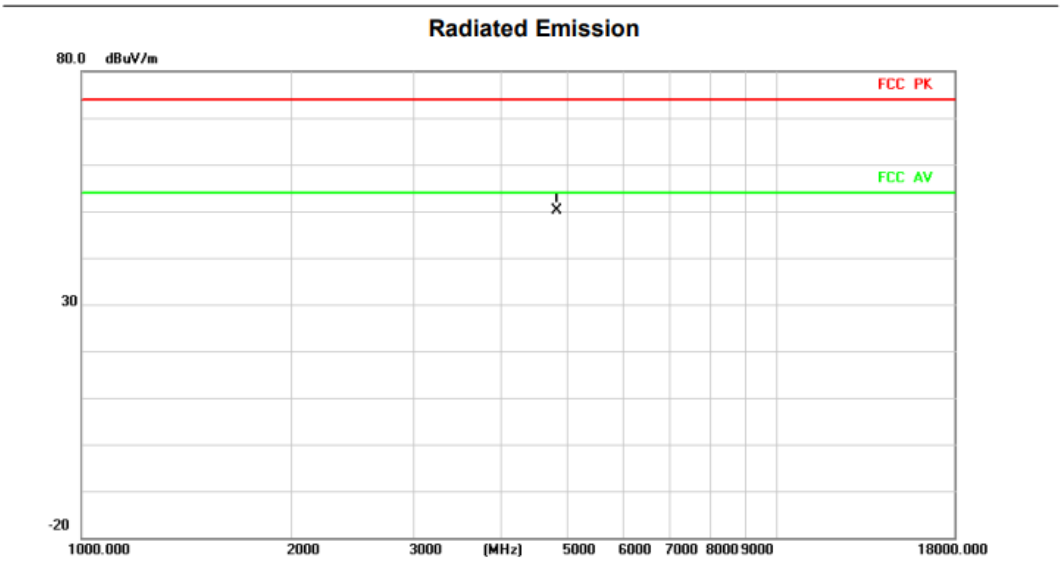
3) Radiated emission: Above 1G

Note:

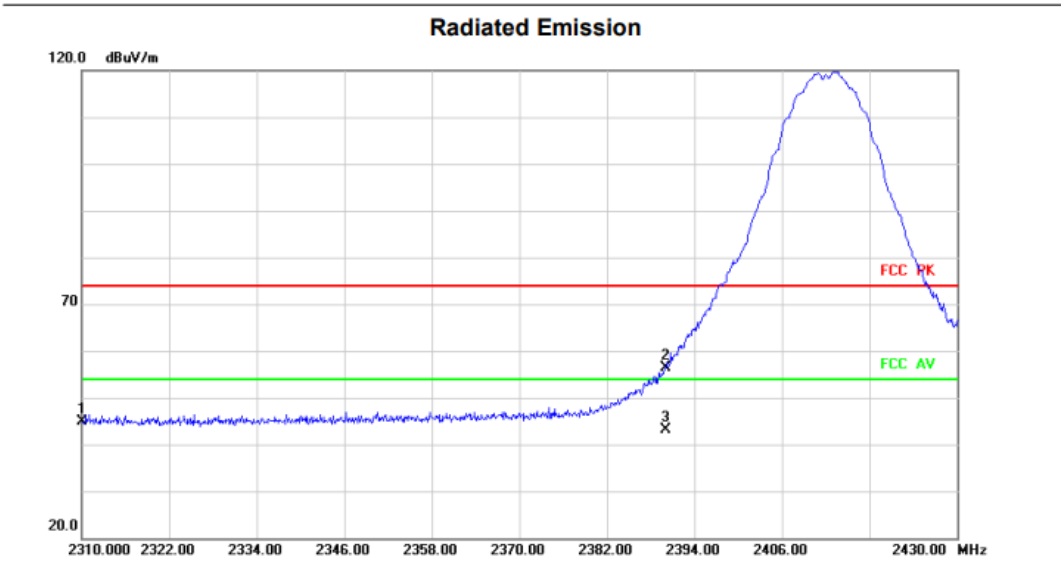
1. Measurement = Reading + Correct Factor.
2. Over = Measurement – Limit

Above 1G (1GHz~18GHz)	Test mode:11B	Test Channel:1

VERTICAL



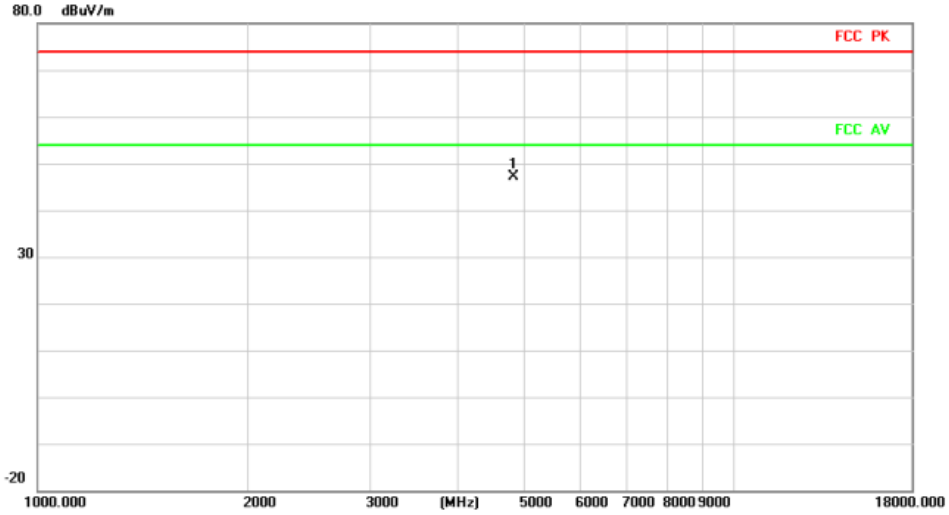
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	51.99	-1.88	50.11	74.00	-23.89	peak			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	34.59	10.19	44.78	74.00	-29.22	peak			
2		2390.000	45.93	10.41	56.34	74.00	-17.66	peak			
3	*	2390.000	32.76	10.41	43.17	54.00	-10.83	AVG			

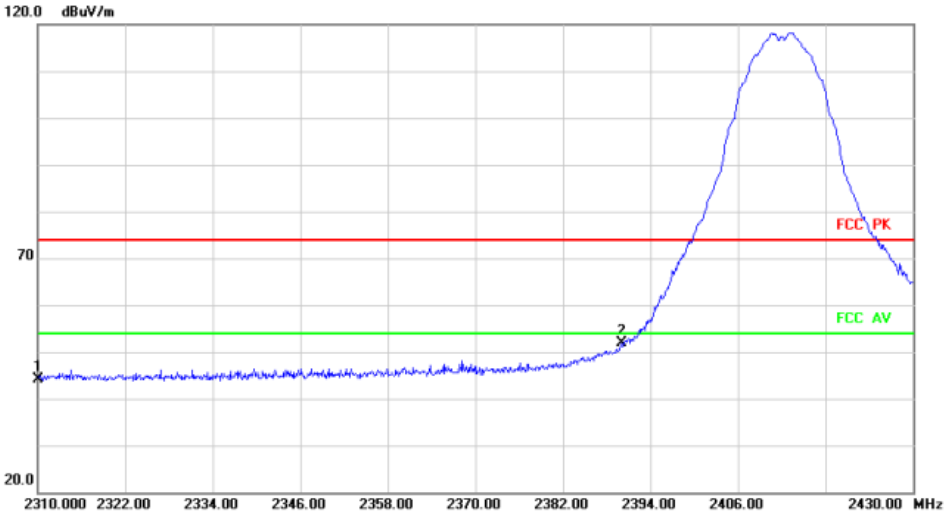
HORIZONTA

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	49.11	-1.88	47.23	74.00	-26.77	peak			

