

RADIO TEST REPORT

Report No: STS1504101F02

Issued for

Piu Mobile Corp

6030 Nw 99 Av Unit 405 Miami fl 33178 USA

L A B

Product Name:	Smart Phone
Brand Name:	N/A
Model No.:	Y210D
Series Model:	Y320
FCC ID:	2ADOOY210DY320
Test Standard:	FCC Part 15.247

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	IEST RESU	JLI CERTIFICATION
Applicant'sname	Piu Mobile Cor	ър
Address	6030 Nw 99 Av	Unit 405 Miami fl 33178 USA
Manufacture's Name	SHENZHEN M	I-HORSE TECHNOLOGY CO.,LTD
Address	Building B13 Y District,Shenzh	intian Industry Park,Xixiang Street,Baoan nen,China
Product description		
Product name	Smart Phone	
Band name		
Model and/or type reference	Y210D	
Ratings	DC 5V/1000m/	A
Standards	FCC Part 15.2	47
Test procedure	ANSI C63.10-2	2013
under test (EUT) is in complic sample identified in the repor This report shall not be re	ance with the Foundation to the following th	d by STS, and the test results show that the equipment CC requirements. And it is applicable only to the tested pt in full, without the written approval of STS, this, personal only, and shall be noted in the revision of the
Date of Test		
Date (s) of performance of tes	sts 12 May. 20	15 ~18 May. 2015
Date of Issue	19 May. 20	15
Test Result	Pass	
Testing En	gineer : _	(Jin Ming)
Technical N	Лanager : —	(Vita Li)
Authorized	Signatory:	Thoney Young

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(Bovey Yang)



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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	19 May. 2015	STS1504101F02	ALL	Initial Issue





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C				
Standard Section	I I I I I I I I I I I I I I I I I I I			
15.207	Conducted Emission	PASS		
15.247(a)(1)	Hopping Channel Separation	PASS		
15.247(b)(1)	Peak Output Power	PASS		
15.247(c)	Radiated Spurious Emission	PASS		
15.247(d)	Conducted Spurious Emission	PASS		
15.247(a)(iii)	Number of Hopping Frequency	PASS		
15.247(a)(iii)	Dwell Time	PASS		
15.247(a)(1)	Bandwidth	PASS		
15.205	Band Edge Emission	PASS		
15.203	Antenna Requirement	PASS		

NOTE:

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



1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.

Add.: 1/F, Building B, Zhuoke Science Park, No.190, Chongqing Road,

Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

CNAS Registration No.: L7649;

FCC Registration No.: 842334; IC Registration No.: 12108A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately 95 % $^{\circ}$

No.	Item	Uncertainty
1	Conducted Emission (9KHz-150KHz)	±2.88dB
2	Conducted Emission (150KHz-30MHz)	±2.67dB
3	RF power,conducted	±0.70dB
4	Spurious emissions,conducted	±1.19dB
5	All emissions,radiated(<1G) 30MHz-200MHz	±2.83dB
6	All emissions,radiated(<1G) 200MHz-1000MHz	±2.94dB
7	All emissions,radiated(>1G)	±3.03dB
8	Temperature	±0.5°C
9	Humidity	±2%



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Phone		
Equipment	Siliait Filolie		
Trade Name	N/A		
Model Name	Y210D		
Serial Model	Y320		
Model Difference	They are different only for model name.		
Channel List	Please refer to the Note 2.		
Bluetooth	Frequency:2402 – 2480 MHz Modulation: GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps)		
Adoutes	Input:AC 100-240V,50/60Hz,200mA		
Adapter	Output:DC 5V,1000mA		
Datte	Rated Voltage: 3.7V		
Battery	capacity :1500mAh		
Hardware version number	G621-V1.0		
Coffees	6820-b-G621_JinHuiMa-B12B_150324_1_user_dib		
Software versioning number	aialog_dt		
Connecting I/O Port(s)	Please refer to the User's Manual		

Note:

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



2.

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

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PIFA Antenna	N/A	1	BT Antenna

The EUT antenna is integral Antenna. no antenna other than that furnished by the responsible party shall be used with the device.



2.2 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	CH00
Mode 2	CH39
Mode 3	CH78
Mode 4	Charging+ Link Mode

For Conducted Emission		
Final Test Mode	Description	
Mode 4	Charging+ Link Mode	

For Radiated Emission					
Final Test Mode	Description				
Mode 1	CH00				
Mode 2	CH39				
Mode 3	CH78				
Mode 4	Charging+ Link Mode				

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

2.3 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 FHSS

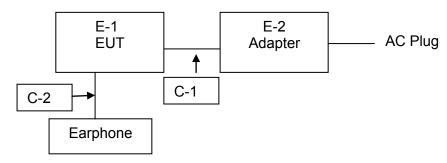
Test software Version	Test program: N/A			
Frequency	2402 MHz 2441 MHz 2480 MHz			
Parameters(1Mbps)	DEF	DEF	DEF	



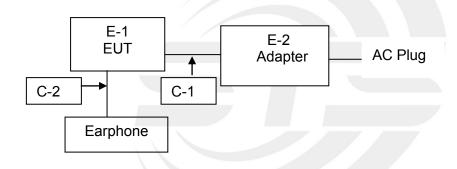
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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 FHSS

Radiated Spurious Emission Test



Conducted Emission Test





2.5 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.	Series No.	Note
E-1	Smart Phone	N/A	Y210D	N/A	EUT
E-2	Adapter	N/A	BJ-250	N/A	EUT
E-3	Earphone	N/A	N/A	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	unshielded	NO	82.5cm	N/A
C-2	unshielded	NO	119.1cm	N/A
			7//	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in <code>"Length_"</code> column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".



2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2014.10.25	2015.10.24
Test Receiver	R&S	ESCI	101427	2014.10.25	2015.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2014.11.25	2015.11.24
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	9120D-1343	2015.03.06	2016.03.05
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.06.06	2015.06.05
PreAmplifier	Agilent	8449B	60538	2014.10.25	2015.10.24
Loop Antenna	ARA	PLA-1030/B	1029	2014.06.08	2015.06.07
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2014.10.25	2015.10.24

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	
EMI Test Receiver	R&S	ESPI	102086	2014.11.20	2015.11.19	
LISN	R&S	ENV216	101242	2014.10.25	2015.10.24	



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&207(a) limit in the table below has to be followed.

Class B	Standard	
Quasi-peak	Average	Standard
66 - 56 *	56 - 46 *	CISPR
56.00	46.00	CISPR
60.00	50.00	CISPR
	Quasi-peak 66 - 56 * 56.00	66 - 56 * 56 - 46 * 56.00 46.00

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	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.

The following table is the setting of the receiver

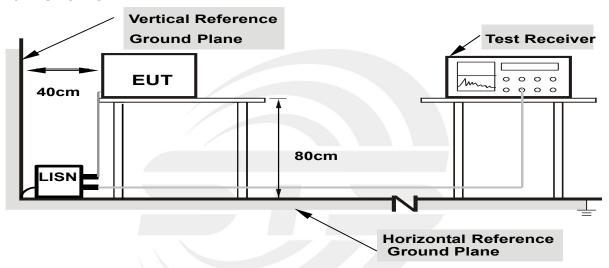
Receiver Parameters	Setting	
Attenuation	10 dB	
Start Frequency	0.15 MHz	
Stop Frequency	30 MHz	
IF Bandwidth	9 kHz	



3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 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

3.1.4 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.



