

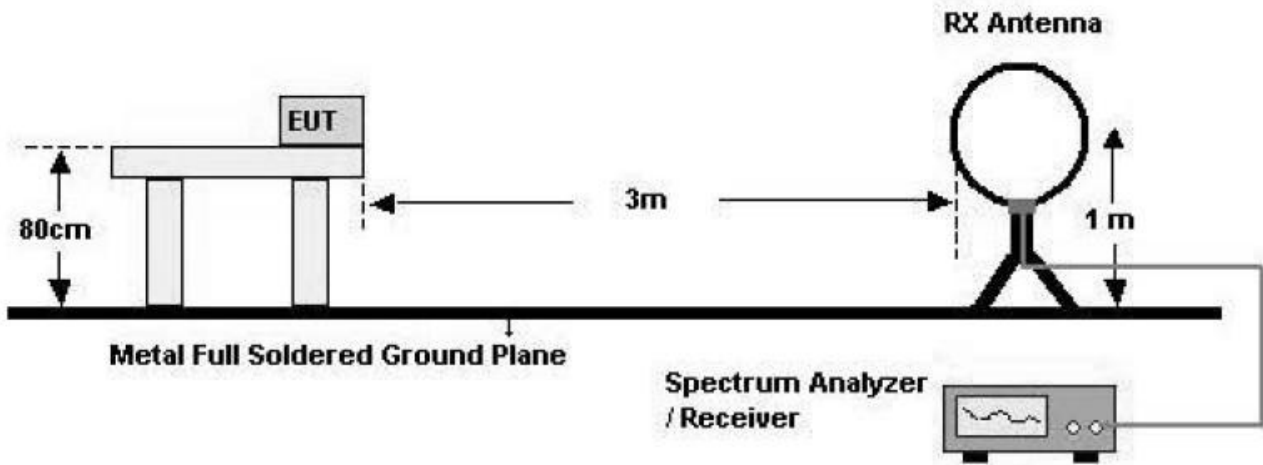
**9.6.2 RADIATED SPURIOUS EMISSIONS****LIMIT : §15.247(d), §15.205, §15.209**

1. 20dBc in any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

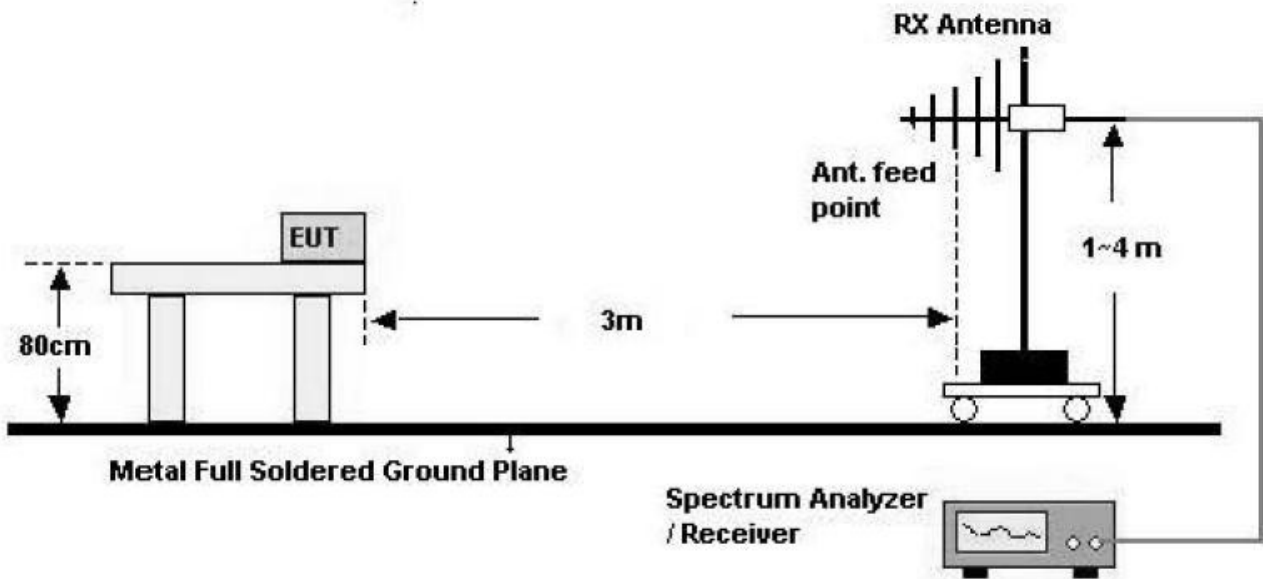
<b>Frequency (MHz)</b>	<b>Field Strength (uV/m)</b>	<b>Measurement Distance (m)</b>
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### Test Configuration

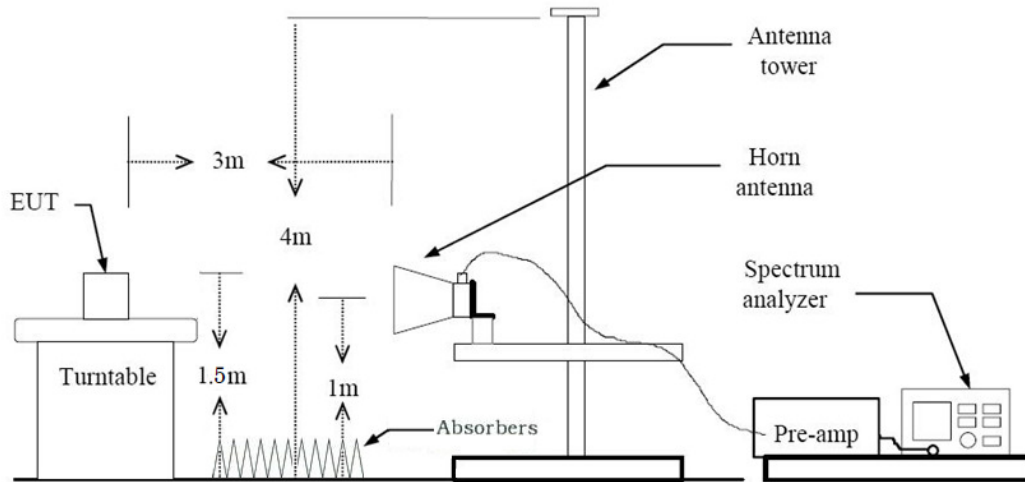
#### Below 30 MHz



#### 30 MHz - 1 GHz



**Above 1 GHz**



**TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. Spectrum Setting
  - a. Peak: 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 3 \times$  RBW
  - b. Average: 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds.