Radiated Emission

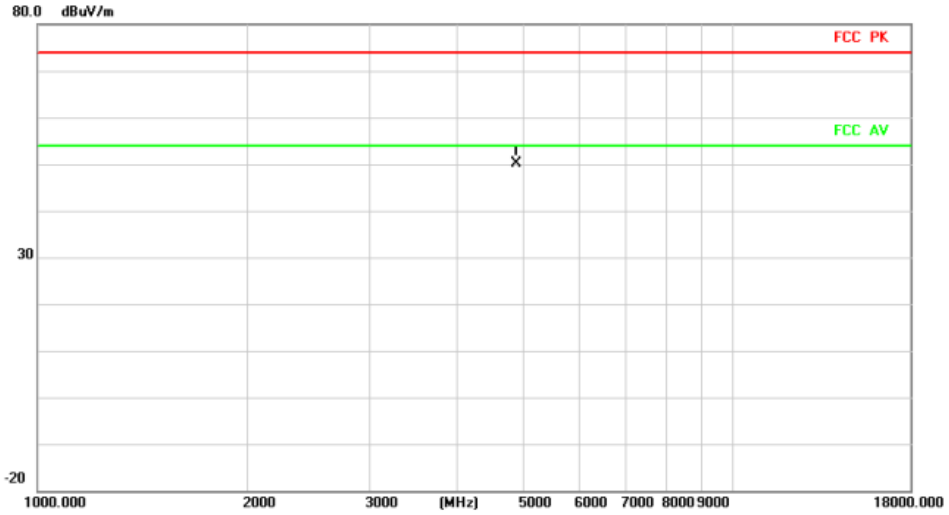


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	33.98	10.19	44.17	74.00	-29.83	peak			
2	*	2390.000	41.45	10.41	51.86	74.00	-22.14	peak			

Above 1G (1GHz~18GHz)	Test mode:11B	Test Channel:6

VERTICAL

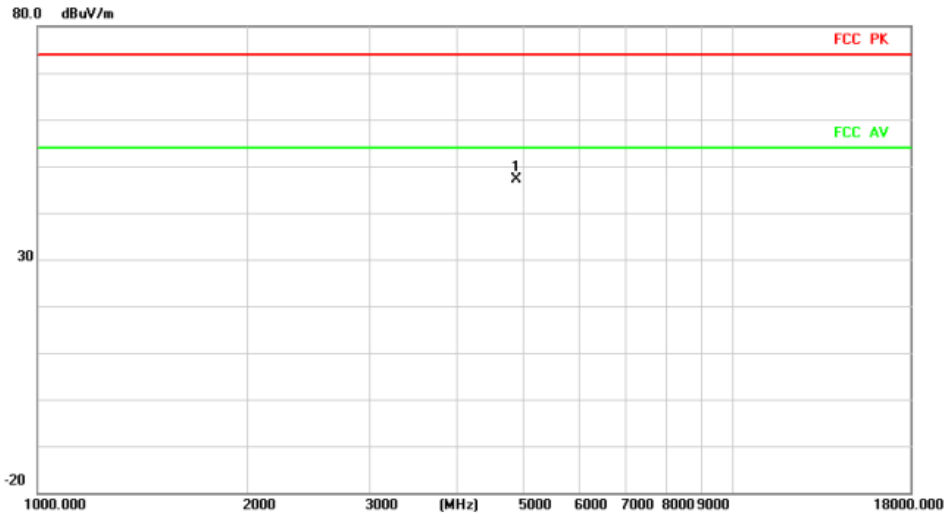
Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	51.64	-1.53	50.11	74.00	-23.89	peak			

HORIZONTA

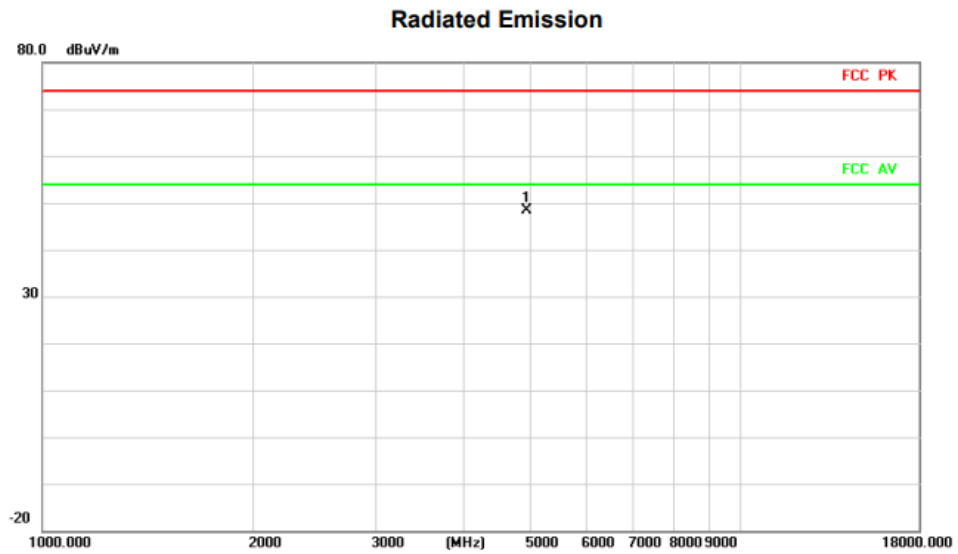
Radiated Emission



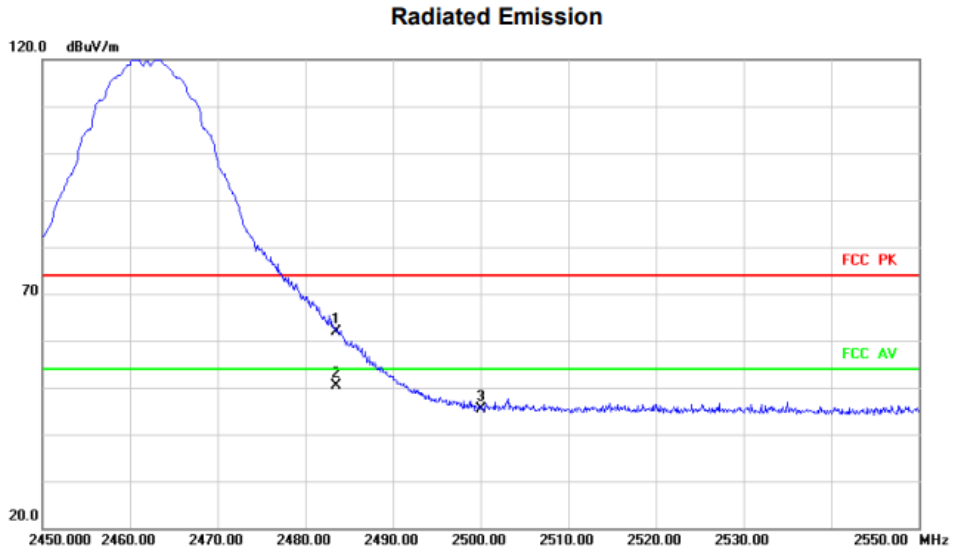
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	48.74	-1.53	47.21	74.00	-26.79	peak			