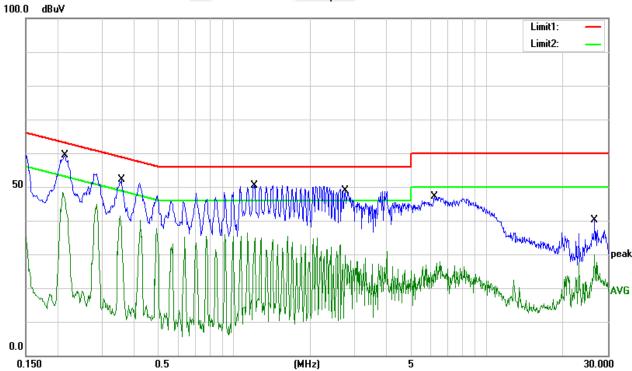
3.1.5 TEST RESULTS

EUT:	Smart Phone	Model Name.:	Y210D
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	L
Test Voltage:	DC 5V from Adapter AC120V/60Hz	Test Mode:	Mode 4

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	Remark
0.2140	47.41	9.99	57.40	63.05	-5.65	QP
0.2140	38.37	9.99	48.36	53.05	-4.69	AVG
0.3580	40.12	10.07	50.19	58.77	-8.58	QP
0.3580	31.33	10.07	41.40	48.77	-7.37	AVG
1.2060	38.57	9.92	48.49	56.00	-7.51	QP
1.2060	24.88	9.92	34.80	46.00	-11.20	AVG
2.7620	36.97	10.01	46.98	56.00	-9.02	QP
2.7620	19.72	10.01	29.73	46.00	-16.27	AVG
6.1980	34.94	10.20	45.14	60.00	-14.86	QP
6.1980	17.11	10.20	27.31	50.00	-22.69	AVG
26.6100	27.49	10.55	38.04	60.00	-21.96	QP
26.6100	19.43	10.55	29.98	50.00	-20.02	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



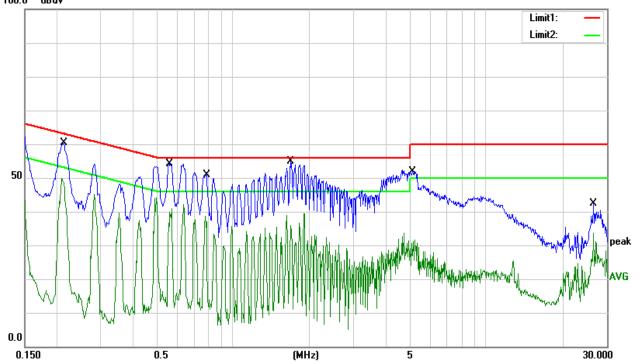


EUT:	Smart Phone	Model Name.:	Y210D
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	N
Test Voltage:	DC 5V from Adapter AC120V/60Hz	Test Mode:	Mode 4

Frequency	Reading	Correct	Result	Limit	Margin	Domonic
(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	Remark
0.2140	48.44	9.99	58.43	63.05	-4.62	QP
0.2140	39.84	9.99	49.83	53.05	-3.22	AVG
0.5581	42.22	9.93	52.15	56.00	-3.85	QP
0.5581	30.94	9.93	40.87	46.00	-5.13	AVG
0.7860	38.81	10.00	48.81	56.00	-7.19	QP
0.7860	28.70	10.00	38.70	46.00	-7.30	AVG
1.6940	42.96	10.00	52.96	56.00	-3.04	QP
1.6940	28.98	10.00	38.98	46.00	-7.02	AVG
5.1300	39.78	10.20	49.98	60.00	-10.02	QP
5.1300	21.49	10.20	31.69	50.00	-18.31	AVG
26.6100	31.59	10.71	42.30	60.00	-17.70	QP
26.6100	22.96	10.71	33.67	50.00	-16.33	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15247&205(a), then the Part 15 247&209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (30MHz - 1000MHz)

EIMITO OT TO USIN TES EIMIOGION WENCON EIMENT (COMITE TOOCH II)					
Frequencies	Field Strength	Measurement Distance			
(MHz)	(micorvolts/meter)	(meters)			
0.009~0.490	2400/F(KHz)	300			
0.490~1.705	24000/F(KHz)	30			
1.705~30.0	30	30			
30~88	100	3			
88~216	150	3			
216~960	200	3			
Above 960	500	3			

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

EDEOLIENCY (MUz)	Class B (dBuV/m) (at 3M)		
FREQUENCY (MHz)	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

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Spectrum Parameter	Setting	
Attenuation	Auto	
Detector	Peak	
Start Frequency	1000 MHz(Peak/AV)	
Stop Frequency	10th carrier harmonic(Peak/AV)	
RB / VB (emission in restricted	1 MILL / 1 MILL AV - 1 MILL / 1 OLL	
band)	1 MHz / 1 MHz, AV=1 MHz / 10Hz	

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters(above 1GHz is 1.5 m) above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m(above 1GHz is 1.5 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. Note:

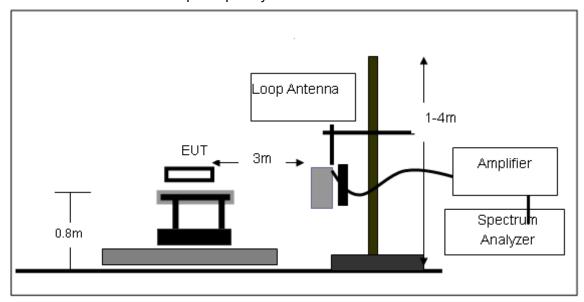
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD No deviation

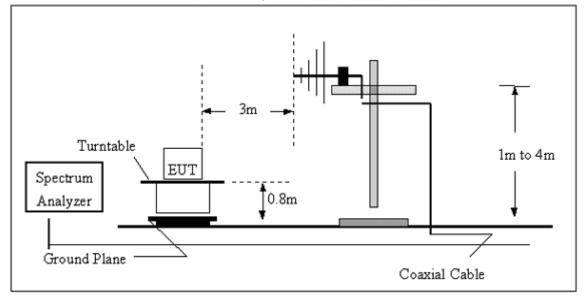


3.2.4 TEST SETUP

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

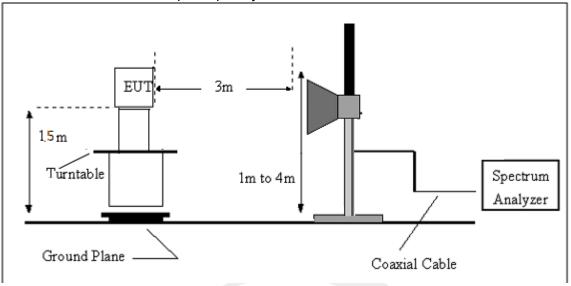


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





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



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.





3.2.6 TEST RESULTS

Below 30MHz

EUT:	Smart Phone	Model Name.:	Y210D
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	DC 5V from Adapter AC120V/60Hz	Test Mode:	N/A

Freq.	Reading	Limit	Margin	State	Test Result
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	rest Result
					PASS
					PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



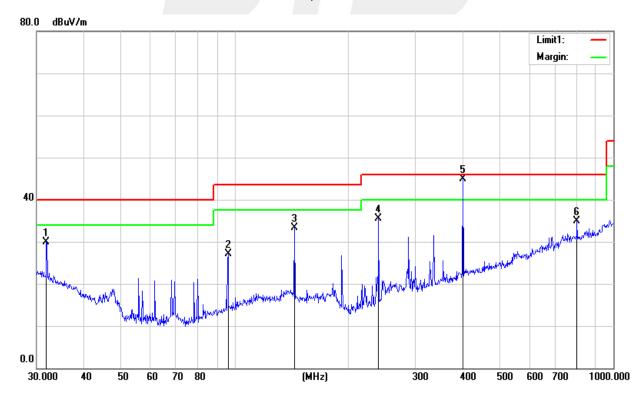
Between 30-1000MHz

EUT:	Smart Phone	Model Name.:	Y210D
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	DC 5V from Adapter AC 120V/60Hz	Test Mode:	Mode 4

