

Frequency (MHz)

93.05 95.85

Level

dBuV dBuV/m dBuV/m

4.51 34.41 44.40 47.21 74.00 -26.79 Vertical

Limit

Line

0ver

dB

74.00 21.85 Vertical

Limit Pol/Phase

Read

Level

2500

Remark

30

10

-102478

Ant

dB/m

32.71

Freq Factor

MHz

2483.500 32.71

pp 2480.016

2

Cable Preamp

dB

4.50

Loss Factor

dB

34.41





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1) Pre-scan transmitting mode with all kind of modulation and all kind of data type, find the 1-DH5 of data type is the worse case of GFSK modulation type, the 2-DH5 of data type is the worse case of π /4DQPSK modulation type, the 3-DH5 of data type is the worse case of 8DPSKmodulation type in transmitter mode.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic

equation with a sample calculation is as follows:

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor – Antenna Factor – Cable Factor







Appendix L): Radiated Spurious Emissions

Receiver Setup:	15		1000		225	
	Frequency	Detector	RBW	VBW	Remark	
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak	
	0.009MHz-0.090MHz	Average	Average 10kHz		Average	
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	
0	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak	
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average	
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	
		Peak	1MHz	3MHz	Peak	
(3)	Above 1GHz	Peak	1MHz	10Hz	Average	
Test Procedure:			~	1		
Below 1GHz test p	rocedure as below:					

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic a. camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value C. of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to d heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. e. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel, the middle channel, the Highest channel
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X i. axis positioning which it is worse case.
- İ. Repeat above procedures until all frequencies measured was complete.

Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBµV/m)	Remark	Measurement distance (m)	
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300	
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30	
	1.705MHz-30MHz	30	-	13	30	12
	30MHz-88MHz	100	40.0	Quasi-peak	3	6
	88MHz-216MHz	150	43.5	Quasi-peak	3	
	216MHz-960MHz	200	46.0	Quasi-peak	3	
	960MHz-1GHz	500	54.0	Quasi-peak	3	
	Above 1GHz	500	54.0	Average	3	
	Note: 15.35(b), Unless emissions is 20dE applicable to the peak emission lev	otherwise specified above the maximi equipment under te vel radiated by the o	l, the limit or um permitted st. This pea device.	n peak radio fr d average emi k limit applies	equency ission limit to the total	~0







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Report No. : EED32I00298701 Radiated Spurious Emissions test Data: Radiated Emission below 1GHz

30MHz~1GHz (QP)		
Test mode:	Transmitting	Horizontal



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
_	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	99.878	13.18	1.57	23.86	38.61	43.50	-4.89	Horizontal	
2	150.011	9.70	1.58	26.68	37.96	43.50	-5.54	Horizontal	
3	199.986	11.60	2.21	25.28	39.09	43.50	-4.41	Horizontal	
4	250.301	12.41	2.35	25.32	40.08	46.00	-5.92	Horizontal	
5	350.477	14.82	2.71	24.74	42.27	46.00	-3.73	Horizontal	
6 pp	672.845	20.11	3.72	18.77	42.60	46.00	-3.40	Horizontal	







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		Ant	Cable	Read		Limit	0ver		
	Freq	Factor	Loss	Level	Level	Line	Limit	Pol/Phase	Remark
_									
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	26 001	13 59	0 77	17 01	22.26	40.00	7 74	Vantical	
1	20.001	15.50	0.77	17.91	52.20	40.00	-/./4	ventical	
2	46.995	14.85	1.16	19.39	35.40	40.00	-4.60	Vertical	
3	59.859	13.82	1.43	15.15	30.40	40.00	-9.60	Vertical	
4	91.816	11.58	1.59	16.54	29.71	43.50	-13.79	Vertical	
5 pp	204.955	11.69	2.23	25.95	39.87	43.50	-3.63	Vertical	
6	851.035	21.91	4.18	9.10	35.19	46.00	-10.81	Vertical	