Above 1G (1GHz~18GHz)	Test mode: 11B	Test Channel:11

VERTICAL



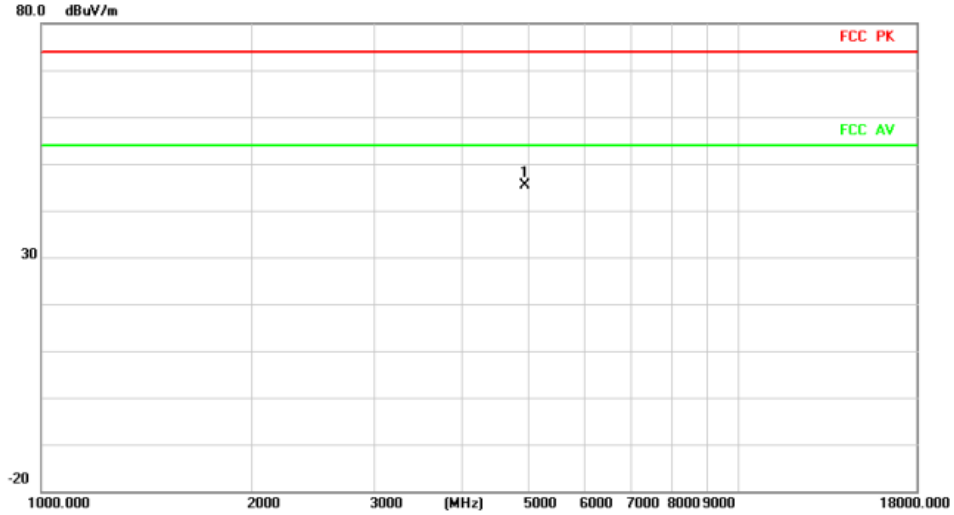
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	49.71	-1.29	48.42	74.00	-25.58	peak			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	50.86	11.09	61.95	74.00	-12.05	peak			
2	*	2483.500	39.38	11.09	50.47	54.00	-3.53	AVG			
3		2500.000	34.11	11.22	45.33	74.00	-28.67	peak			

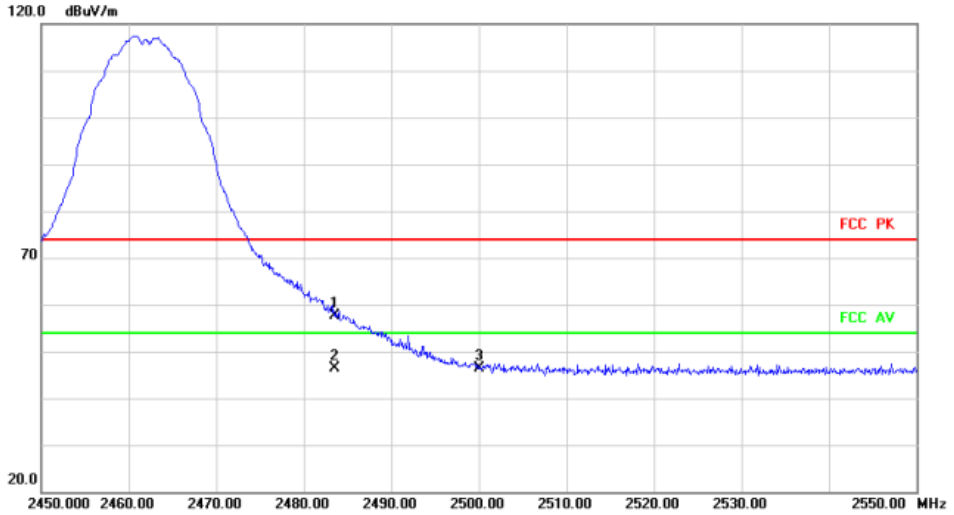
HORIZONTA

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	46.72	-1.29	45.43	74.00	-28.57	peak			

Radiated Emission

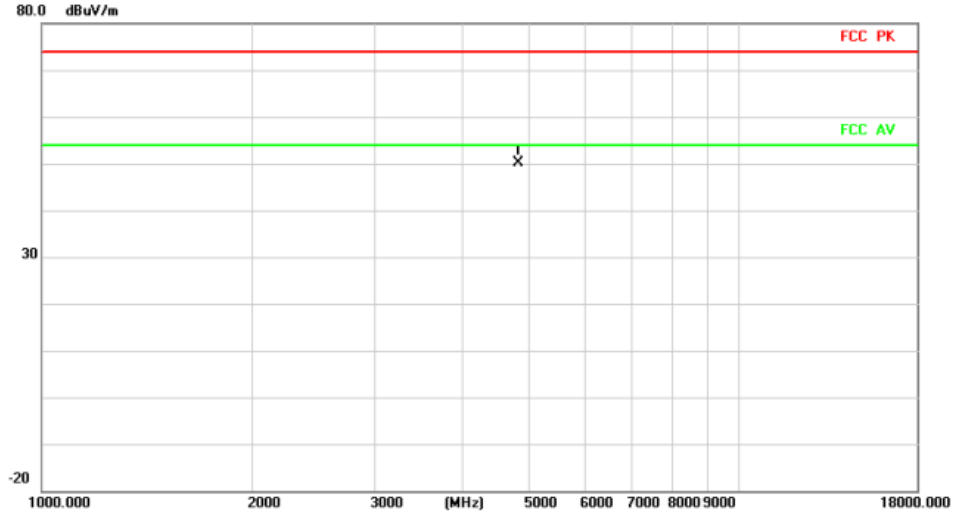


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	46.44	11.09	57.53	74.00	-16.47	peak			
2	*	2483.500	35.24	11.09	46.33	54.00	-7.67	AVG			
3		2500.000	35.18	11.22	46.40	74.00	-27.60	peak			

Above 1G (1GHz~18GHz)	Test mode:11G	Test Channel:1

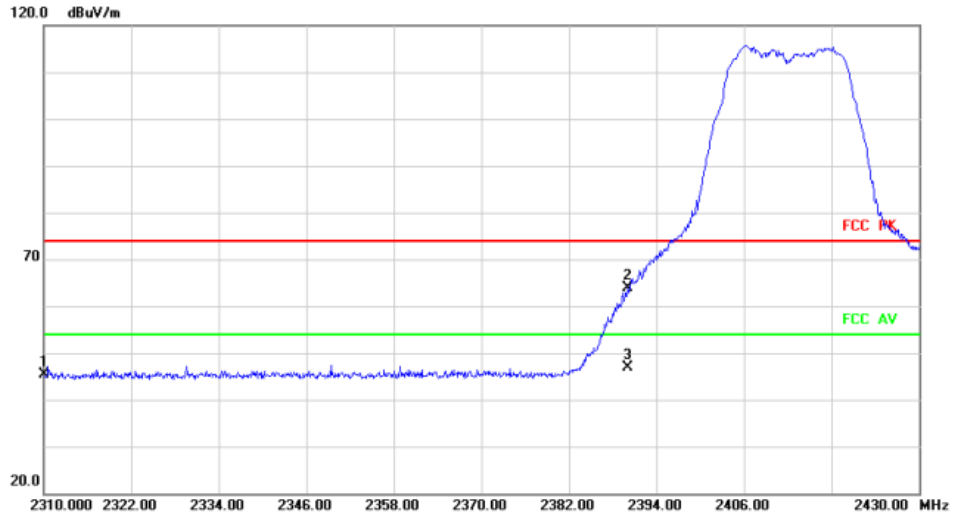
VERTICAL

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	51.96	-1.88	50.08	74.00	-23.92	peak			

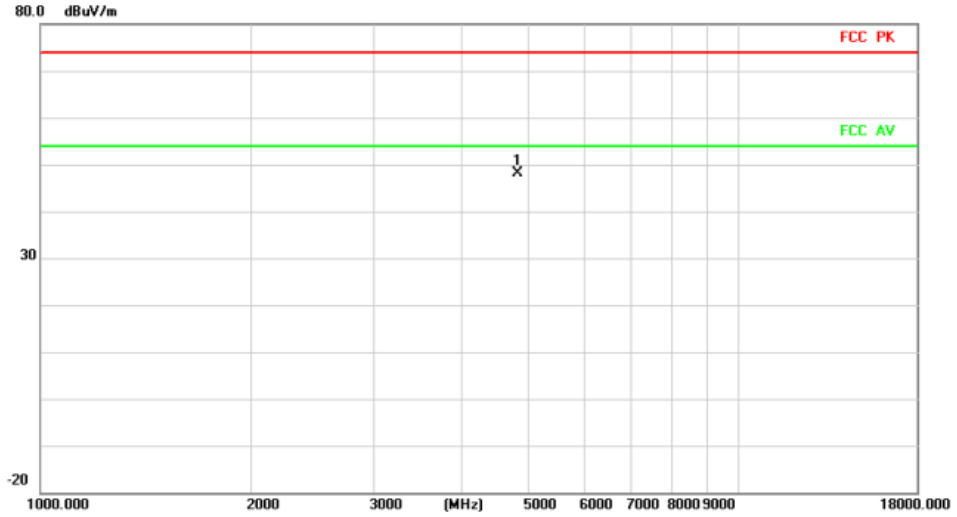
Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	35.22	10.19	45.41	74.00	-28.59	peak			
2		2390.000	53.58	10.41	63.99	74.00	-10.01	peak			
3	*	2390.000	36.36	10.41	46.77	54.00	-7.23	AVG			