Note :

1. We are performed the RSE and radiated band edge using standard radiated method.
2. The duty cycle factor for BT mode.

BT Mode	T <sub>on</sub> (ms)	VBW(1/T) (Hz)	The actual setting value of VBW (Hz)
GFSK	2.885	347	1000
$\pi/4$ DQPSK	2.890	346	1000
8DPSK	2.890	346	1000

**TEST RESULTS**

**9 kHz – 30MHz**

**Operation Mode:** Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

**Notes:**

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. This test is performed with hopping off.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

**TEST RESULTS****Below 1 GHz****Operation Mode:** Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

**Notes:**

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. This test is performed with hopping off.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Above 1 GHz

Operation Mode: CH Low(GFSK)

Frequency [MHz]	Reading DBuV	* A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	51.86	-2.96	V	0	48.90	73.98	25.08	PK
4804	42.55	-2.96	V	-24.73	14.86	53.98	39.12	AV
7206	58.24	6.88	V	0	65.12	73.98	8.86	PK
7206	53.39	6.88	V	-24.73	35.54	53.98	18.44	AV
4804	50.85	-2.96	H	0	47.89	73.98	26.09	PK
4804	41.60	-2.96	H	-24.73	13.91	53.98	40.07	AV
7206	58.37	6.88	H	0	65.25	73.98	8.73	PK
7206	53.56	6.88	H	-24.73	35.71	53.98	18.27	AV

Operation Mode: CH Low(8DPSK)

Frequency [MHz]	Reading DBuV	* A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	50.77	-2.96	V	0	47.81	73.98	26.17	PK
4804	38.44	-2.96	V	-24.73	10.75	53.98	43.23	AV
7206	57.16	6.88	V	0	64.04	73.98	9.94	PK
7206	44.89	6.88	V	-24.73	27.04	53.98	26.94	AV
4804	49.88	-2.96	H	0	46.92	73.98	27.06	PK
4804	37.56	-2.96	H	-24.73	9.87	53.98	44.11	AV
7206	57.43	6.88	H	0	64.31	73.98	9.67	PK
7206	45.03	6.88	H	-24.73	27.18	53.98	26.80	AV

Operation Mode: CH Low( $\pi/4$ DQPSK)

Frequency [MHz]	Reading DBuV	*A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	51.09	-2.96	V	0	48.13	73.98	25.85	PK
4804	38.45	-2.96	V	-24.73	10.76	53.98	43.22	AV
7206	56.37	6.88	V	0	63.25	73.98	10.73	PK
7206	45.11	6.88	V	-24.73	27.26	53.98	26.72	AV
4804	50.32	-2.96	H	0	47.36	73.98	26.62	PK
4804	37.55	-2.96	H	-24.73	9.86	53.98	44.12	AV
7206	56.71	6.88	H	0	63.59	73.98	10.39	PK
7206	45.36	6.88	H	-24.73	27.51	53.98	26.47	AV

\* A:F: ANTENNA FACTOR  
 C:L: CABLE LOSS  
 AMP GAIN: AMPLIFIER GAIN

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
  - a. Peak Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW = 3 MHz.
  - b. Average Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds.  
 We performed using a reduced video BW method was done with the analyzer in linear mode.
6. FYI : Duty Cycle Correction Factor (79 channel hopping)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 79 channels = 229.100 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 1$
  - c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 2.900$  ms
  - d. Duty Cycle Correction =  $20\log(\text{Worst Case Dwell Time} / 100\text{ms}) \text{ dB} = -30.752 \text{ dB}$
7. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 20 channels = 58.00 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 2$

- c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 5.800$  ms
  - d. Duty Cycle Correction(AFH) =  $20\log(\text{Worst Case Dwell Time}/ 100\text{ms})$  dB = -24.7314 dB
  - e. We applied DCCF in the test result which hopping channel number is 20.
8. We have done Normal Mode and EDR Mode test.
9. This test is performed with hopping off.
10. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: CH Mid(GFSK)

Frequency [MHz]	Reading DBuV	* A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	51.42	-2.60	V	0	48.82	73.98	25.16	PK
4882	41.70	-2.60	V	-24.73	14.37	53.98	39.61	AV
7323	59.39	6.11	V	0	65.50	73.98	8.48	PK
7323	55.66	6.11	V	-24.73	37.04	53.98	16.94	AV
4882	50.65	-2.60	H	0	48.05	73.98	25.93	PK
4882	40.96	-2.60	H	-24.73	13.63	53.98	40.35	AV
7323	59.87	6.11	H	0	65.98	73.98	8.00	PK
7323	55.89	6.11	H	-24.73	37.27	53.98	16.71	AV

Operation Mode: CH Mid(8DPSK)

Frequency [MHz]	Reading DBuV	* A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	50.54	-2.60	V	0	47.94	73.98	26.04	PK
4882	38.03	-2.60	V	-24.73	10.70	53.98	43.28	AV
7323	59.00	6.11	V	0	65.11	73.98	8.87	PK
7323	47.01	6.11	V	-24.73	28.39	53.98	25.59	AV
4882	49.38	-2.60	H	0	46.78	73.98	27.20	PK
4882	37.15	-2.60	H	-24.73	9.82	53.98	44.16	AV
7323	59.33	6.11	H	0	65.44	73.98	8.54	PK
7323	47.22	6.11	H	-24.73	28.60	53.98	25.38	AV

Operation Mode: CH Mid( $\pi/4$ DQPSK)

Frequency [MHz]	Reading DBuV	*A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	50.56	-2.60	V	0	47.96	73.98	26.02	PK
4882	38.00	-2.60	V	-24.73	10.67	53.98	43.31	AV
7323	58.29	6.11	V	0	64.40	73.98	9.58	PK
7323	47.46	6.11	V	-24.73	28.84	53.98	25.14	AV
4882	49.32	-2.60	H	0	46.72	73.98	27.26	PK
4882	37.13	-2.60	H	-24.73	9.80	53.98	44.18	AV
7323	58.98	6.11	H	0	65.09	73.98	8.89	PK
7323	47.73	6.11	H	-24.73	29.11	53.98	24.87	AV

\* A:F: ANTENNA FACTOR  
 C:L: CABLE LOSS  
 AMP GAIN: AMPLIFIER GAIN

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
  - a. Peak Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW = 3 MHz.
  - b. Average Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds.  
 We performed using a reduced video BW method was done with the analyzer in linear mode.
6. FYI : Duty Cycle Correction Factor (79 channel hopping)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 79 channels = 229.100 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 1$
  - c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 2.900$  ms
  - d. Duty Cycle Correction =  $20\log(\text{Worst Case Dwell Time} / 100\text{ms}) \text{ dB} = -30.752 \text{ dB}$
7. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 20 channels = 58.00 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 2$

- c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 5.800$  ms
  - d. Duty Cycle Correction(AFH) =  $20\log(\text{Worst Case Dwell Time}/ 100\text{ms})$  dB = -24.7314 dB
  - e. We applied DCCF in the test result which hopping channel number is 20.
8. We have done Normal Mode and EDR Mode test.
9. This test is performed with hopping off.
10. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: CH High(GFSK)