Transmitter Emission above 1GHz

Worse case	mode:	GFSK(1-D	H5)	Test char	nnel:	Lowest	Remark: P	Remark: Peak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1267.104	30.38	2.59	34.89	52.53	50.61	74.00	-23.39	Pass	Н
1593.340	31.04	2.91	34.6	45.41	44.76	74.00	-29.24	Pass	н
4804.000	34.69	5.11	34.35	39.59	45.04	74.00	-28.96	Pass	H)
5836.044	35.78	7.07	34.30	41.52	50.07	74.00	-23.93	Pass	́н́
7206.000	36.42	6.66	34.90	37.47	45.65	74.00	-28.35	Pass	Н
9608.000	37.88	7.73	35.08	39.08	49.61	74.00	-24.39	Pass	Н
1267.104	30.38	2.59	34.89	50.62	48.70	74.00	-25.30	Pass	V
3795.660	32.95	5.47	34.58	43.69	47.53	74.00	-26.47	Pass	V
4804.000	34.69	5.11	34.35	40.47	45.92	74.00	-28.08	Pass	V
5821.207	35.77	7.03	34.30	41.18	49.68	74.00	-24.32	Pass	V
7206.000	36.42	6.66	34.90	38.71	46.89	74.00	-27.11	Pass	V
9608.000	37.88	7.73	35.08	38.83	49.36	74.00	-24.64	Pass	V

Worse case	mode:	GFSK(1-D	H5)	Test char	nnel:	Middle	Remark: P	Remark: Peak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1319.777	30.50	2.65	34.84	46.15	44.46	74.00	-29.54	Pass	Н
1782.177	31.37	3.07	34.45	44.19	44.18	74.00	-29.82	Pass	Н
4882.000	34.85	5.08	34.33	40.24	45.84	74.00	-28.16	Pass	H
6527.712	36.17	6.91	34.63	40.56	49.01	74.00	-24.99	Pass	SH
7323.000	36.43	6.77	34.90	35.85	44.15	74.00	-29.85	Pass	Н
9764.000	38.05	7.60	35.05	36.72	47.32	74.00	-26.68	Pass	Н
1273.572	30.40	2.60	34.89	52.39	50.50	74.00	-23.50	Pass	V
1837.456	31.46	3.11	34.41	46.94	47.10	74.00	-26.90	Pass	V
4882.000	34.85	5.08	34.33	42.49	48.09	74.00	-25.91	Pass	V
7323.000	36.43	6.77	34.90	39.74	48.04	74.00	-25.96	Pass	V
5806.408	35.76	7.00	34.30	41.64	50.10	74.00	-23.90	Pass	V
9764.000	38.05	7.6	35.05	39.09	49.69	74.00	-24.31	Pass	V



D	- 00	2 - 6	00
Pad	ε 6ι	J OT	δL

Worse case	mode:	GFSK(1-DH5)		Test channel:		Highest	Remark: P	Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis	
5986.509	35.89	7.40	34.30	41.06	50.05	74.00	-23.95	Pass	Н	
4960.000	35.02	5.05	34.31	40.96	46.72	74.00	-27.28	Pass	Н	
1842.139	31.46	3.11	34.41	44.90	45.06	74.00	-28.94	Pass	<u></u>	
7440.000	36.45	6.88	34.9	39.54	47.97	74.00	-26.03	Pass	H	
1254.268	30.35	2.58	34.91	51.39	49.41	74.00	-24.59	Pass	Ч	
9920.000	38.22	7.47	35.02	37.95	48.62	74.00	-25.38	Pass	Н	
1289.885	30.43	2.62	34.87	50.55	48.73	74.00	-25.27	Pass	V	
1842.139	31.46	3.11	34.41	47.82	47.98	74.00	-26.02	Pass	V	
4960.000	35.02	5.05	34.31	40.63	46.39	74.00	-27.61	Pass	V	
5836.044	35.78	7.07	34.30	41.71	50.26	74.00	-23.74	Pass	V	
7440.000	36.45	6.88	34.90	40.30	48.73	74.00	-25.27	Pass	V	
9920.000	38.22	7.47	35.02	39.64	50.31	74.00	-23.69	Pass	V	
)	6	ST)		67)		6)		S)	
Worse case	mode:	π/4DQPSk	(2-DH5)	Test char	nnel:	Lowest	Remark: P	eak		
	Antonno		Preamn	Read						