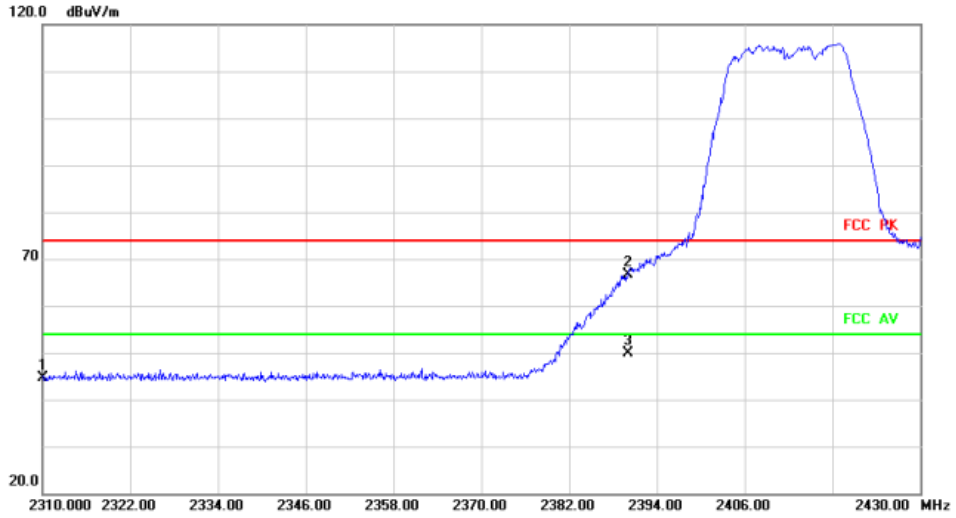
HORIZONTA

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	50.09	-1.88	48.21	74.00	-25.79	peak			

Radiated Emission

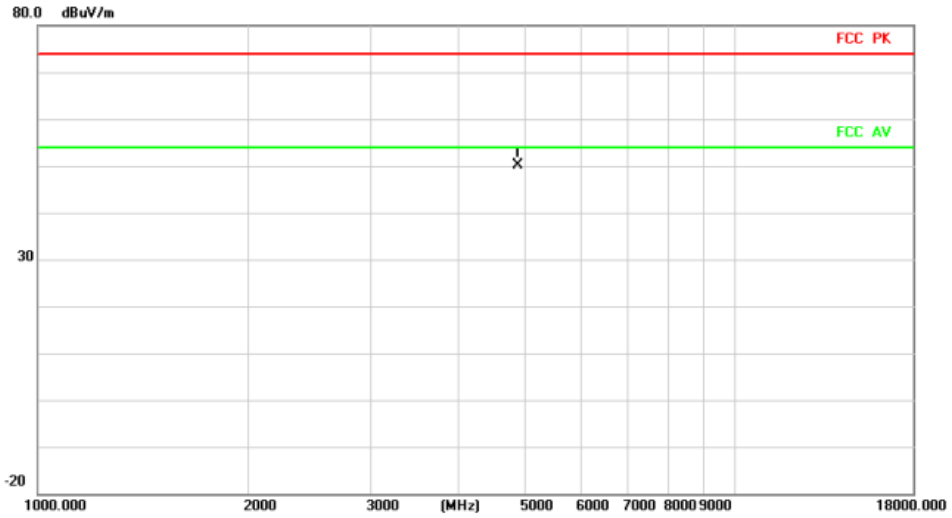


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	34.35	10.19	44.54	74.00	-29.46	peak			
2		2390.000	56.23	10.41	66.64	74.00	-7.36	peak			
3	*	2390.000	39.43	10.41	49.84	54.00	-4.16	AVG			

Above 1G (1GHz~18GHz)	Test mode:11G	Test Channel:6

VERTICAL

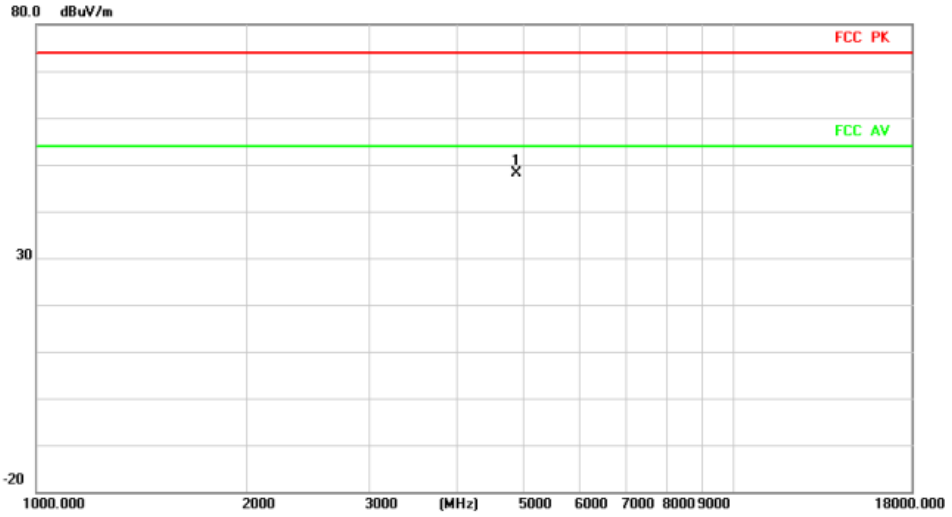
Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	51.66	-1.53	50.13	74.00	-23.87	peak			

HORIZONTA

Radiated Emission

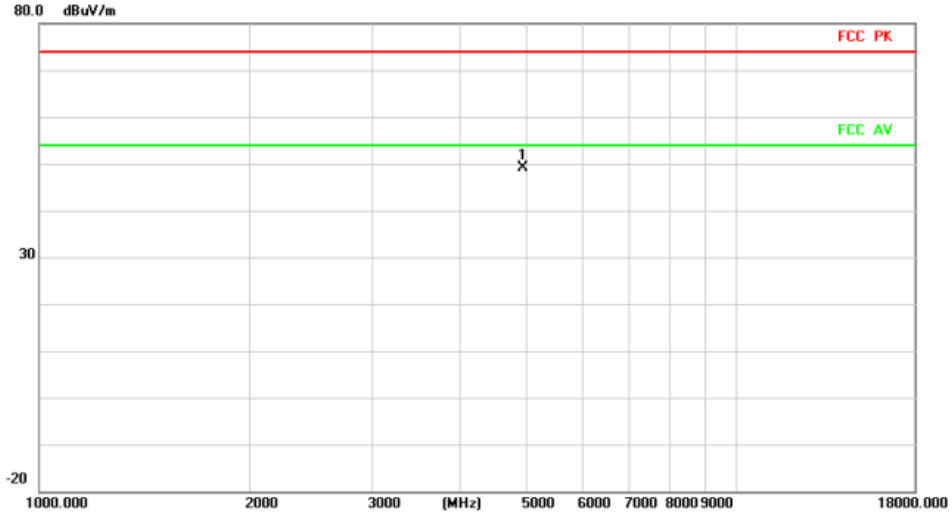


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	49.72	-1.53	48.19	74.00	-25.81	peak			