Frequency [MHz]	Reading DBuV	※ A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	52.26	-2.53	V	0	49.73	73.98	24.25	PK
4960	42.82	-2.53	V	-24.73	15.56	53.98	38.42	AV
7440	59.16	5.73	V	0	64.89	73.98	9.09	PK
7440	55.04	5.73	V	-24.73	36.04	53.98	17.94	AV
4960	51.15	-2.53	H	0	48.62	73.98	25.36	PK
4960	42.05	-2.53	H	-24.73	14.79	53.98	39.19	AV
7440	59.31	5.73	H	0	65.04	73.98	8.94	PK
7440	55.20	5.73	H	-24.73	36.20	53.98	17.78	AV

Operation Mode: CH High(8DPSK)

Frequency [MHz]	Reading DBuV	※ A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	51.24	-2.53	V	0	48.71	73.98	25.27	PK
4960	38.68	-2.53	V	-24.73	11.42	53.98	42.56	AV
7440	58.35	5.73	V	0	64.08	73.98	9.90	PK
7440	46.12	5.73	V	-24.73	27.12	53.98	26.86	AV
4960	50.09	-2.53	H	0	47.56	73.98	26.42	PK
4960	37.74	-2.53	H	-24.73	10.48	53.98	43.50	AV
7440	58.61	5.73	H	0	64.34	73.98	9.64	PK
7440	46.31	5.73	H	-24.73	27.31	53.98	26.67	AV

Operation Mode: CH High ( $\pi/4$ DQPSK)

Frequency [MHz]	Reading DBuV	*A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	51.10	-2.53	V	0	48.57	73.98	25.41	PK
4960	38.71	-2.53	V	-24.73	11.45	53.98	42.53	AV
7440	57.59	5.73	V	0	63.32	73.98	10.66	PK
7440	46.70	5.73	V	-24.73	27.70	53.98	26.28	AV
4960	50.27	-2.53	H	0	47.74	73.98	26.24	PK
4960	37.93	-2.53	H	-24.73	10.67	53.98	43.31	AV
7440	58.08	5.73	H	0	63.81	73.98	10.17	PK
7440	46.91	5.73	H	-24.73	27.91	53.98	26.07	AV

\* A:F: ANTENNA FACTOR  
 C:L: CABLE LOSS  
 AMP GAIN: AMPLIFIER GAIN

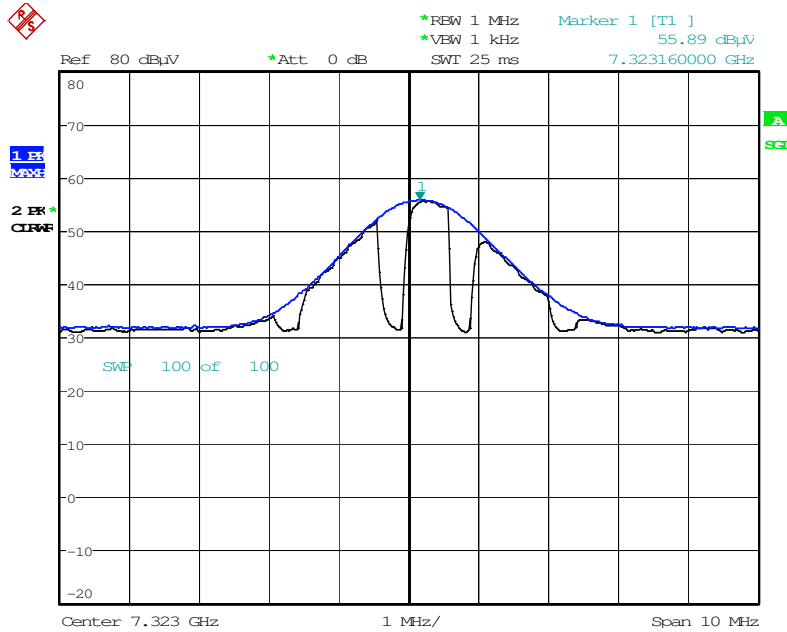
Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. Spectrum setting:
  - a. Peak Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW = 3 MHz.
  - b. Average Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds.  
 We performed using a reduced video BW method was done with the analyzer in linear mode.
6. FYI : Duty Cycle Correction Factor (79 channel hopping)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 79 channels = 229.100 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 1$
  - c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 2.900$  ms
  - d. Duty Cycle Correction =  $20\log(\text{Worst Case Dwell Time} / 100\text{ms}) \text{ dB} = -30.752 \text{ dB}$
7. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 20 channels = 58.00 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 2$

- c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 5.800$  ms
  - d. Duty Cycle Correction(AFH) =  $20\log(\text{Worst Case Dwell Time}/ 100\text{ms})$  dB = -24.7314 dB
  - e. We applied DCCF in the test result which hopping channel number is 20.
8. We have done Normal Mode and EDR Mode test.
9. This test is performed with hopping off.
10. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