worse case	mode:	II/4DQPSr	(2-DH5)	Test char	inel:	Lowest	Remark: P	Remark: Peak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1257.465	30.36	2.58	34.90	51.02	49.06	74.00	-24.94	Pass	Н
1828.125	31.44	3.10	34.42	44.48	44.60	74.00	-29.40	Pass	Н
3933.367	32.85	5.45	34.59	43.10	46.81	74.00	-27.19	Pass	Н
4804.000	34.69	5.11	34.35	40.21	45.66	74.00	-28.34	Pass	Н
7206.000	36.42	6.66	34.90	38.96	47.14	74.00	-26.86	Pass	SH/
9608.000	37.88	7.73	35.08	40.19	50.72	74.00	-23.28	Pass	Н
1257.465	30.36	2.58	34.90	51.02	49.06	74.00	-24.94	Pass	V
1597.401	31.05	2.92	34.59	47.39	46.77	74.00	-27.23	Pass	V
4804.000	34.69	5.11	34.35	41.34	46.79	74.00	-27.21	Pass	V
5420.742	35.45	6.10	34.30	42.65	49.90	74.00	-24.10	Pass	V
7206.000	36.42	6.66	34.90	39.07	47.25	74.00	-26.75	Pass	V
9608.000	37.88	7.73	35.08	39.22	49.75	74.00	-24.25	Pass	V
	1								



Report No. :	EED32100	298701		I		e	Pa	age 61 of	80
Worse case	mode:	π/4DQPSł	<(2-DH5)	Test chai	nnel:	Middle	Remark: P	eak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1289.885	30.43	2.62	34.87	45.98	44.16	74.00	-29.84	Pass	Н
1693.716	31.22	3.00	34.52	43.83	43.53	74.00	-30.47	Pass	Н
4882.000	34.85	5.08	34.33	41.30	46.90	74.00	-27.10	Pass	H
5732.974	35.70	6.83	34.30	41.03	49.26	74.00	-24.74	Pass	Н
7323.000	36.43	6.77	34.90	37.16	45.46	74.00	-28.54	Pass	Ч
9764.000	38.05	7.60	35.05	39.50	50.10	74.00	-23.90	Pass	Н
1283.335	30.42	2.61	34.88	50.99	49.14	74.00	-24.86	Pass	V
1663.803	31.17	2.97	34.54	45.56	45.16	74.00	-28.84	Pass	V
1837.456	31.46	3.11	34.41	46.13	46.29	74.00	-27.71	Pass	V
4882.000	34.85	5.08	34.33	41.31	46.91	74.00	-27.09	Pass	V
7323.000	36.43	6.77	34.90	38.98	47.28	74.00	-26.72	Pass	V
9764.000	38.05	7.60	35.05	38.33	48.93	74.00	-25.07	Pass	V
9	6	ST)		67		6)		S)
Worse case	mode:	π/4DQPSł	K(2-DH5)	Test char	nnel:	Highest	Remark: P	eak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1360.714	30.59	2.69	34.80	50.87	49.35	74.00	-24.65	Pass	Н
1928.509	31.59	3.18	34.35	47.26	47.68	74.00	-26.32	Pass	Н
4960.000	35.02	5.05	34.31	43.16	48.92	74.00	-25.08	Pass	Н
6094.137	35.95	7.33	34.36	41.10	50.02	74.00	-23.98	Pass	Н
7440.000	36.45	6.88	34.90	41.72	50.15	74.00	-23.85	Pass	SH/
9920.000	38.22	7.47	35.02	39.69	50.36	74.00	-23.64	Pass	Н
1367.659	30.60	2.70	34.79	51.98	50.49	74.00	-23.51	Pass	V
1837.456	31.46	3.11	34.41	48.03	48.19	74.00	-25.81	Pass	V
4321.837	33.60	5.30	34.50	45.37	49.77	74.00	-24.23	Pass	V
4960.000	35.02	5.05	34.31	42.62	48.38	74.00	-25.62	Pass	V
7440.000	36.45	6.88	34.90	42.03	50.46	74.00	-23.54	Pass	V
9920 000	38.22	7 47	35.02	39.86	50.53	74 00	-23 47	Pass	V