Above 1G (1GHz~18GHz)	Test mode: 11G	Test Channel:11

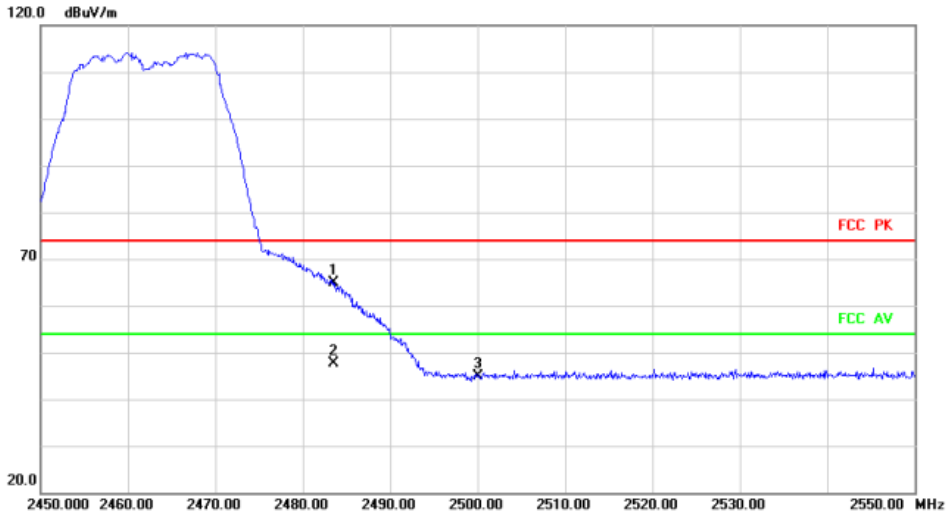
VERTICAL

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	50.50	-1.29	49.21	74.00	-24.79	peak			

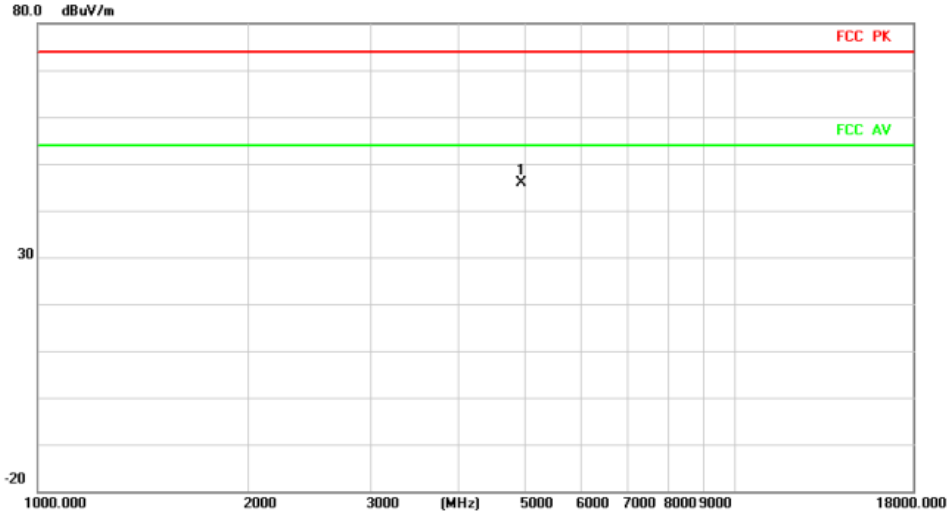
Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	53.89	11.09	64.98	74.00	-9.02	peak			
2	*	2483.500	36.66	11.09	47.75	54.00	-6.25	AVG			
3		2500.000	33.54	11.22	44.76	74.00	-29.24	peak			

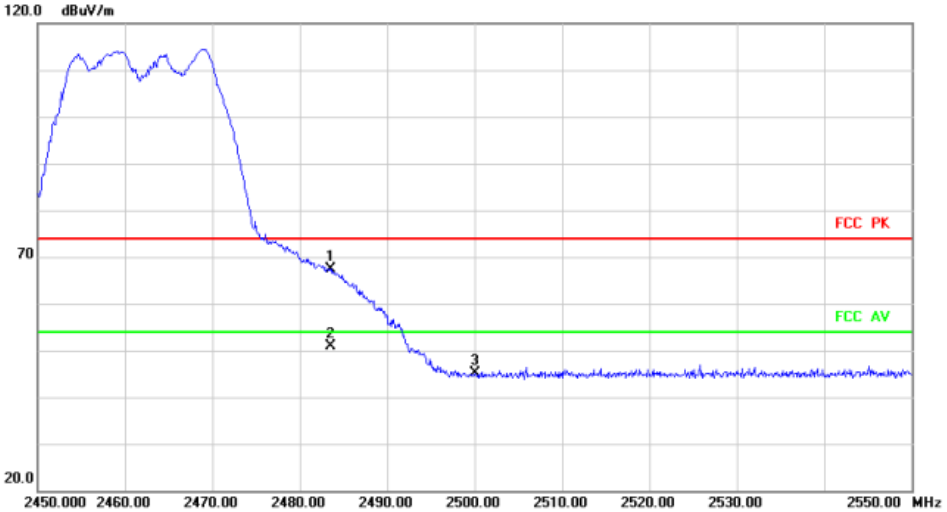
HORIZONTA

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	47.29	-1.29	46.00	74.00	-28.00	peak			

Radiated Emission

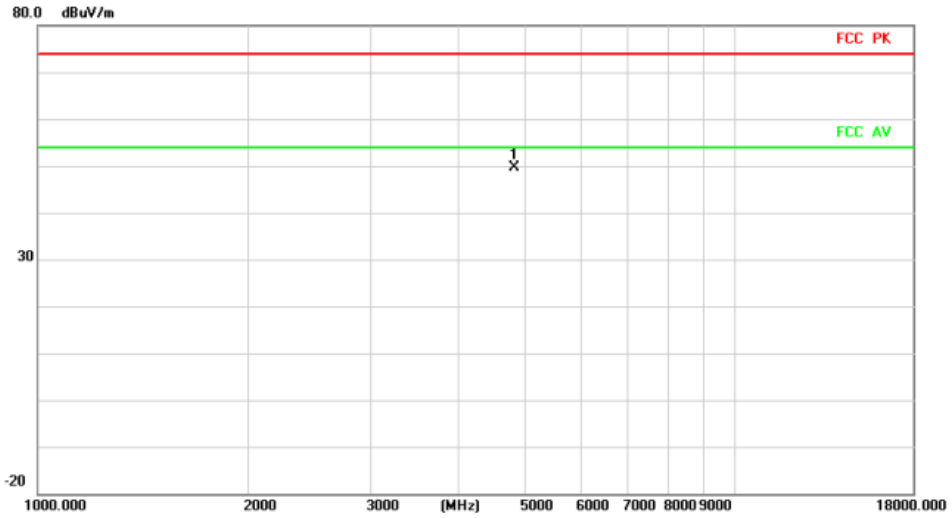


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	56.23	11.09	67.32	74.00	-6.68	peak			
2	*	2483.500	39.85	11.09	50.94	54.00	-3.06	AVG			
3		2500.000	33.97	11.22	45.19	74.00	-28.81	peak			