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
31.8427	11.96	17.99	29.95	40.00	-10.05	QP
96.0986	16.71	10.42	27.13	43.50	-16.37	QP
143.8294	20.63	12.64	33.27	43.50	-10.23	QP
239.9873	23.43	12.15	35.58	46.00	-10.42	QP
400.4320	26.11	18.84	44.95	46.00	-1.05	QP
801.7862	8.78	26.08	34.86	46.00	-11.14	QP

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



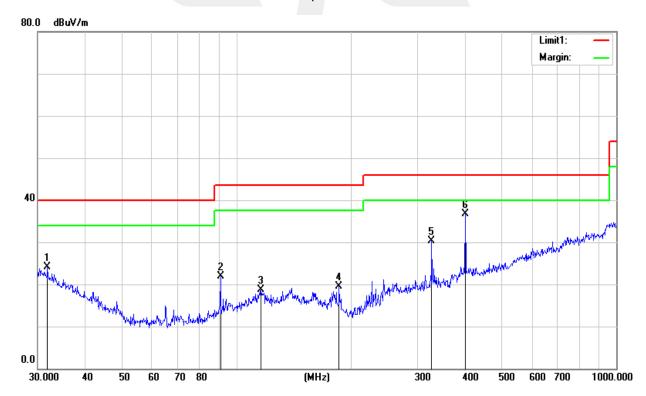


EUT:	Smart Phone	Model Name.:	Y210D
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Vertical
Test Voltage:	DC 5V from Adapter AC 120V/60Hz	Test Mode:	Mode 4

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
31.8427	6.14	17.99	24.13	40.00	-15.87	QP
90.8554	12.15	9.77	21.92	43.50	-21.58	QP
116.1320	6.20	12.51	18.71	43.50	-24.79	QP
186.4408	9.49	9.93	19.42	43.50	-24.08	QP
326.7395	13.84	16.37	30.21	46.00	-15.79	QP
400.4318	17.82	18.84	36.66	46.00	-9.34	QP

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.





Above 1000 MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Commont	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment	
	Low Channel (2402 MHz)							
4804.20	67.41	-3.62	63.79	74.00	-10.21	PK	Vertical	
4804.22	47.32	-3.62	43.70	54.00	-10.30	AV	Vertical	
7206.13	62.94	-0.90	62.04	74.00	-11.96	PK	Vertical	
7206.12	42.25	-0.90	41.35	54.00	-12.65	AV	Vertical	
4804.00	62.26	-3.65	58.61	74.00	-15.39	PK	Horizontal	
4803.99	45.78	-3.65	42.13	54.00	-11.87	AV	Horizontal	
	Mid Channel (2441 MHz)							
4882.08	65.56	-3.65	61.91	74	-12.09	PK	Vertical	
4882.06	50.78	-3.65	47.13	54	-6.87	AV	Vertical	
7323.22	61.35	-0.84	60.51	74	-13.49	PK	Vertical	
7323.2	45.57	-0.84	44.73	54	-9.27	AV	Vertical	
4882.18	62.89	-3.68	59.21	74	-14.79	PK	Horizontal	
4882.14	45.46	-3.68	41.78	54	-12.22	AV	Horizontal	
High Channel (2480 MHz)								
4960.25	61.95	-3.59	58.36	74	-15.64	PK	Vertical	
4960.3	46.33	-3.59	42.74	54	-11.26	AV	Vertical	
4960.32	61.87	-3.59	58.28	74	-15.72	PK	Horizontal	
4960.31	46.96	-3.59	43.37	54	-10.63	AV	Horizontal	

Note:

- 1) 30MHz~25GHz:(Scan with GFSK, π/4-DQPSK,8DPSK, the worst casw is GFSK Mode)
- 2) Factor = Antenna Factor + Cable Loss Pre-amplifier.

Emission Level = Meter Reading + Factor

Margin = Limit - Emission Leve



Band edge

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment	
	GFSK							
2399.9	69.86	-12.99	56.87	74	-17.13	PK	Vertical	
2399.9	55.26	-12.99	42.27	54	-11.73	AV	Vertical	
2399.9	70.22	-12.99	57.23	74	-16.77	PK	Horizontal	
2399.9	54.29	-12.99	41.3	54	-12.7	AV	Horizontal	
2483.6	71.75	-12.78	58.97	74	-15.03	PK	Vertical	
2483.6	54.96	-12.78	42.18	54	-11.82	AV	Vertical	
2483.6	71.85	-12.78	59.07	74	-14.93	PK	Horizontal	
2483.6	54.38	-12.78	41.6	54	-12.4	AV	Horizontal	
	π/4-DQPSK							
2399.9	71.56	-12.99	58.57	74	-15.43	PK	Vertical	
2399.9	54.54	-12.99	41.55	54	-12.45	AV	Vertical	
2399.9	70.46	-12.99	57.47	74	-16.53	PK	Horizontal	
2399.9	55.07	-12.99	42.08	54	-11.92	AV	Horizontal	
2483.6	71.86	-12.78	59.08	74	-14.92	PK	Vertical	
2483.6	56.86	-12.78	44.08	54	-9.92	AV	Vertical	
2483.6	71.46	-12.78	58.68	74	-15.32	PK	Horizontal	
2483.6	54.57	-12.78	41.79	54	-12.12	AV	Horizontal	
			8DPSK					
2399.9	71.96	-12.99	58.97	74	-15.03	PK	Vertical	
2399.9	55.68	-12.99	42.69	54	-11.31	AV	Vertical	
2399.9	70.57	-12.99	57.58	74	-16.42	PK	Horizontal	
2399.9	56.54	-12.99	43.55	54	-10.45	AV	Horizontal	
2483.6	71.86	-12.78	59.08	74	-14.92	PK	Vertical	
2483.6	55.58	-12.78	42.8	54	-11.2	AV	Vertical	
2483.6	71.53	-12.78	58.75	74	-15.25	PK	Horizontal	
2483.6	54.95	-12.78	42.17	54	-11.83	AV	Horizontal	

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.



Hopping

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment	
	GFSK							
2390	69.64	-12.99	56.65	74	-17.35	PK	Vertical	
2390	55.76	-12.99	42.77	54	-11.23	AV	Vertical	
2390	68.76	-12.99	55.77	74	-18.23	PK	Horizontal	
2390	54.54	-12.99	41.55	54	-12.45	AV	Horizontal	
2483.5	67.96	-12.78	55.18	74	-18.82	PK	Vertical	
2483.5	55.96	-12.78	43.18	54	-10.82	AV	Vertical	
2483.5	68.25	-12.78	55.47	74	-18.53	PK	Horizontal	
2483.5	55.85	-12.78	43.07	54	-10.93	AV	Horizontal	
	π/4-DQPSK							
2390	69.96	-12.99	56.97	74	-17.03	PK	Vertical	
2390	56.36	-12.99	43.37	54	-10.63	AV	Vertical	
2390	68.58	-12.99	55.59	74	-18.41	PK	Horizontal	
2390	54.85	-12.99	41.86	54	-12.14	AV	Horizontal	
2483.5	68.17	-12.78	55.39	74	-18.61	PK	Vertical	
2483.5	54.86	-12.78	42.08	54	-11.92	AV	Vertical	
2483.5	69.25	-12.78	56.47	74	-17.53	PK	Horizontal	
2483.5	55.75	-12.78	42.97	54	-11.03	AV	Horizontal	
	8DPSK							
2390	69.16	-12.99	56.17	74	-17.83	PK	Vertical	
2390	55.16	-12.99	42.17	54	-11.83	AV	Vertical	
2390	68.12	-12.99	55.13	74	-18.87	PK	Horizontal	
2390	55.28	-12.99	42.29	54	-11.71	AV	Horizontal	
2483.5	69.29	-12.78	56.51	74	-17.49	PK	Vertical	
2483.5	55.25	-12.78	42.47	54	-11.53	AV	Vertical	
2483.5	68.15	-12.78	55.37	74	-18.63	PK	Horizontal	
2483.5	55.13	-12.78	42.37	54	-11.63	AV	Horizontal	

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.