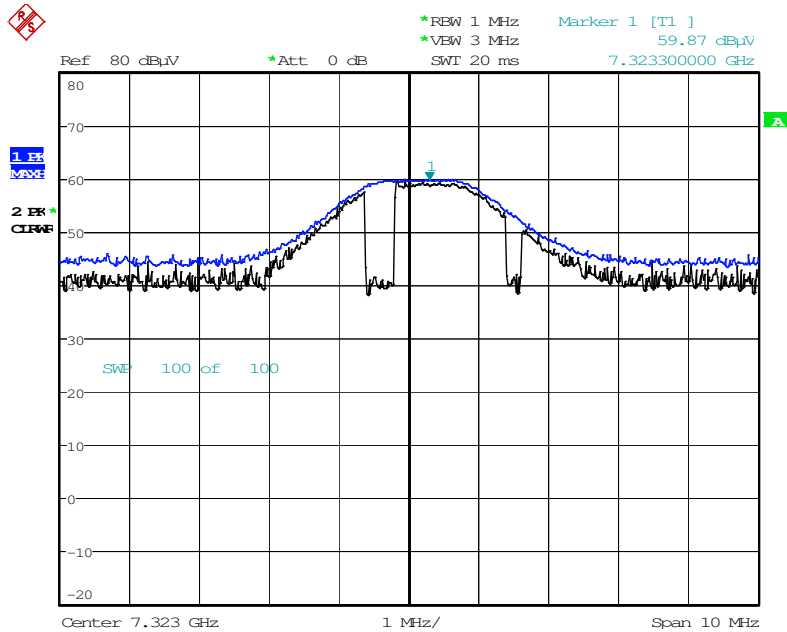
■ **RESULT PLOTS (Worst case : y-H)**

**Radiated Spurious Emissions plot – Average Reading (GFSK, Ch.39 3rd Harmonic)**



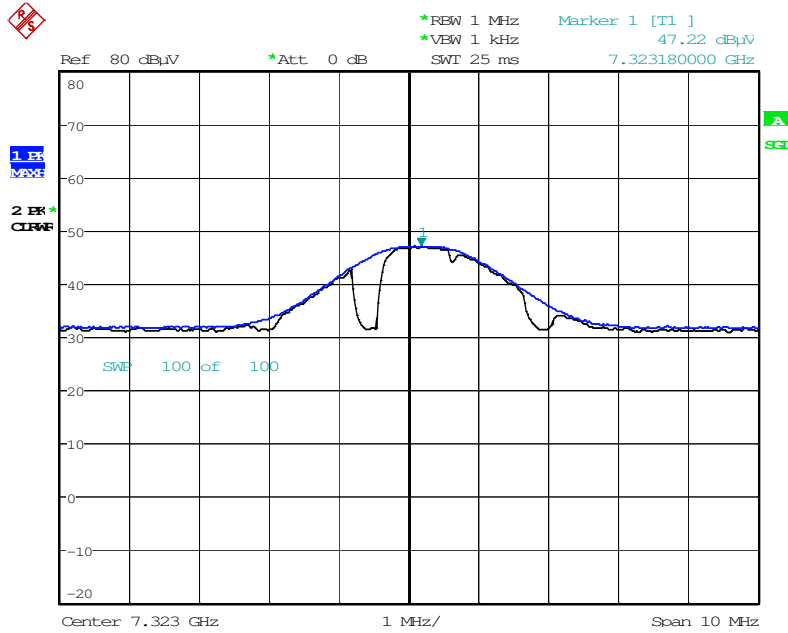
Date: 26.APR.2016 20:32:13

**Radiated Spurious Emissions plot – Peak Reading (GFSK, Ch.39 3rd Harmonic)**



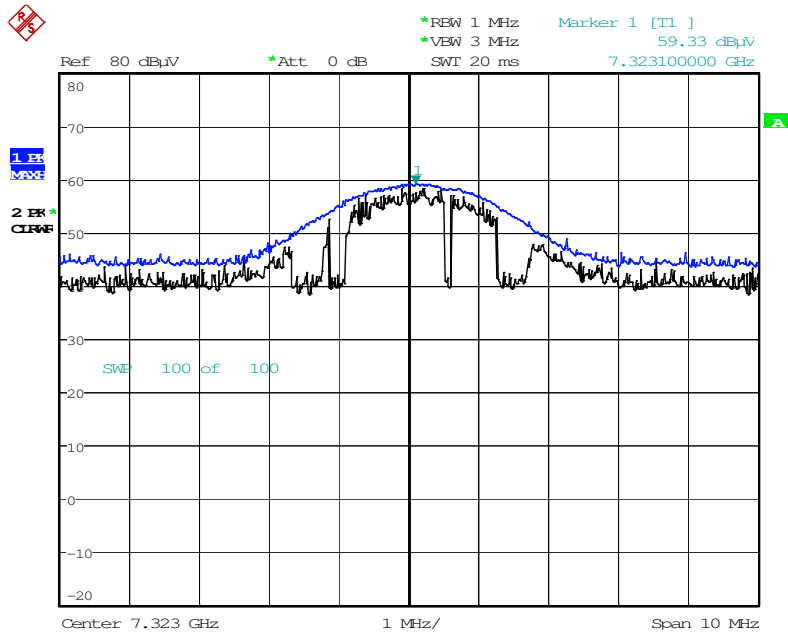
Date: 26.APR.2016 20:31:58

### Radiated Spurious Emissions plot – Average Reading (8DPSK, Ch.39 3rd Harmonic)



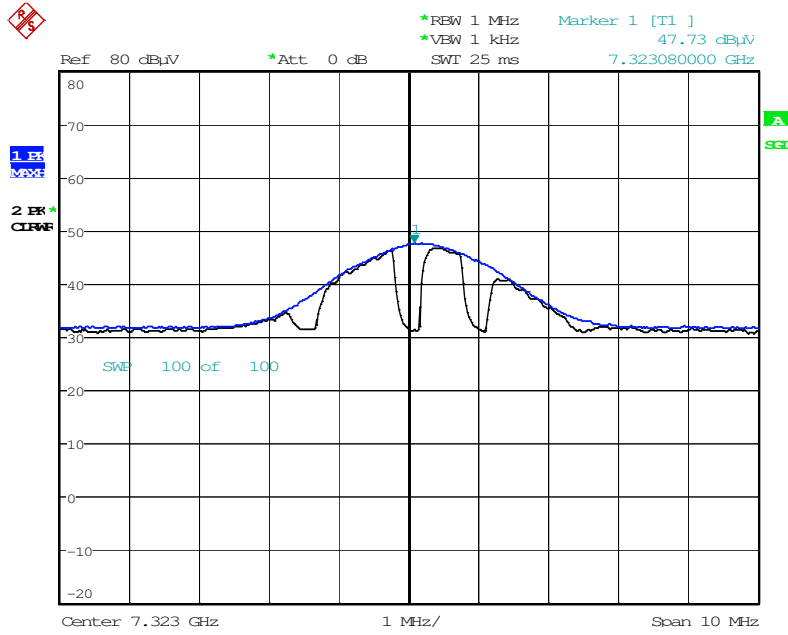
Date: 26.APR.2016 20:34:17

### Radiated Spurious Emissions plot – Peak Reading (8DPSK, Ch.39 3rd Harmonic)



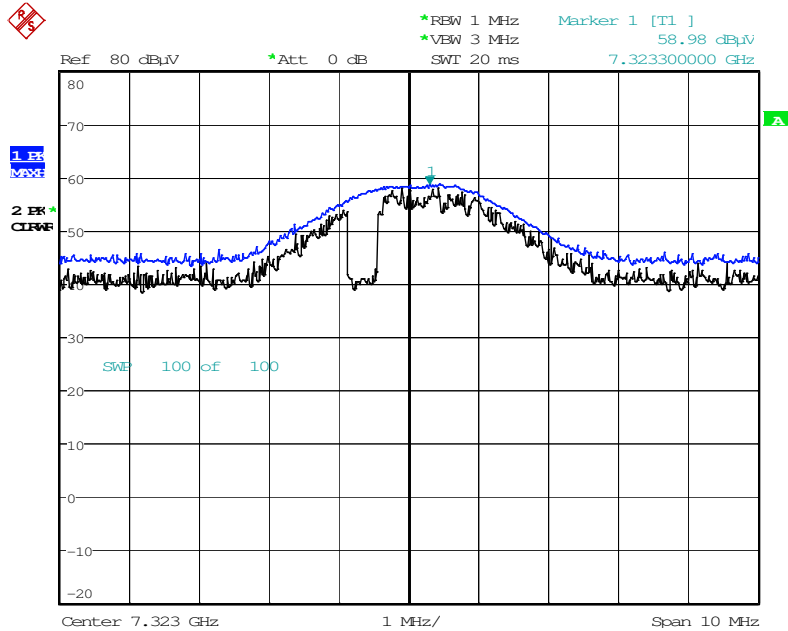
Date: 26.APR.2016 20:33:54

**Radiated Spurious Emissions plot – Average Reading ( $\pi/4$ DQPSK, Ch.39 3rd Harmonic)**



Date: 26.APR.2016 20:33:00

**Radiated Spurious Emissions plot – Peak Reading ( $\pi/4$ DQPSK, Ch.39 3rd Harmonic)**



Date: 26.APR.2016 20:33:30

### 9.6.3 RADIATED RESTRICTED BAND EDGES

#### Test Requirements and limit, §15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. 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)).