Above 1G (1GHz~18GHz)	Test mode: 11N20SISO	Test Channel:1

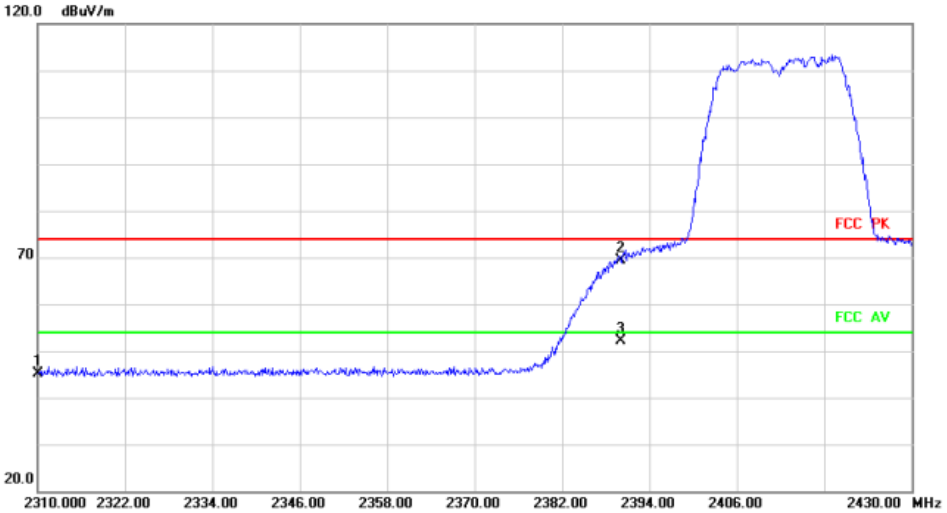
VERTICAL

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	51.49	-1.88	49.61	74.00	-24.39	peak			

Radiated Emission



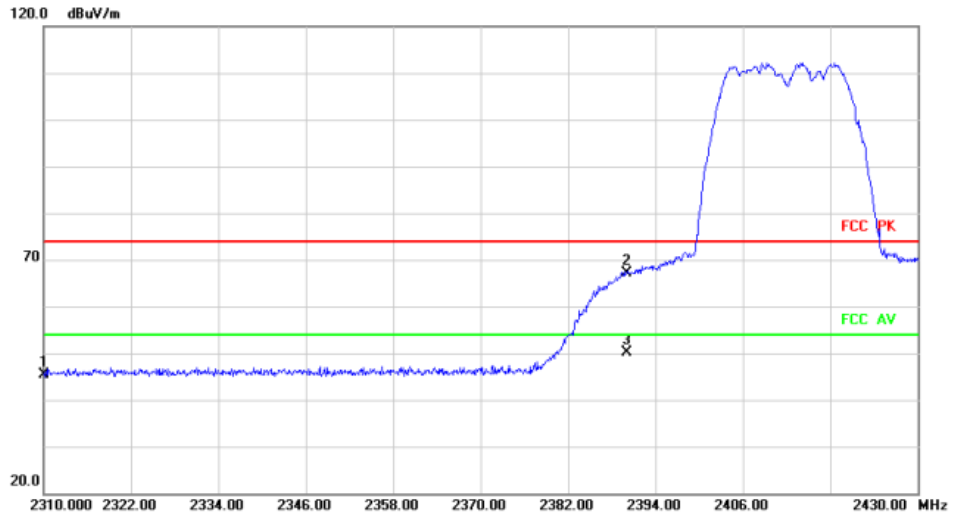
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	35.02	10.19	45.21	74.00	-28.79	peak			
2		2390.000	58.97	10.41	69.38	74.00	-4.62	peak			
3	*	2390.000	41.83	10.41	52.24	54.00	-1.76	AVG			

HORIZONTA

Radiated Emission

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4824.000	48.94	-1.88	47.06	74.00	-26.94	peak			

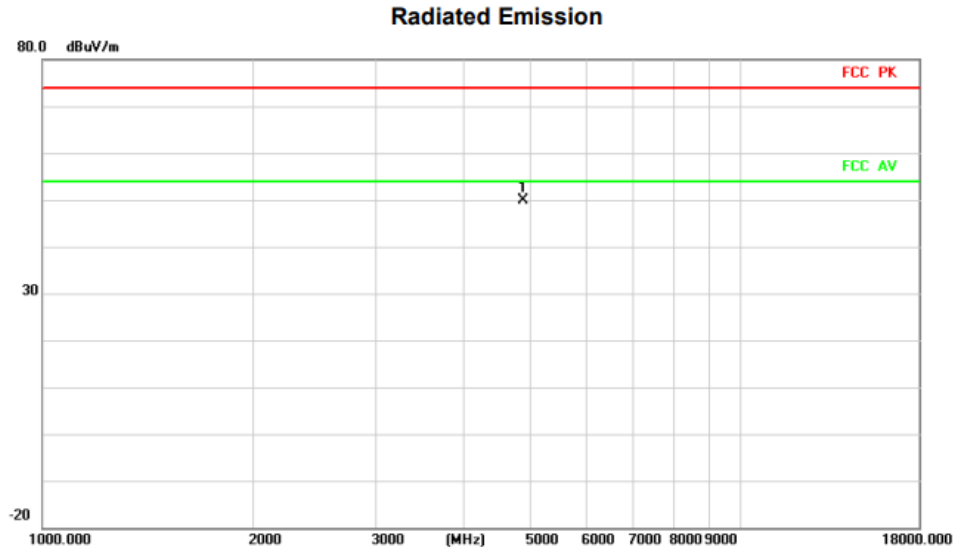
Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	35.12	10.19	45.31	74.00	-28.69	peak			
2		2390.000	56.69	10.41	67.10	74.00	-6.90	peak			
3	*	2390.000	39.66	10.41	50.07	54.00	-3.93	AVG			

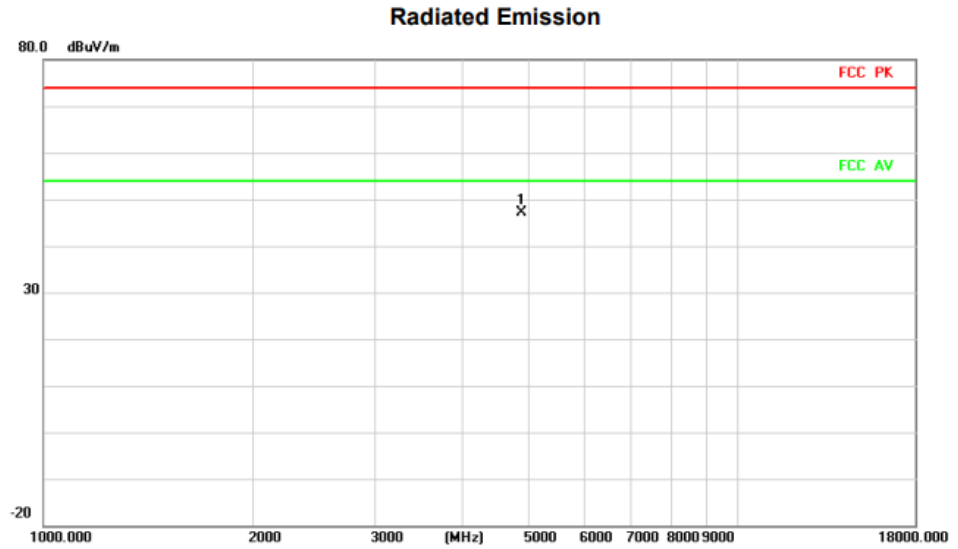
Above 1G (1GHz~18GHz)	Test mode:11N20SISO	Test Channel:6

VERTICAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	51.29	-1.53	49.76	74.00	-24.24	peak			

HORIZONTA

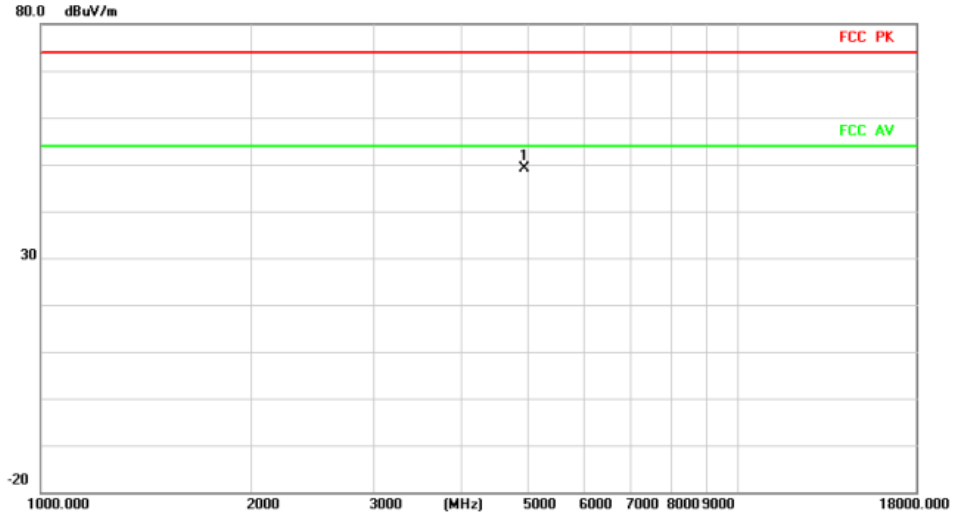


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4884.000	48.76	-1.53	47.23	74.00	-26.77	peak			