4. CONDUCTED SPURIOUS EMISSIONS

4.1 REQUIREMENT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

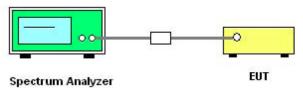
According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Spectrum Parameter	Setting		
Detector	Peak		
Start/Stop Frequency	30 MHz to 10th carrier harmonic		
RB / VB (emission in restricted band)	100 KHz/300 KHz		
Trace-Mode:	Max hold		

For Band edge

Spectrum Parameter	Setting		
Detector	Peak		
Start/Ston Eraguanay	Lower Band Edge: 2310 – 2404 MHz		
Start/Stop Frequency	Upper Band Edge: 2478 – 2500 MHz		
RB / VB (emission in restricted band)	100 KHz/300 KHz		
Trace-Mode:	Max hold		

4.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 500hm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

4.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

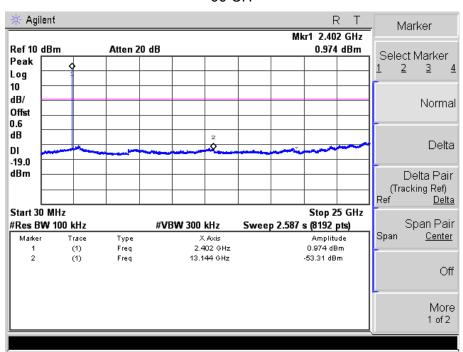


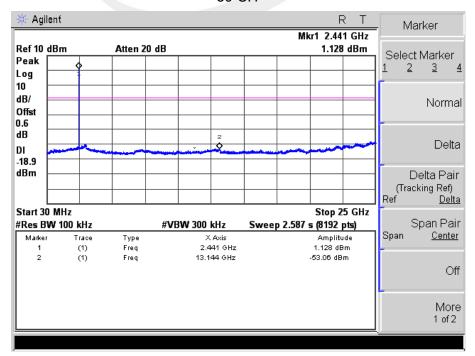


4.5 TEST RESULTS

EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	GFSK(1Mbps)-00/39/78 CH		

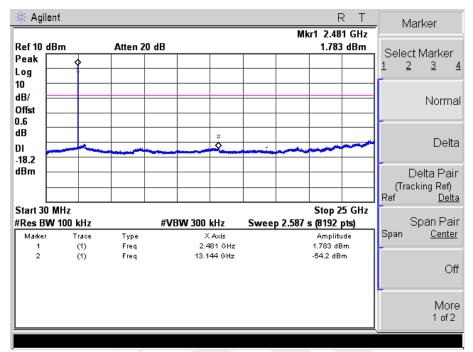
00 CH







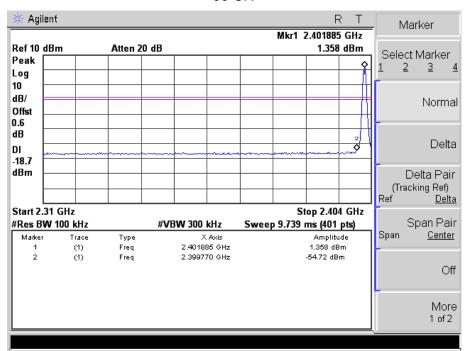
78 CH

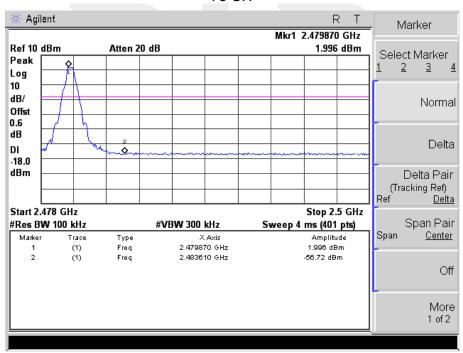




For Band edge

00 CH



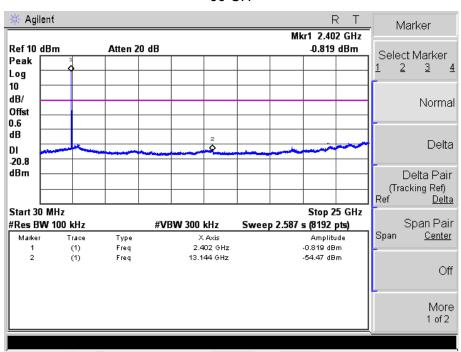


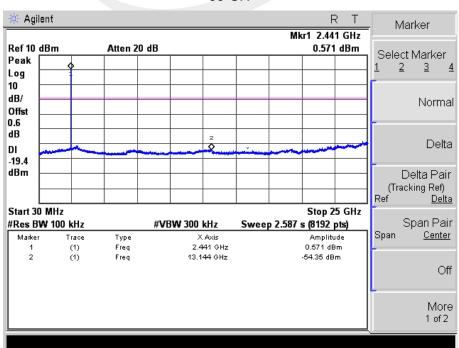


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EUT:	Smart Phone	Model Name :	Y210D		
Temperature :	25 ℃	Relative Humidity:	50%		
Pressure :	1012 hPa	Test Voltage :	DC 3.7V		
Test Mode :	π/4-DQPSK(2Mbps) –00/39/78 CH				

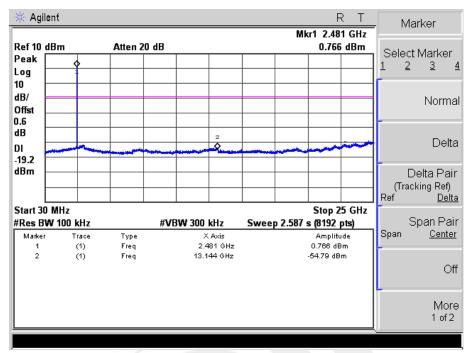
00 CH







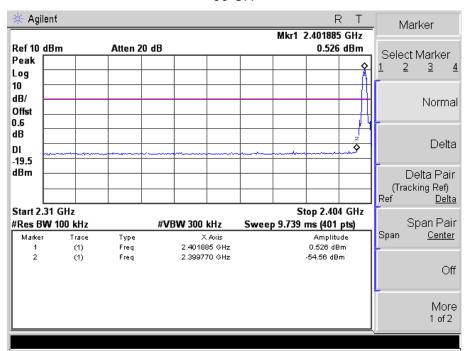
78 CH

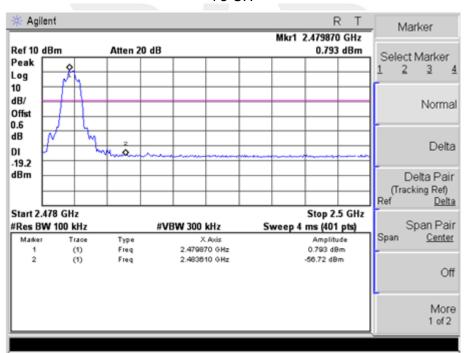




For Band edge

00 CH



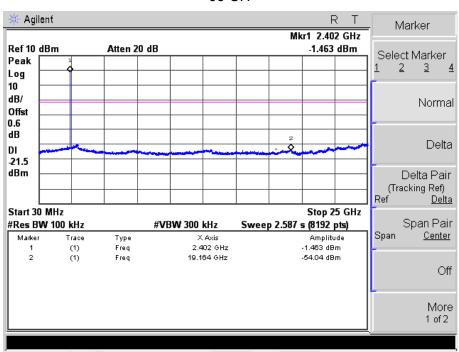


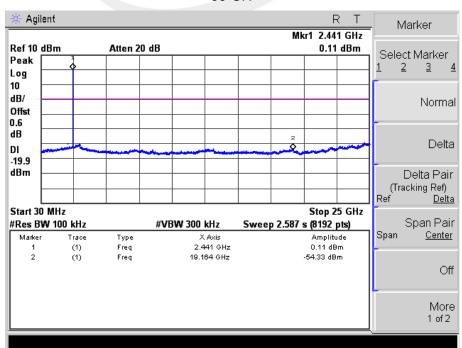


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EUT:	Smart Phone	Model Name :	Y210D		
Temperature :	25 ℃	Relative Humidity:	50%		
Pressure :	1012 hPa	Test Voltage :	DC 3.7V		
Test Mode :	8-DPSK(3Mbps) -00/39/78 CH				