Worse case	mode:	8DPSK(3-D	DH5)	Test char	nnel:	Lowest	Remark: Pe	eak	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis
1238.405	30.32	2.56	34.92	45.42	43.38	74.00	-30.62	Pass	Н
1597.401	31.05	2.92	34.59	45.35	44.73	74.00	-29.27	Pass	Н
1913.838	31.57	3.17	34.36	45.57	45.95	74.00	-28.05	Pass	н
4804.000	34.69	5.11	34.35	44.19	49.64	74.00	-24.36	Pass	H
7206.000	36.42	6.66	34.90	39.79	47.97	74.00	-26.03	Pass	Ч
9608.000	37.88	7.73	35.08	37.84	48.37	74.00	-25.63	Pass	Н
1195.049	30.21	2.51	34.97	48.72	46.47	74.00	-27.53	Pass	V
1746.251	31.31	3.04	34.48	44.43	44.30	74.00	-29.70	Pass	V
4804.000	34.69	5.11	34.35	40.92	46.37	74.00	-27.63	Pass	V
5925.863	35.85	7.27	34.30	41.06	49.88	74.00	-24.12	Pass	V
7206.000	36.42	6.66	34.90	38.74	46.92	74.00	-27.08	Pass	V
9608.000	37.88	7.73	35.08	37.31	47.84	74.00	-26.16	Pass	V

Worse case	mode:	8DPSK(3-D	DH5)	Test chan	nel:	Middle	Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis	
1276.818	30.41	2.60	34.88	51.38	49.51	74.00	-24.49	Pass	Н	
1837.456	31.46	3.11	34.41	47.65	47.81	74.00	-26.19	Pass	Н	
4882.000	34.85	5.08	34.33	42.44	48.04	74.00	-25.96	Pass	Н	
5956.109	35.87	7.33	34.30	41.04	49.94	74.00	-24.06	Pass	H	
7323.000	36.43	6.77	34.90	38.86	47.16	74.00	-26.84	Pass	Sн/	
9764.000	38.05	7.60	35.05	37.46	48.06	74.00	-25.94	Pass	Н	
1260.670	30.37	2.58	34.90	52.57	50.62	74.00	-23.38	Pass	V	
1668.044	31.18	2.98	34.54	47.14	46.76	74.00	-27.24	Pass	V	
4882.000	34.85	5.08	34.33	42.33	47.93	74.00	-26.07	Pass	V	
6379.864	36.10	7.05	34.54	42.01	50.62	74.00	-23.38	Pass	V	
7323.000	36.43	6.77	34.90	39.21	47.51	74.00	-26.49	Pass	V	
9764.000	38.05	7.60	35.05	39.21	49.81	74.00	-24.19	Pass	V	





Report No. : EED32100298701				~		Page 63 of 80				
Worse case	mode:	8DPSK(3-I	DH5)	Test cha	nnel:	Highest	Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBµV)	Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Result	Antenna Polaxis	
1267.104	30.38	2.59	34.89	51.14	49.22	74.00	-24.78	Pass	Н	
1655.354	31.15	2.97	34.55	44.60	44.17	74.00	-29.83	Pass	Н	
4960.000	35.02	5.05	34.31	39.56	45.32	74.00	-28.68	Pass	H	
5821.207	35.77	7.03	34.30	42.32	50.82	74.00	-23.18	Pass	H	
7440.000	36.45	6.88	34.90	40.11	48.54	74.00	-25.46	Pass	Ч	
9920.000	38.22	7.47	35.02	38.20	48.87	74.00	-25.13	Pass	Н	
1267.104	30.38	2.59	34.89	51.28	49.36	74.00	-24.64	Pass	V	
1837.456	31.46	3.11	34.41	48.68	48.84	74.00	-25.16	Pass	V	
4310.849	33.57	5.31	34.50	44.92	49.30	74.00	-24.70	Pass	V	
4960.000	35.02	5.05	34.31	40.90	46.66	74.00	-27.34	Pass	V	
7440.000	36.45	6.88	34.90	40.62	49.05	74.00	-24.95	Pass	V	
9920.000	38.22	7.47	35.02	39.70	50.37	74.00	-23.63	Pass	V	
- /		C.C. J.	•	1001		162			021	

Note:

1) Pre-scan transmitting mode with all kind of modulation and all kind of data type, find the 1-DH5 of data type is the worse case of GFSK modulation type, the 2-DH5 of data type is the worse case of π /4DQPSK modulation type, the 3-DH5 of data type is the worse case of 8DPSKmodulation type in transmitter mode.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic

equation with a sample calculation is as follows:

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor – Antenna Factor – Cable Factor

3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.







PHOTOGRAPHS OF TEST SETUP

Test Model No.: X8



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)





















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View of Product-28











View of Product-30



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