Operation Mode	Normal(GFSK)
Operating Frequency	2402 MHz, 2480 MHz
Channel No	CH 0, CH 78

Frequency [MHz]	Reading dBuV	* A.F.+CL [dB]	Ant. Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.37	31.31	H	0	56.68	73.98	17.30	PK
2390.0	12.12	31.31	H	-24.73	18.70	53.98	35.28	AV
2390.0	25.06	31.31	V	0	56.37	73.98	17.61	PK
2390.0	12.09	31.31	V	-24.73	18.67	53.98	35.31	AV
2483.5	34.98	31.37	H	0	66.35	73.98	7.63	PK
2483.5	32.20	31.37	H	-24.73	38.84	53.98	15.14	AV
2483.5	33.09	31.37	V	0	64.46	73.98	9.52	PK
2483.5	30.00	31.37	V	-24.73	36.64	53.98	17.34	AV

Operation Mode EDR(8DPSK)  
 Operating Frequency 2402 MHz , 2480 MHz  
 Channel No CH 0, CH 78

Frequency [MHz]	Reading dBuV	* A.F.+CL [dB]	Ant. Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	24.95	31.31	H	0	56.26	73.98	17.72	PK
2390.0	12.08	31.31	H	-24.73	18.66	53.98	35.32	AV
2390.0	24.83	31.31	V	0	56.14	73.98	17.84	PK
2390.0	12.01	31.31	V	-24.73	18.59	53.98	35.39	AV
2483.5	34.94	31.37	H	0	66.31	73.98	7.67	PK
2483.5	30.47	31.37	H	-24.73	37.11	53.98	16.87	AV
2483.5	33.05	31.37	V	0	64.42	73.98	9.56	PK
2483.5	28.96	31.37	V	-24.73	35.60	53.98	18.38	AV

Operation Mode EDR( $\pi$ /4DQPSK)  
 Operating Frequency 2402 MHz , 2480 MHz  
 Channel No CH 0, CH 78

Frequency [MHz]	Reading dBuV	* A.F.+CL [dB]	Ant. Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	24.94	31.31	H	0	56.25	73.98	17.73	PK
2390.0	12.05	31.31	H	-24.73	18.63	53.98	35.35	AV
2390.0	24.91	31.31	V	0	56.22	73.98	17.76	PK
2390.0	12.10	31.31	V	-24.73	18.68	53.98	35.30	AV
2483.5	35.18	31.37	H	0	66.55	73.98	7.43	PK
2483.5	30.42	31.37	H	-24.73	37.06	53.98	16.92	AV
2483.5	33.32	31.37	V	0	64.69	73.98	9.29	PK
2483.5	28.85	31.37	V	-24.73	35.49	53.98	18.49	AV

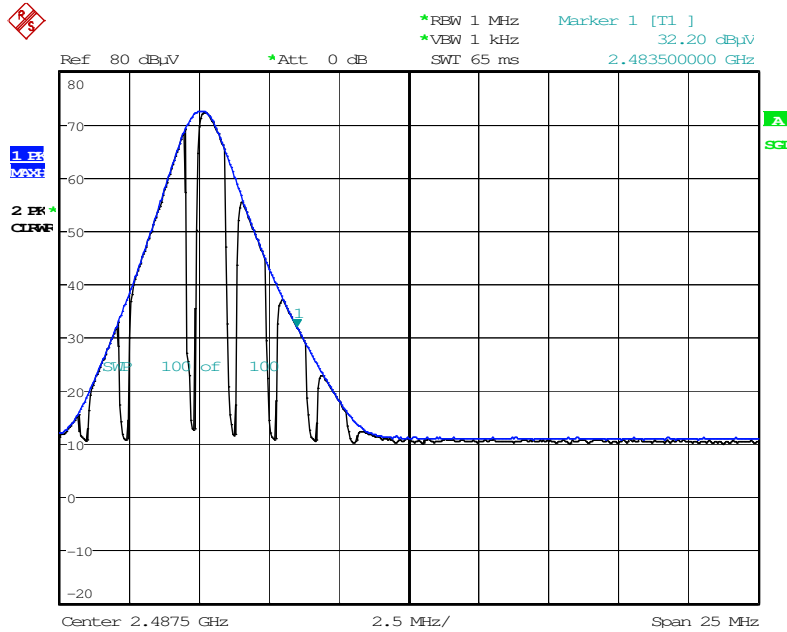
\* A:F: ANTENNA FACTOR  
 C:L: CABLE LOSS  
 AMP GAIN: AMPLIFIER GAIN

**Notes:**

1. Frequency range of measurement = 2483.5 MHz ~ 2500 MHz
2. Total = Reading Value + Antenna Factor + Cable Loss + Duty Cycle Correction Factor
3. Spectrum setting:
  - a. Peak Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW = 3 MHz.
  - b. Average Setting 1 GHz – 25 GHz, RBW = 1 MHz, VBW  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds.  
We performed using a reduced video BW method was done with the analyzer in linear mode.
4. FYI : Duty Cycle Correction Factor (79 channel hopping)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 79 channels = 229.100 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 1$
  - c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 2.900$  ms
  - d. Duty Cycle Correction =  $20\log(\text{Worst Case Dwell Time} / 100\text{ms})$  dB = -30.752 dB
5. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
  - a. Time to cycle through all channels=  $\Delta t = \tau$  [ms] x 20 channels = 58.00 ms, where  $\tau$  = pulse width
  - b.  $100 \text{ ms} / \Delta t$  [ms] =  $H \rightarrow$  Round up to next highest integer,  $H' = 2$
  - c. Worst Case Dwell Time =  $\tau$  [ms] x  $H' = 5.800$  ms
  - d. Duty Cycle Correction(AFH) =  $20\log(\text{Worst Case Dwell Time} / 100\text{ms})$  dB = -24.7314 dB
  - e. We applied DCCF in the test result which hopping channel number is 20.
6. We have done Normal Mode, EDR Mode.
7. This test is performed with hopping off.
8. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