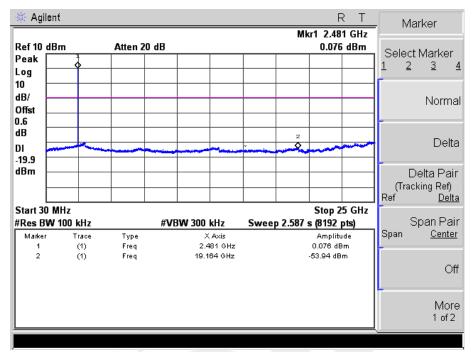
00 CH







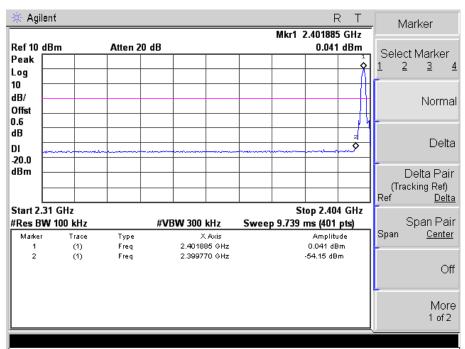
78 CH



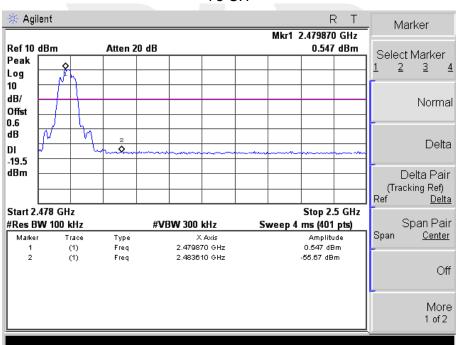


For Band edge

00 CH



78 CH





5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS	

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 KHz
VB	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST PROCEDURE

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

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EUT	SPECTRUM
	ANALYZER

5.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.





5.5 TEST RESULTS

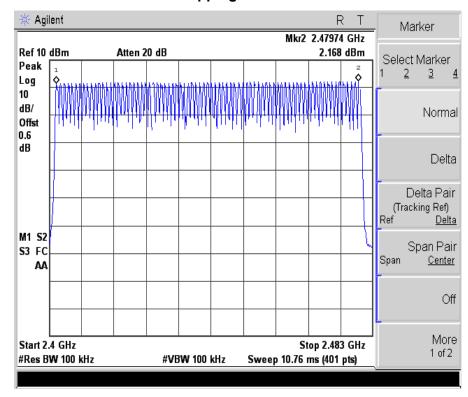
EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	Hopping Mode		

Number of Hopping Channel

79

Report No.: STS1504101F02

Hopping channel





AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C					
Section Test Item Limit Frequency Range (MHz) Result					
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS	

6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to e. zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
- k. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.

6.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

6.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

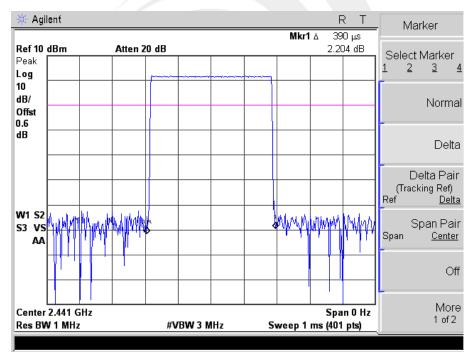


6.5 TEST RESULTS

EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	GFSK(1Mbps)-DH1/DH3/DH5		

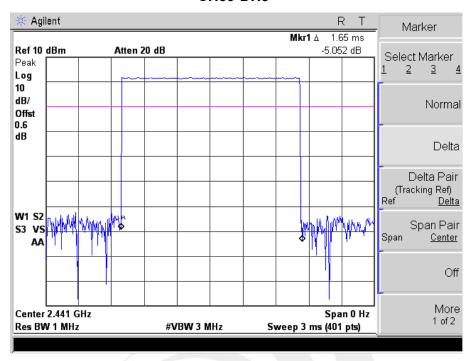
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits(s)
DH1	2441 MHz	0.390	0.125	0.4
DH3	2441 MHz	1.650	0.264	0.4
DH5	2441 MHz	2.910	0.310	0.4

CH39-DH1

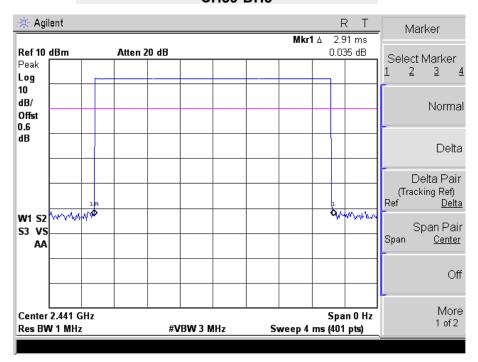




CH39-DH3



CH39-DH5



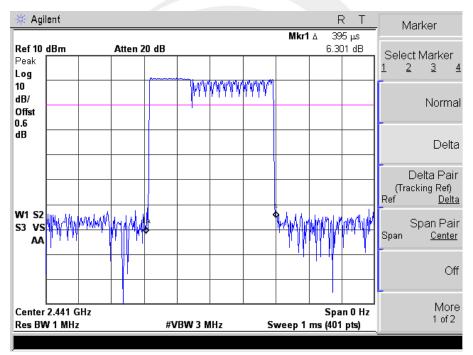


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EUT:	Smart Phone	Model Name :	Y210D		
Temperature :	25 ℃	Relative Humidity:	50%		
Pressure :	1012 hPa	Test Voltage :	DC 3.7V		
Test Mode :	π/4-DQPSK(2Mbps) –2DH1/2DH3/2DH5				

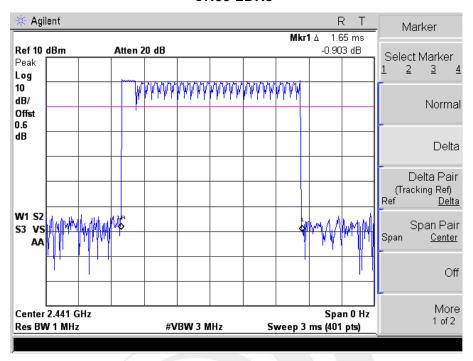
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits(s)
DH1	2441 MHz	0.395	0.126	0.4
DH3	2441 MHz	1.650	0.264	0.4
DH5	2441 MHz	2.910	0.310	0.4