Above 1G (1GHz~18GHz)	Test mode: 11N20SISO	Test Channel:11

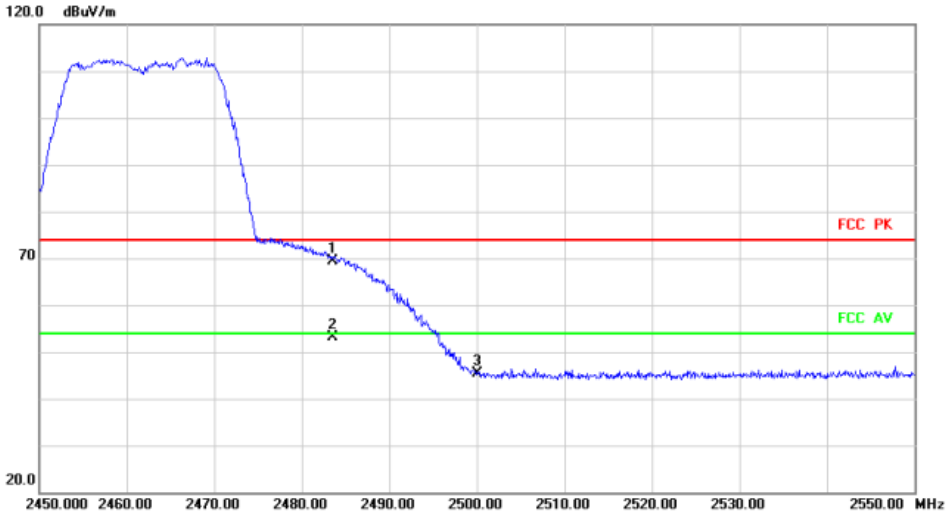
VERTICAL

Radiated Emission



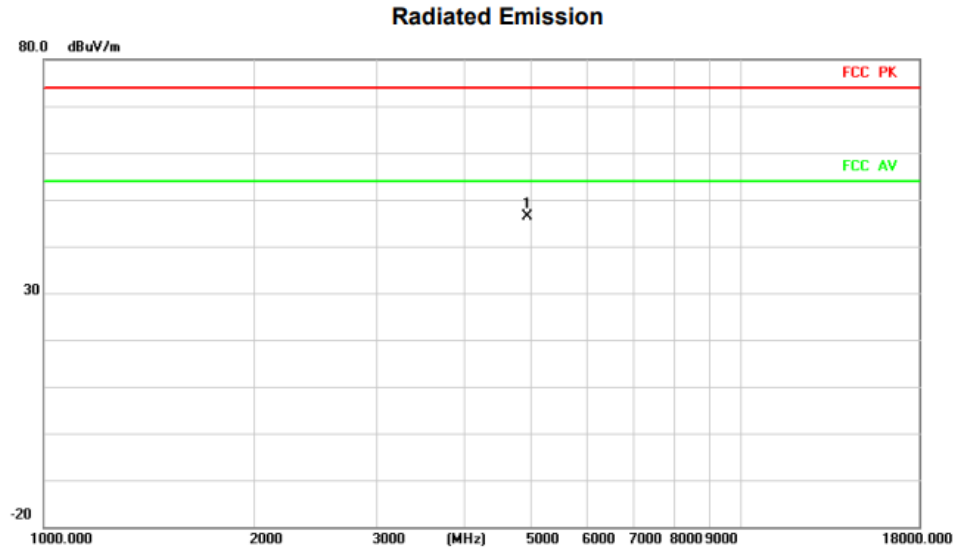
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	50.38	-1.29	49.09	74.00	-24.91	peak			

Radiated Emission

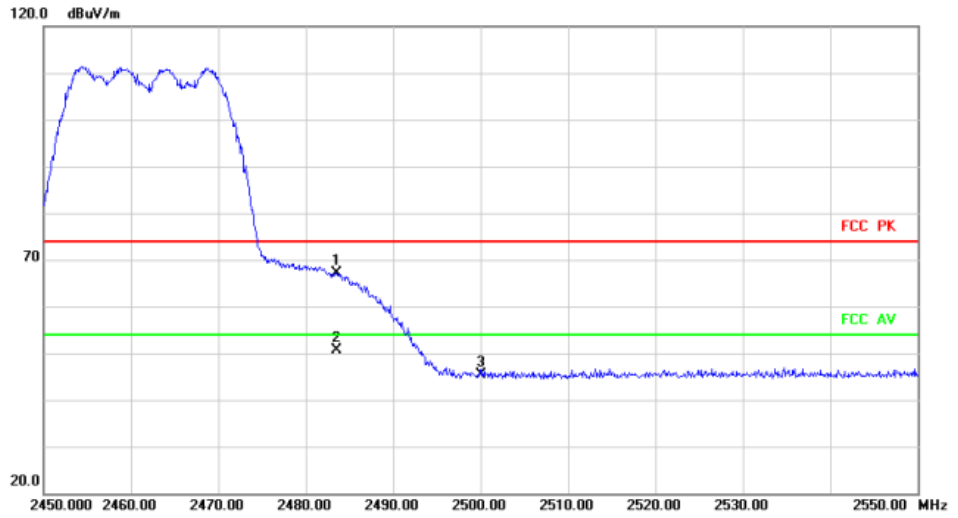


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	58.35	11.09	69.44	74.00	-4.56	peak			
2	*	2483.500	42.12	11.09	53.21	54.00	-0.79	AVG			
3		2500.000	34.25	11.22	45.47	74.00	-28.53	peak			

HORIZONTA



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	4924.000	47.79	-1.29	46.50	74.00	-27.50	peak			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	56.15	11.09	67.24	74.00	-6.76	peak			
2	*	2483.500	39.53	11.09	50.62	54.00	-3.38	AVG			
3		2500.000	34.23	11.22	45.45	74.00	-28.55	peak			

The high frequency, which started from 18GHz to 25GHz, was pre-scanned and the result which was 20dB lower than the limit line was not recorded in this report.

3.3 Spurious Emission at Antenna Port

3.3.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

3.3.2 Test Procedure

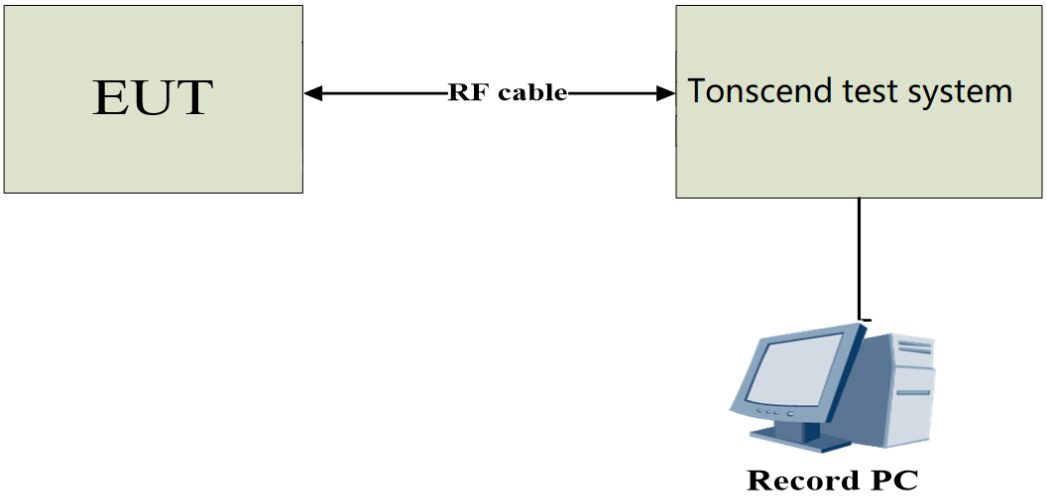
Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
● Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.

b) Spectrum Setting as below:

Centre Frequency	The centre frequency of the channel under test
Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.3.3 Test Setup



3.3.4 The Result

Note: For test data, please refer to test report no: RF240314002-03-001.

