



CH Mid : $2.885 * (800/6)/20 * 8.0 = 153.87$ (ms)

3-DH 5(The longest packet type for 8DPSK)

CH Mid : $2.890 * (800/6)/20 * 8.0 = 154.13$ (ms)

Note :

A DH5 Packet need 5 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/6 hops per second with 79 channels. So the system have each channel 3.3755 times per second and so for 31.6 seconds the system have 106.7 times of appearance.

Each tx-time per appearance of DH5 is 2.883 ms.

Dwell time = Tx-time * 106.7

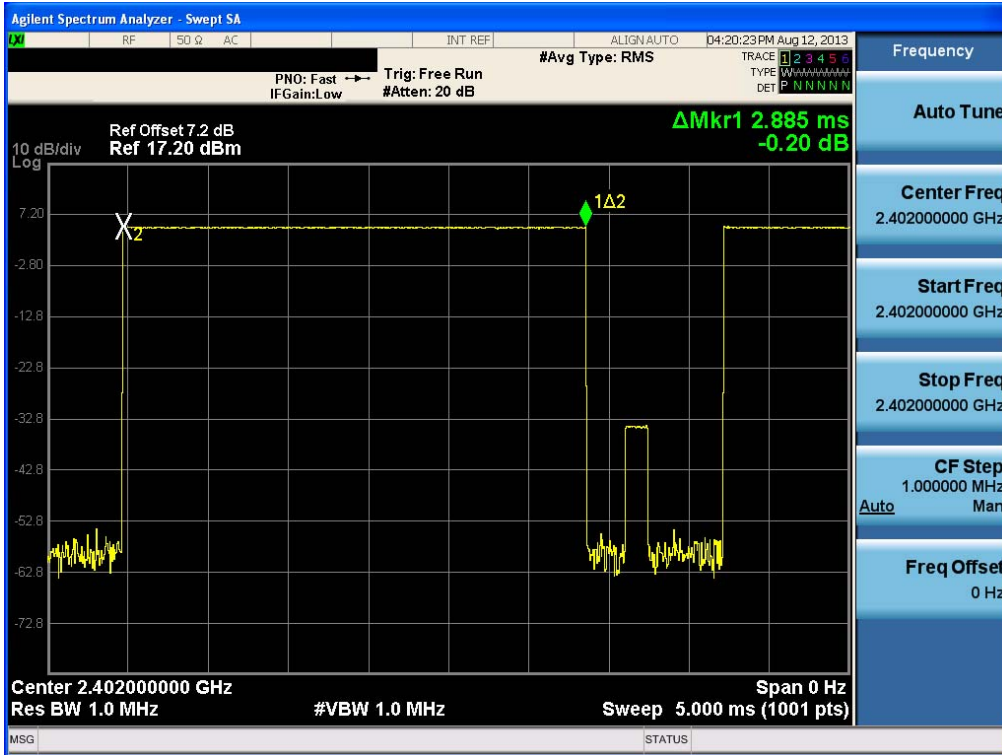
TEST RESULTS

See the table.