CH39-2DH1

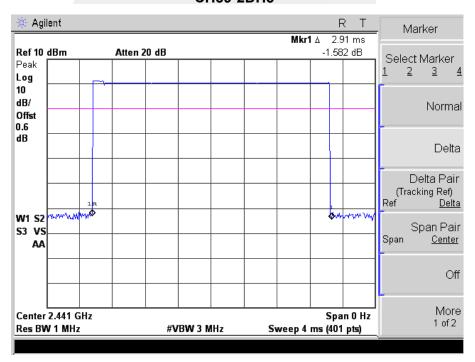




CH39-2DH3



CH39-2DH5



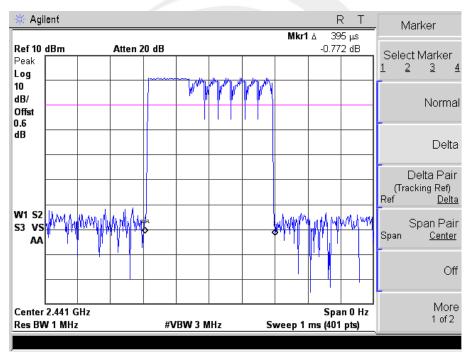


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EUT:	Smart Phone	Model Name :	Y210D		
Temperature:	25 ℃	Relative Humidity:	50%		
Pressure :	1012 hPa	Test Voltage :	DC 3.7V		
Test Mode :	8DPSK(2Mbps) –3DH1/3DH3/3DH5				

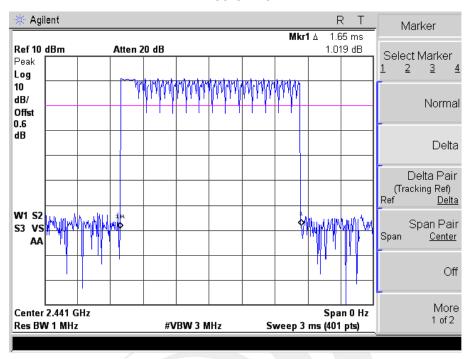
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits(s)
DH1	2441 MHz	0.395	0.126	0.4
DH3	2441 MHz	1.650	0.264	0.4
DH5	2441 MHz	2.910	0.310	0.4

CH39-3DH1

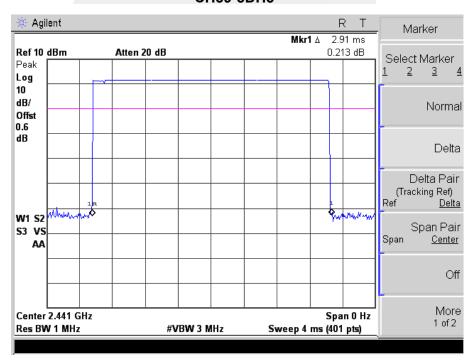




CH39-3DH3



CH39-3DH5





7. HOPPING CHANNEL SEPARATION MEASUREMEN

7.1 APPLIED PROCEDURES / LIMIT

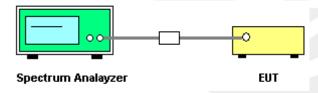
Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting	
Attenuation	Auto	
Span Frequency	> Measurement Bandwidth or Channel Separation	
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)	
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

7.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- C. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.



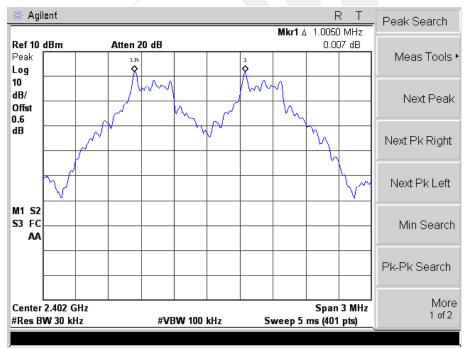
7.5 TEST RESULTS

EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH00 / CH39 /CH78 (GFSK(1Mbps) Mode)		

Frequency	Ch. Separation (MHz)	Limit	Result
2402 MHz	1.005	0.822	Complies
2441 MHz	1.005	0.827	Complies
2480 MHz	1.005	0.826	Complies

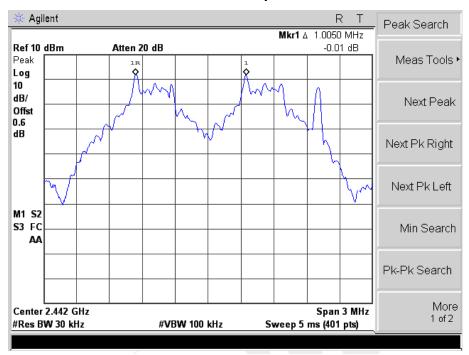
For GFSK: Ch. Separation Limits: >20dB bandwidth

CH00 -1Mbps

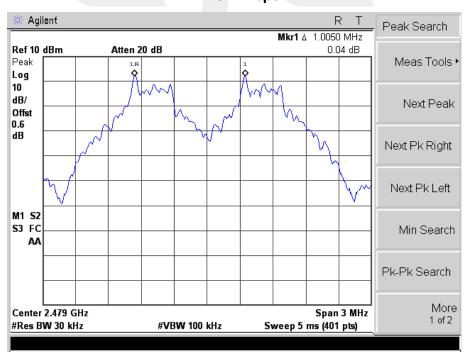




CH39 -1Mbps



CH78 -1Mbps



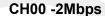


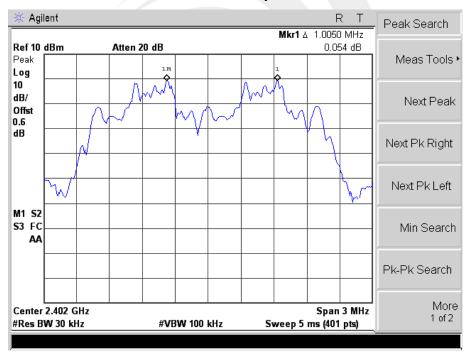
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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH00 / CH39 /CH78 (π/4-DQPSK(2Mbps) Mode)		

Frequency	Ch. Separation (MHz)	Limit	Result
2402 MHz	1.005	0.748	Complies
2441 MHz	1.005	0.750	Complies
2480 MHz	1.005	0.748	Complies

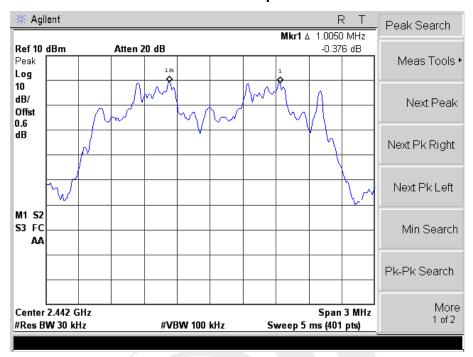
For $\pi/4$ -DQPSK(2Mbps): Ch. Separation Limits: > two-thirds 20dB bandwidth



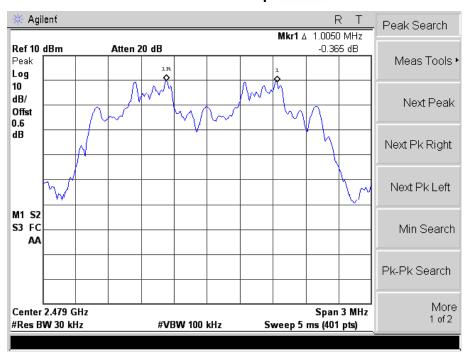




CH39 -2Mbps



CH78 -2Mbps





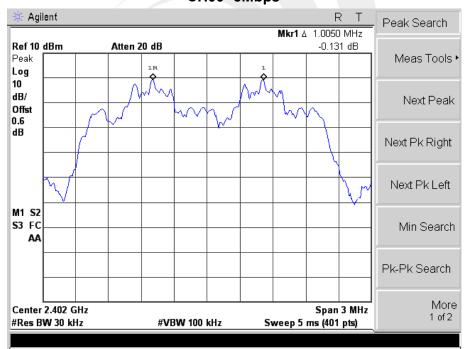
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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH00 / CH39 /CH78 (8-DPSK(3Mbps)Mode)		