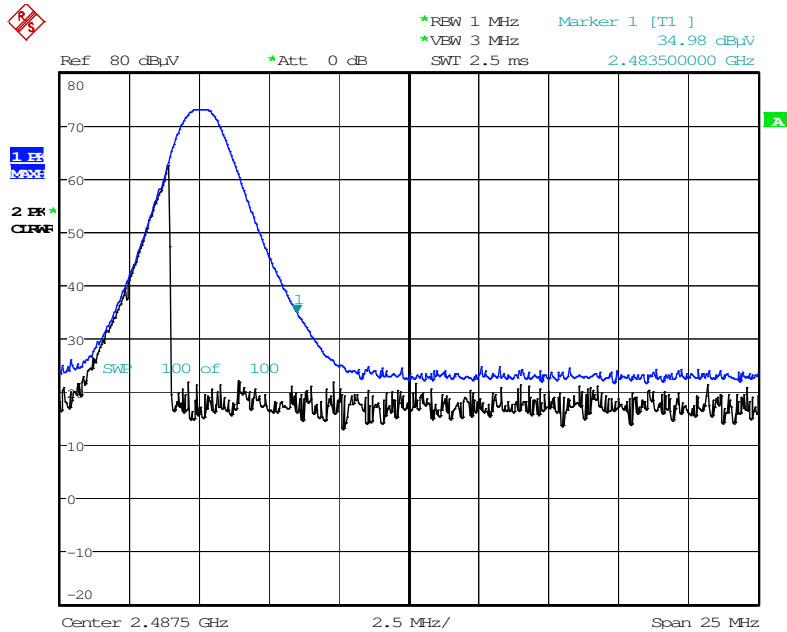
RESULT PLOTS (Worst case : x-H)

Radiated Restricted Band Edges plot – Average Reading (GFSK, Ch.78)



Date: 26.APR.2016 17:02:08

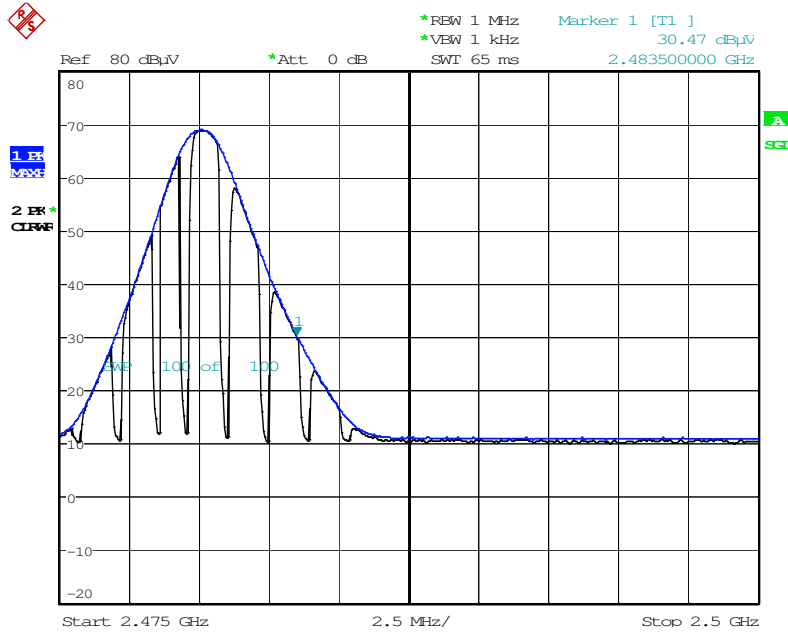
Radiated Restricted Band Edges plot – Peak Reading (GFSK, Ch.78)



Date: 26.APR.2016 17:02:47

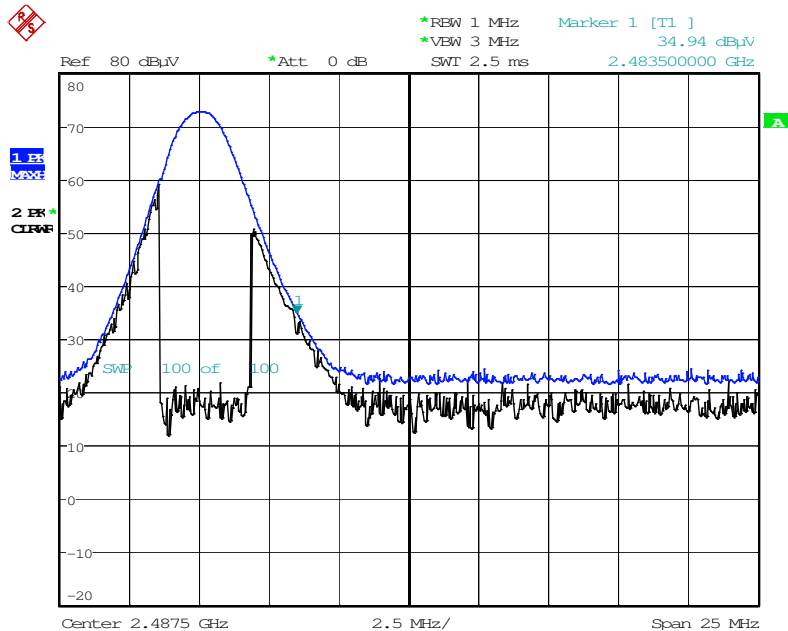
**Note : Only the worst case plots for Radiated Restricted Band Edges.**

**Radiated Restricted Band Edges plot – Average Reading (8DPSK, Ch.78)**



Date: 26.APR.2016 16:49:35

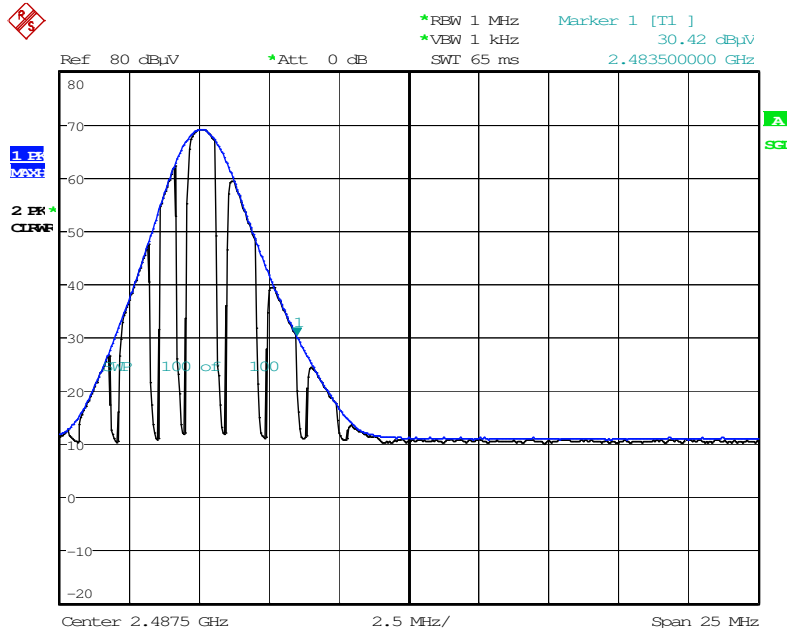
**Radiated Restricted Band Edges plot – Peak Reading (8DPSK, Ch.78)**