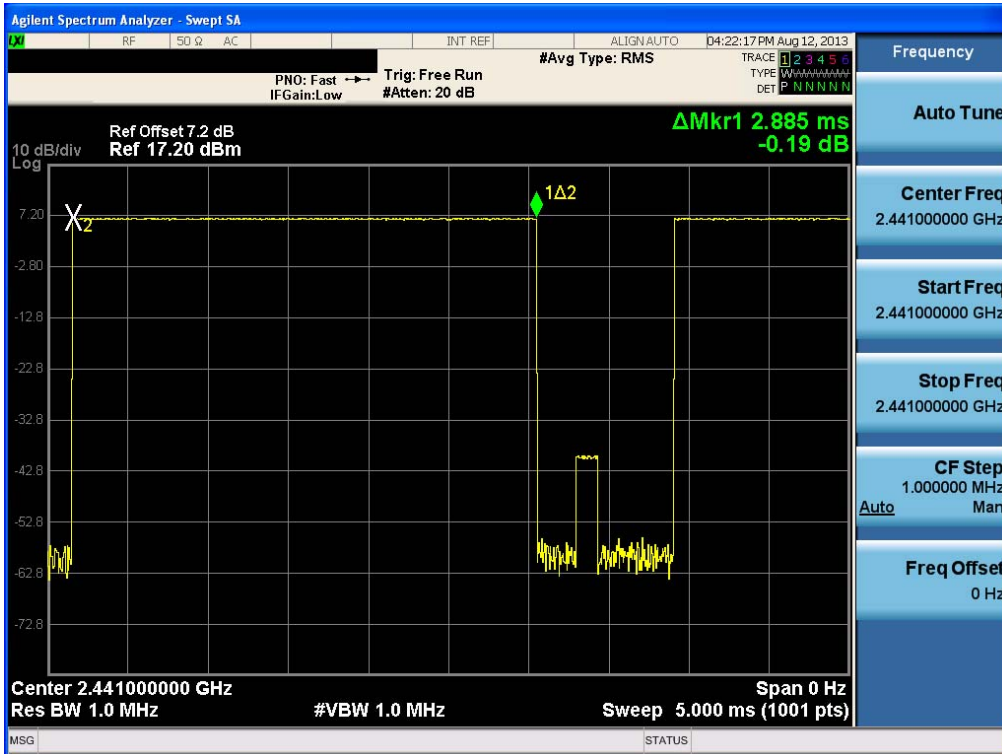
	Channel	GFSK	8DPSK	$\pi/4$ DQPSK
Pulse Time (ms)	Low	2.885	2.890	2.890
	Mid	2.885	2.890	2.885
	High	2.890	2.890	2.890

	Channel	GFSK	8DPSK	$\pi/4$ DQPSK	Period Time (s)	Limit (ms)	Result
Total of Dwell (ms)	Low	307.73	308.27	308.27	31.6	400	PASS
	Mid	307.73	308.27	307.73	31.6		PASS
	High	308.27	308.27	308.27	31.6		PASS

Test Plots (GFSK)
Dwell Time (Low-CH)

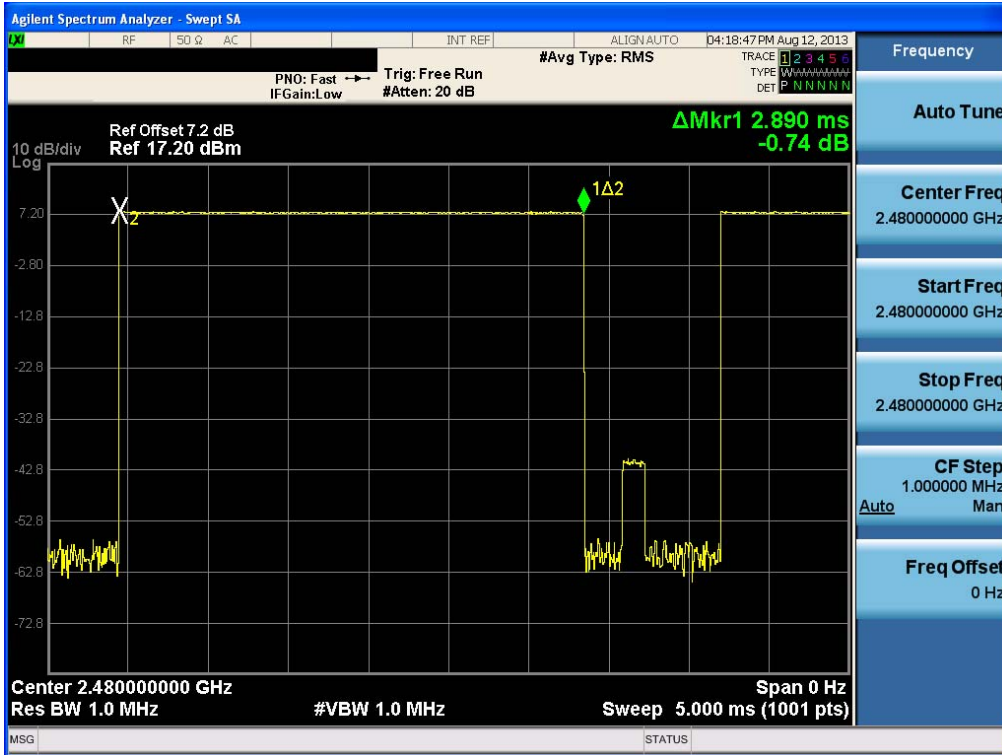


Test Plots (GFSK)
Dwell Time (Mid-CH)