Frequency	Ch. Separation (MHz)	Limit	Result
2402 MHz	1.005	0.776	Complies
2441 MHz	1.005	0.780	Complies
2480 MHz	1.005	0.781	Complies

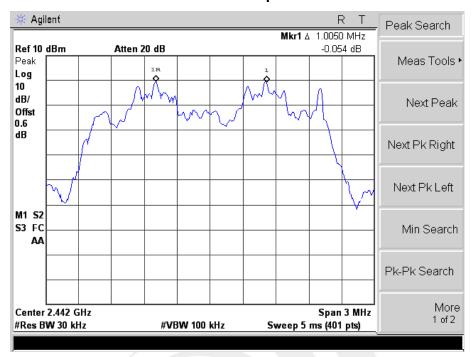
For 8-DPSK(3Mbps):

Ch. Separation Limits: > two-thirds 20dB bandwidth CH00 -3Mbps

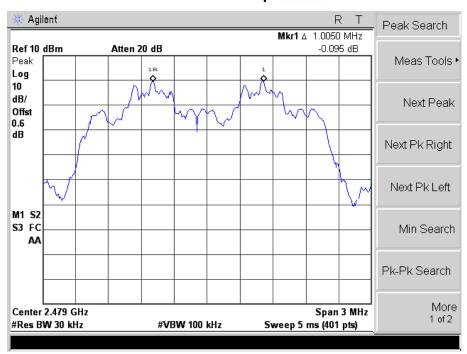




CH39 -3Mbps



CH78 -3Mbps





8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting	
Attenuation	Auto	
Span Frequency	> Measurement Bandwidth or Channel Separation	
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)	
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

8.2 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= 30KHz, VBW=100KHz, Sweep time = Auto.

8.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

8.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



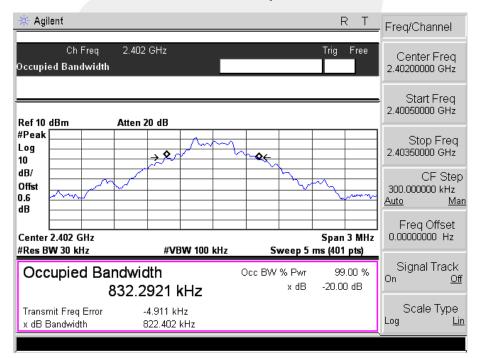


8.5 TEST RESULTS

EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	GFSK(1Mbps)CH00 / CH39 /C78		

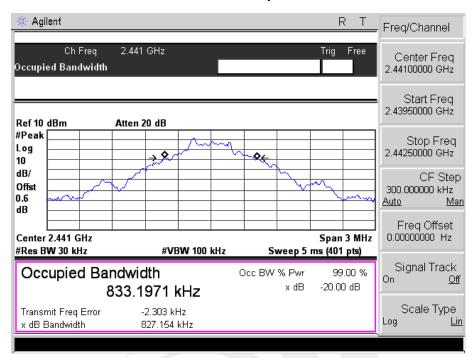
Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	0.822	PASS
2441 MHz	0.827	PASS
2480 MHz	0.826	PASS

CH00 -1Mbps

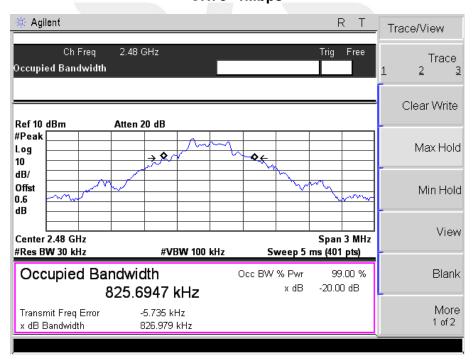




CH39 -1Mbps



CH78 -1Mbps



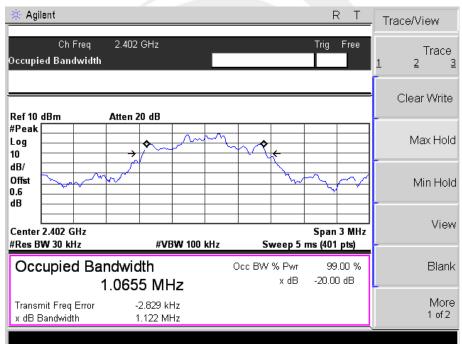


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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	est Mode : π/4-DQPSK(2Mbps)CH00 / CH39 /C78		

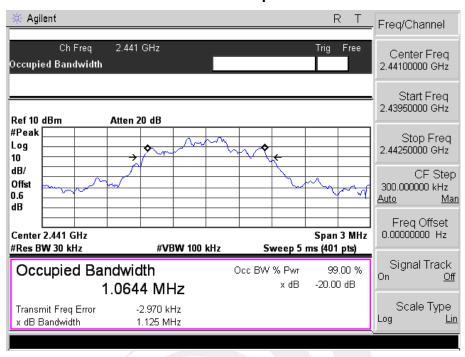
Frequency	20dB Bandwidth(MHz)	Result
2402 MHz	1.122	PASS
2441 MHz	1.125	PASS
2480 MHz	1.122	PASS

CH00 -2Mbps

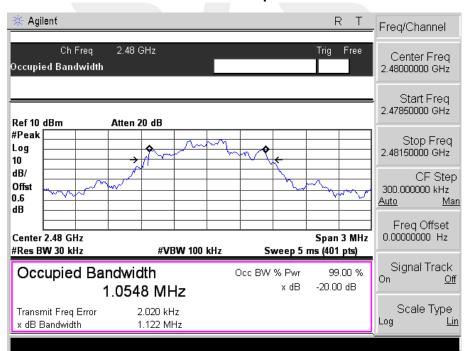




CH39 -2Mbps



CH78 -2Mbps



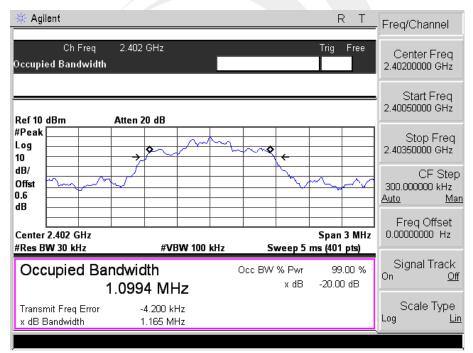


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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity:	50%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode : π/4-DQPSK(2Mbps)CH00 / CH39 /C78			

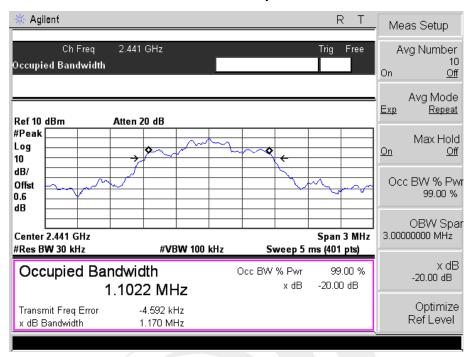
Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.165	PASS
2441 MHz	1.170	PASS
2480 MHz	1.171	PASS

CH00 -3Mbps

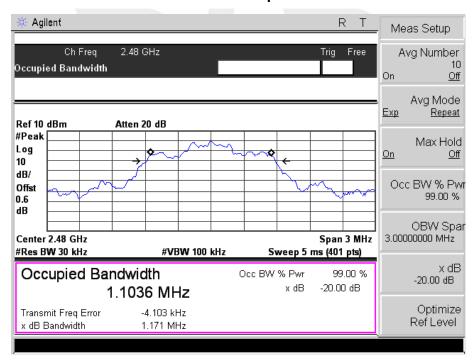




CH39 -3Mbps



CH78 -3Mbps







9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

	FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Peak	1 W or 0.125W		
(b)(i)	Output Power	Or if channel separation > 2/3 bandwidthprovided the systems operatewith an output power no greater than125 mW(20.96dBm)	2400-2483.5	PASS

9.2 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: GFSK(1Mbps):RBW= 1MHz, VBW= 3MHz, Sweep time = Auto.
- c. Spectrum Setting: $\pi/4$ -DQPSK(2Mbps):RBW= 3MHz, VBW= 3MHz, Sweep time = Auto.
- d. Spectrum Setting: 8-DPSK(3Mbps):RBW= 3MHz, VBW= 3MHz, Sweep time = Auto.