Date: 26.APR.2016 16:50:02

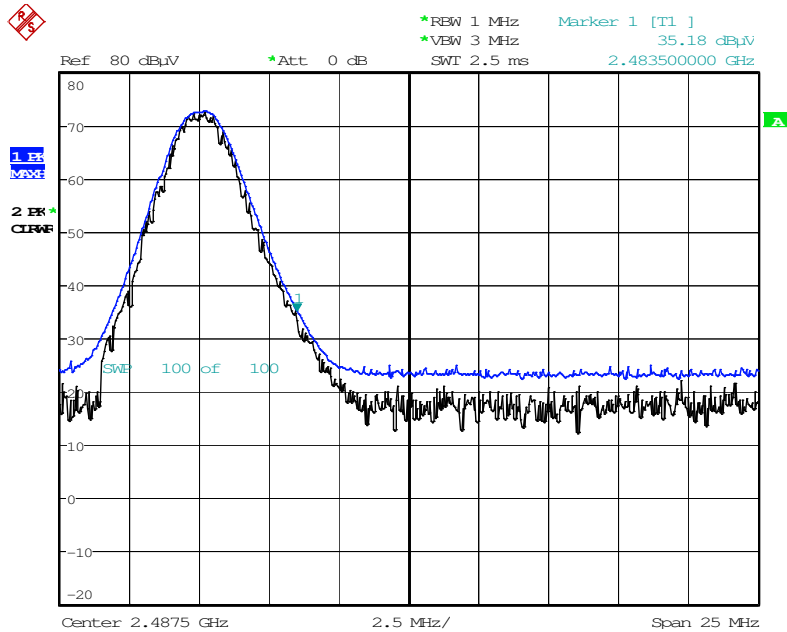
**Note : Only the worst case plots for Radiated Restricted Band Edges.**

**Radiated Restricted Band Edges plot – Average Reading ( $\pi/4$ DQPSK, Ch.78)**



Date: 26.APR.2016 16:53:40

**Radiated Restricted Band Edges plot – Peak Reading ( $\pi/4$ DQPSK, Ch.78)**



Date: 26.APR.2016 16:53:22

**Note : Only the worst case plots for Radiated Restricted Band Edges.**

## 9.7 POWERLINE CONDUCTED EMISSIONS

### LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

### Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

**RESULT PLOTS**

**Conducted Emissions (Line 1)**

Test

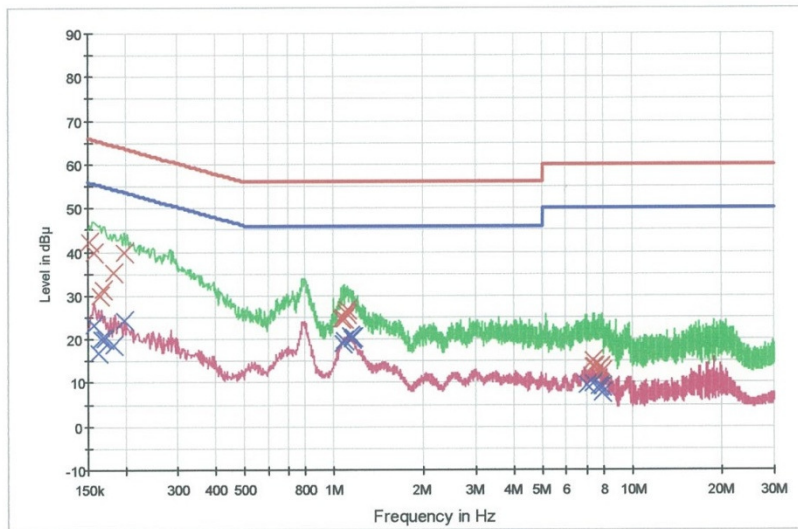
1 / 2

**HCT TEST Report**

**Common Information**

EUT: SM-C5000  
 Manufacturer: SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions: BT MODE

FCC CLASS B



— FCC CLASS B\_QP [..VEMI conducted]      — FCC CLASS B\_AV [..VEMI conducted]  
 — Preview Result 1-PK+ [Preview Result 1.Result:1]      — Preview Result 2-AVG [Preview Result 2.Result:2]  
 x Final Result 1-QPK [Final Result 1.Result:1]      x Final Result 2-CAV [Final Result 2.Result:1]

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.152000	42.3	9.000	Off	N	9.6	23.6	65.9
0.158000	39.7	9.000	Off	N	9.6	25.8	65.6
0.164000	30.0	9.000	Off	N	9.6	35.2	65.3
0.168000	31.3	9.000	Off	N	9.6	33.7	65.1
0.182000	35.1	9.000	Off	N	9.6	29.3	64.4
0.198000	39.6	9.000	Off	N	9.6	24.0	63.7
1.058000	24.7	9.000	Off	N	9.7	31.3	56.0
1.068000	24.8	9.000	Off	N	9.7	31.2	56.0
1.078000	24.8	9.000	Off	N	9.7	31.2	56.0
1.096000	25.9	9.000	Off	N	9.7	30.1	56.0
1.110000	25.9	9.000	Off	N	9.7	30.1	56.0
1.114000	26.7	9.000	Off	N	9.7	29.3	56.0
7.340000	15.2	9.000	Off	N	9.9	44.8	60.0
7.376000	13.8	9.000	Off	N	9.9	46.2	60.0
7.418000	13.6	9.000	Off	N	9.9	46.4	60.0
7.858000	13.7	9.000	Off	N	9.9	46.3	60.0
7.888000	12.5	9.000	Off	N	9.9	47.5	60.0
7.908000	12.5	9.000	Off	N	9.9	47.5	60.0

**Final Result 2**

2016-04-29

오전 9:38:35

Test

2 / 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	23.1	9.000	Off	N	9.6	32.4	55.6
0.162000	16.9	9.000	Off	N	9.6	38.4	55.4
0.166000	20.0	9.000	Off	N	9.6	35.1	55.2
0.170000	19.9	9.000	Off	N	9.6	35.1	55.0
0.182000	18.7	9.000	Off	N	9.6	35.7	54.4
0.198000	24.3	9.000	Off	N	9.6	29.4	53.7
1.068000	19.1	9.000	Off	N	9.7	26.9	46.0
1.088000	19.6	9.000	Off	N	9.7	26.4	46.0
1.132000	20.9	9.000	Off	N	9.7	25.1	46.0
1.144000	20.2	9.000	Off	N	9.7	25.8	46.0
1.152000	20.5	9.000	Off	N	9.7	25.5	46.0
1.156000	20.2	9.000	Off	N	9.7	25.8	46.0
6.996000	9.3	9.000	Off	N	9.9	40.7	50.0
7.340000	9.7	9.000	Off	N	9.9	40.3	50.0
7.366000	9.9	9.000	Off	N	9.9	40.1	50.0
7.716000	9.1	9.000	Off	N	9.9	40.9	50.0
7.876000	9.2	9.000	Off	N	9.9	40.8	50.0
7.888000	7.7	9.000	Off	N	9.9	42.3	50.0