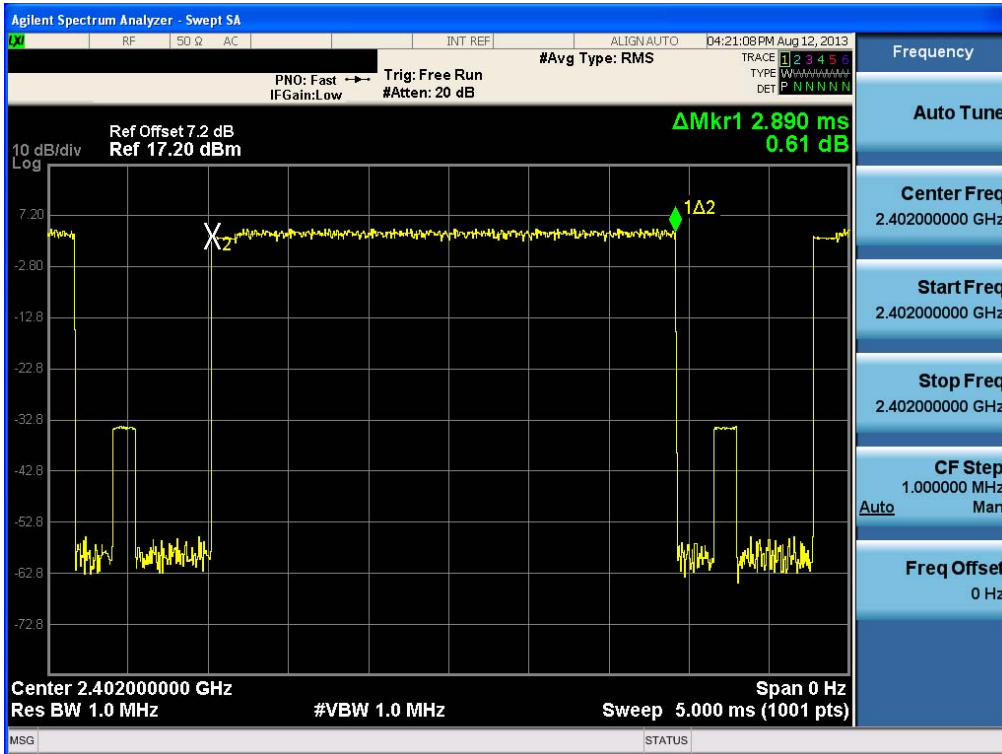


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1308FR45-1	Date of Issue: September 09, 2013	EUT Type: 1900 GSM/EDGE/GPRS Phone with BT v3.0 EDR , 802.11b/g/n and Hotspot	FCC ID: A3LGTS7568I	

Test Plots (GFSK)
Dwell Time (High-CH)