9.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

9.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



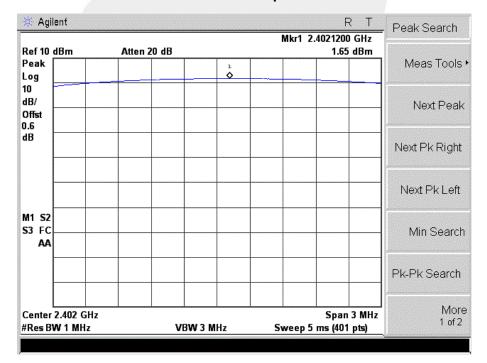
9.5 TEST RESULTS

EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH00/ CH39 /CH78 GFSK(1Mbps)		

Test Channel	Frequency	Peak Output Power	LIMIT
rest sharmer	(MHz)	(dBm)	(dBm)
CH00	2402	1.650	30
CH39	2441	1.874	30
CH78	2480	2.402	30

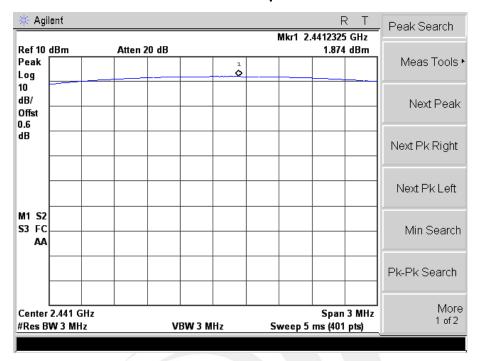
Note: the channel separation > bandwidth

CH00 -1Mbps

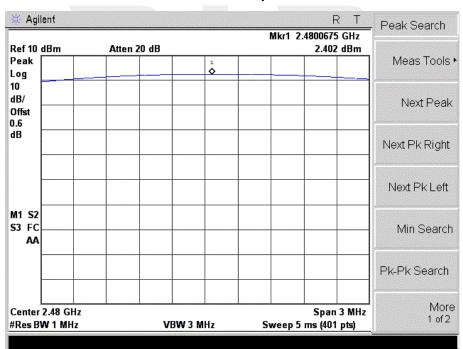




CH39 -1Mbps



CH78 -1Mbps





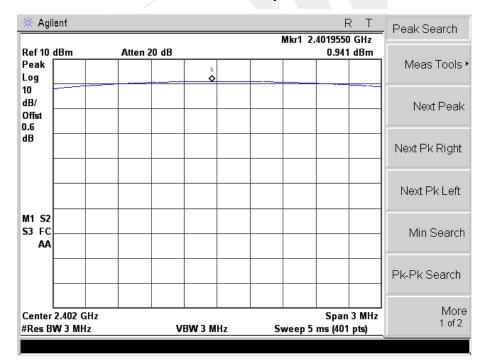
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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH00/ CH39 /CH78 π/4-DQPSK(2Mbps)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH00	2402	0.941	20.96
CH39	2441	1.138	20.96
CH78	2480	1.594	20.96

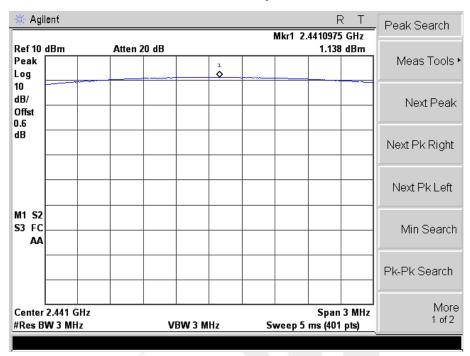
Note: the channel separation >2/3 bandwidth

CH00 -2Mbps

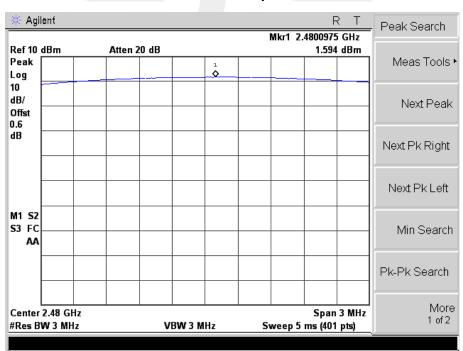




CH39 -2Mbps



CH78 -2Mbps





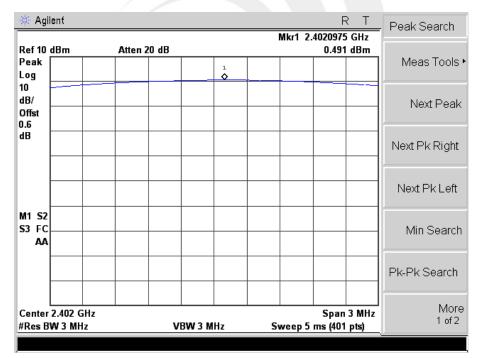
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EUT:	Smart Phone	Model Name :	Y210D
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	ode : CH00/ CH39 /CH78 8-DPSK(3Mbps)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH00	2402	0.491	20.96
CH39	2441	0.746	20.96
CH78	2480	1.142	20.96

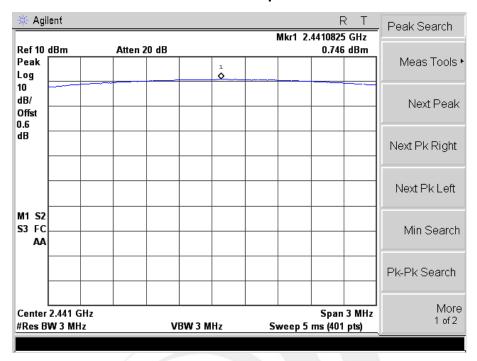
Note: the channel separation >2/3 bandwidth

CH00 -3Mbps

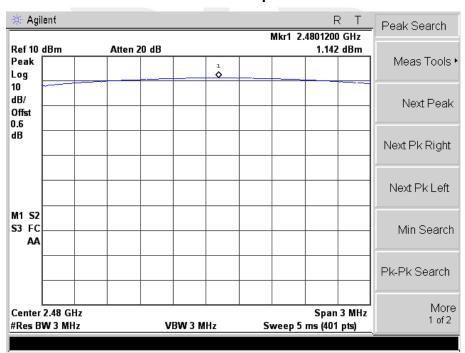




CH39 -3Mbps



CH78 -3Mbps





10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

10.2 EUT ANTENNA

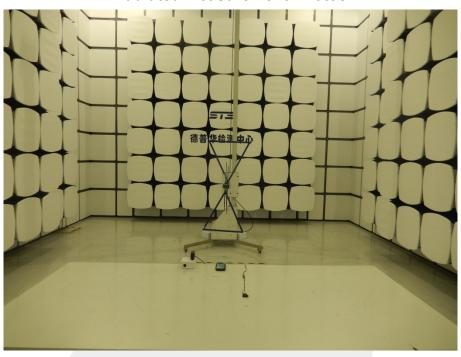
The EUT antenna is permanent attach Antenna. It comply with the standard requirement.





APPENDIX- PHOTOS OF TEST SETUP









Conducted Measurement Photos



* * * * END OF THE REPORT * * * *