2016-04-29

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**Conducted Emissions (Line 2)**

Test

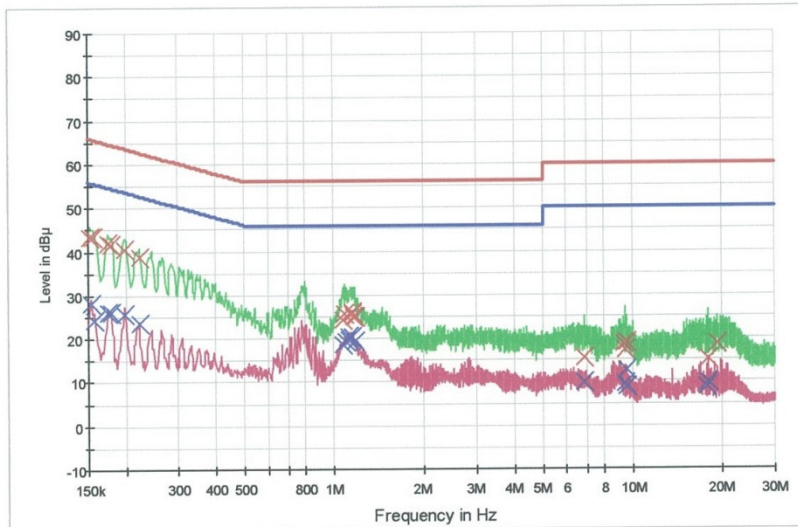
1 / 2

**HCT TEST Report**

**Common Information**

EUT: SM-C5000  
 Manufacturer: SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions: BT MODE

FCC CLASS B



— FCC CLASS B\_QP [..EMI conducted]      — FCC CLASS B\_AV [..EMI conducted]  
 Preview Result 1-PK+ [Preview Result 1.Result:1]      Preview Result 2-AVG [Preview Result 2.Result:2]  
 × Final Result 1-QPK [Final Result 1.Result:1]      × Final Result 2-CAV [Final Result 2.Result:1]

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	43.4	9.000	Off	L1	9.6	22.5	65.9
0.156000	43.3	9.000	Off	L1	9.6	22.4	65.7
0.174000	41.8	9.000	Off	L1	9.6	22.9	64.8
0.178000	41.7	9.000	Off	L1	9.6	22.9	64.6
0.198000	40.7	9.000	Off	L1	9.6	23.0	63.7
0.222000	38.7	9.000	Off	L1	9.6	24.0	62.7
1.072000	24.4	9.000	Off	L1	9.7	31.6	56.0
1.086000	25.8	9.000	Off	L1	9.7	30.2	56.0
1.142000	26.2	9.000	Off	L1	9.7	29.8	56.0
1.152000	25.7	9.000	Off	L1	9.7	30.3	56.0
1.168000	25.1	9.000	Off	L1	9.7	30.9	56.0
1.172000	25.1	9.000	Off	L1	9.7	30.9	56.0
6.862000	15.5	9.000	Off	L1	9.9	44.5	60.0
9.302000	18.7	9.000	Off	L1	10.0	41.3	60.0
9.468000	17.4	9.000	Off	L1	10.0	42.6	60.0
9.480000	18.9	9.000	Off	L1	10.0	41.1	60.0
17.896000	15.1	9.000	Off	L1	10.2	44.9	60.0
19.226000	18.5	9.000	Off	L1	10.2	41.5	60.0

**Final Result 2**

2016-04-29

오전 9:47:50

Test

2 / 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	28.2	9.000	Off	L1	9.6	27.6	55.8
0.158000	24.4	9.000	Off	L1	9.6	31.2	55.6
0.174000	26.1	9.000	Off	L1	9.6	28.6	54.8
0.178000	25.9	9.000	Off	L1	9.6	28.7	54.6
0.198000	25.6	9.000	Off	L1	9.6	28.1	53.7
0.222000	23.5	9.000	Off	L1	9.6	29.3	52.7
1.068000	18.7	9.000	Off	L1	9.7	27.3	46.0
1.100000	19.5	9.000	Off	L1	9.7	26.5	46.0
1.120000	19.7	9.000	Off	L1	9.7	26.3	46.0
1.128000	20.4	9.000	Off	L1	9.7	25.6	46.0
1.142000	20.3	9.000	Off	L1	9.7	25.7	46.0
1.172000	19.4	9.000	Off	L1	9.7	26.6	46.0
6.862000	9.8	9.000	Off	L1	9.9	40.2	50.0
9.468000	9.3	9.000	Off	L1	10.0	40.7	50.0
9.480000	12.5	9.000	Off	L1	10.0	37.5	50.0
9.488000	8.9	9.000	Off	L1	10.0	41.1	50.0
17.788000	8.7	9.000	Off	L1	10.2	41.3	50.0
17.896000	9.9	9.000	Off	L1	10.2	40.1	50.0

2016-04-29

오전 9:47:50

Note : The Worst case of Conducted Emission is standalone mode.

## 10. LIST OF TEST EQUIPMENT

### 10.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216/ LISN	12/28/2015	Annual	100073
Rohde & Schwarz	ESCI / TEST RECEIVER	12/28/2015	Annual	100584
Agilent	E4440A/ Spectrum Analyzer	03/18/2016	Annual	US45303008
Agilent	N9020A / SIGNAL ANALYZER	06/30/2015	Annual	MY51110085
Agilent	N9030A / SIGNAL ANALYZER	11/24/2015	Annual	MY49431210
Agilent	N1911A / Power Meter	07/09/2015	Annual	MY45100523
Agilent	N1921A / Power Sensor	03/11/2016	Annual	MY52260025
Agilent	87300B/Directional Coupler	11/30/2015	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/15/2015	Annual	5001
Hewlett Packard	E3632A / DC POWER SUPPLY	03/09/2016	Annual	KR75303962
Agilent	8493C / Attenuator(10 dB)	07/23/2015	Annual	07560
Rohde & Schwarz	CBT / BLUETOOTH TESTER	05/11/2015	Annual	100422

## 10.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	AM4000 / Antenna Position Tower	N/A	N/A	N/A
Audix	Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Rohde & Schwarz	Loop Antenna	02/23/2016	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/15/2015	Biennial	255
Schwarzbeck	BBHA 9120D / Horn Antenna	05/07/2015	Biennial	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	09/03/2015	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	09/24/2015	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/23/2015	Annual	101068-SZ
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	06/29/2015	Annual	8
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	09/11/2015	Annual	34
Wainwright Instruments	WRCJV2400/2483.5-2370/2520- 60/12SS / Band Reject Filter	07/06/2015	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/26/2016	Annual	2
Agilent	8493C-10 / Attenuator(10 dB)	08/20/2015	Annual	76649
CERNEX	CBLU1183540 / Power Amplifier	07/21/2015	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	07/21/2015	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	07/27/2015	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	07/09/2015	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	04/01/2016	Annual	3000C000276