3.4 6dB Bandwidth

3.4.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

3.4.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was connected to the tonscend test system, and the spectrum analyser is set as follow:

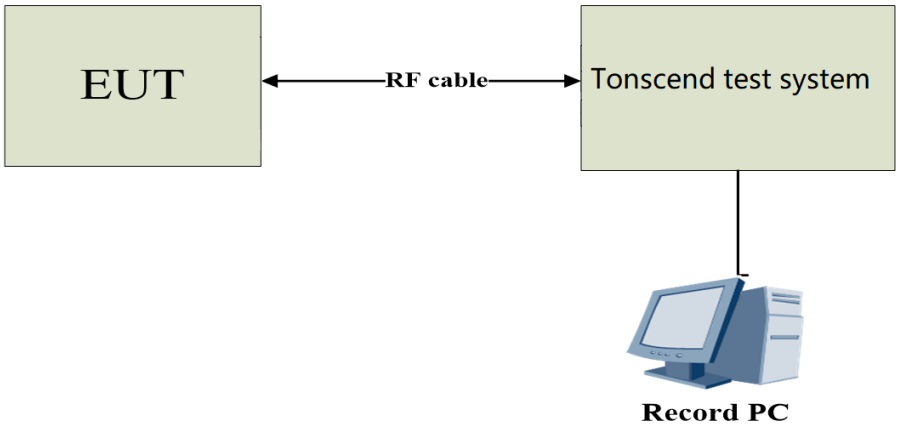
Centre Frequency	The centre frequency of the channel under test
RBW	100kHz
VBW	300kHz
Frequency span	2x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

b) Wait for the trace to stabilize then find the peak value of the trace and place the analyser marker on this peak.

c) Use the -6dB bandwidth function of the spectrum analyser to measure the 6dB Bandwidth of the EUT. This value shall be recorded.

d) Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

3.4.3 Test Setup



3.4.4 Test Result

Note: For test data, please refer to test report no: RF240314002-03-001.

3.5 Maximum conducted output power

3.5.1 Limit

For systems using digital modulation in the 2400~2483.5MHz, The Maximum output Power shall not exceed 1W(30dBm)

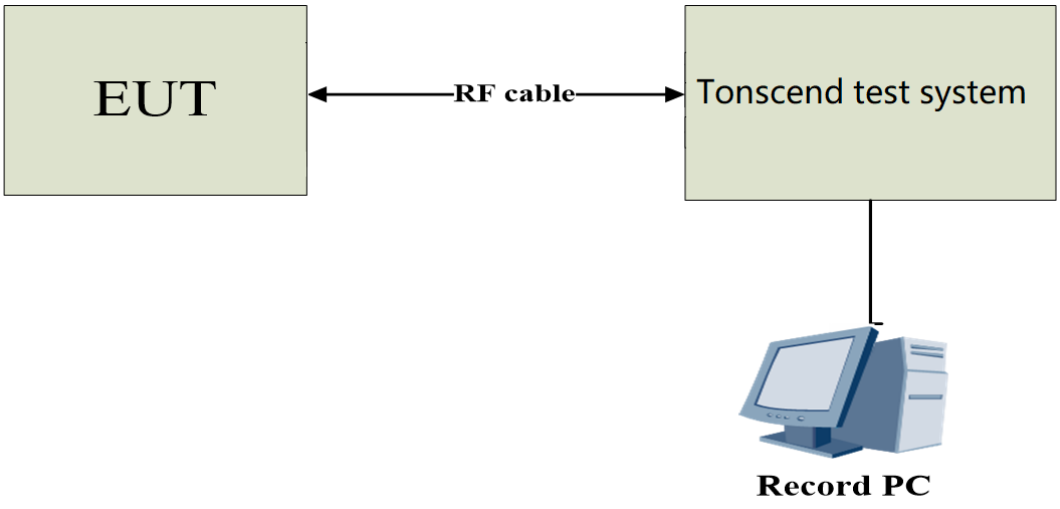
3.5.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.

b) The maximum conducted output power was performed in accordance with method 11.9.2.3 (for average power) of ANSI C63.10-2013.

3.5.3 Test Setup



3.5.4 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.

For Power setting value

Test Mode	Power Level Setting defined by Manufacturer		
Test Software Version	cmd.exe		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	Default	Default	Default
IEEE 802.11g	Default	Default	Default
IEEE 802.11n(20)	Default	Default	Default

3.5.5 The Result

Note: For test data, please refer to test report no: RF240314002-03-001.

3.6 Power Spectral Density

3.6.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmitting.

3.6.2 Test Procedure

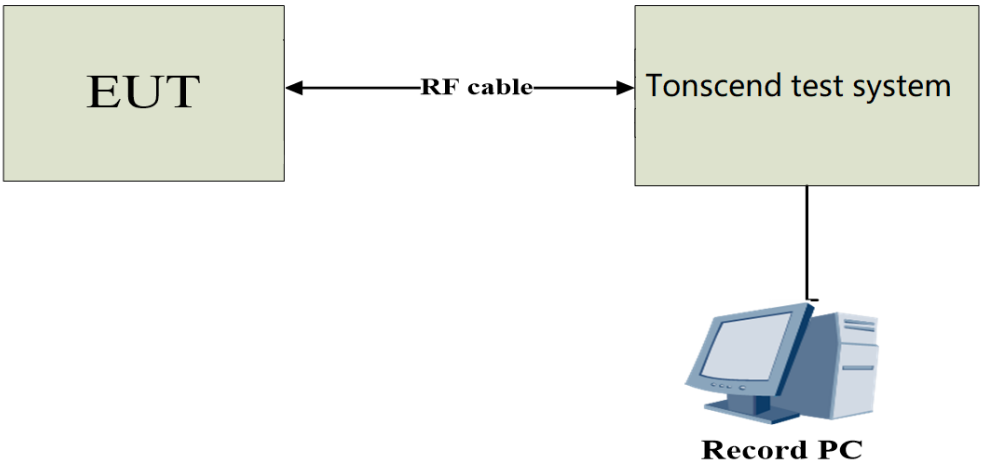
Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.

b) Spectrum analyser settings as following:

Spectrum Parameters	Setting
Span Frequency	1.5 times the DTS bandwidth
RBW	3 kHz
VBW	10 kHz
Detector	Average
Trace	Max Hold
Sweep Time	Auto

3.6.3 Test Setup



3.6.4 The Result

Note: For test data, please refer to test report no: RF240314002-03-001.

Statement

1. The report is invalid without the official seal or special seal of Shenzhen Haiyun Standard Technical Co., Ltd. (hereinafter referred to as the unit).
2. The report is invalid without the signature of the approver.
3. The report is invalid if altered arbitrarily.
4. The report shall not be partially copied without the written approval of the unit.
5. The reported test results are only valid for the tested samples.
6. If there is any objection to the test report, it shall be submitted to the test unit within 15 days from the date of receiving the report, and the overdue shall not be accepted.

Shenzhen Haiyun Standard Technical Co., Ltd.

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End of Test Report