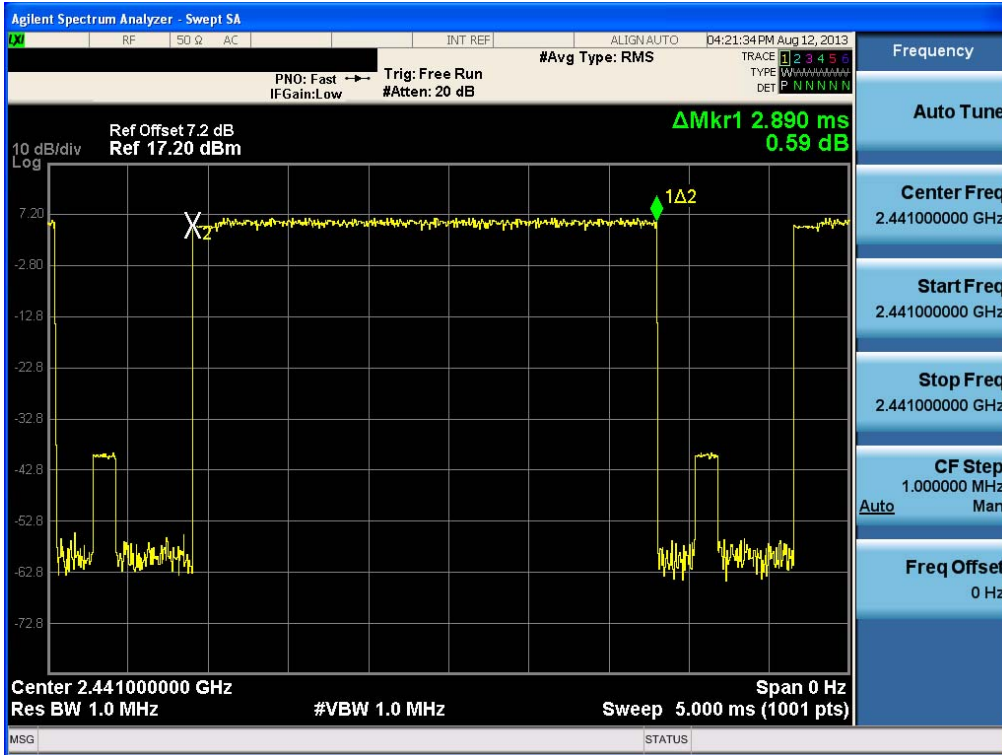
Test Plots (8DPSK)
Dwell Time (Low-CH)



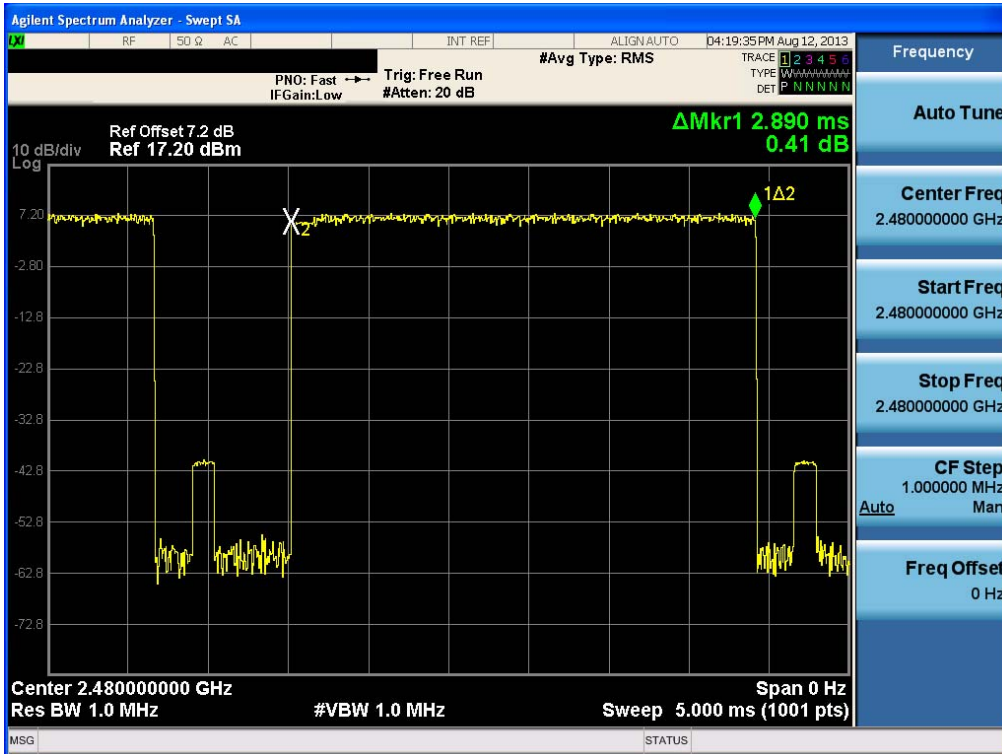
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1308FR45-1	Date of Issue: September 09, 2013	EUT Type: 1900 GSM/EDGE/GPRS Phone with BT v3.0 EDR , 802.11b/g/n and Hotspot	FCC ID: A3LGTS7568I	



Test Plots (8DPSK)
Dwell Time (Mid-CH)

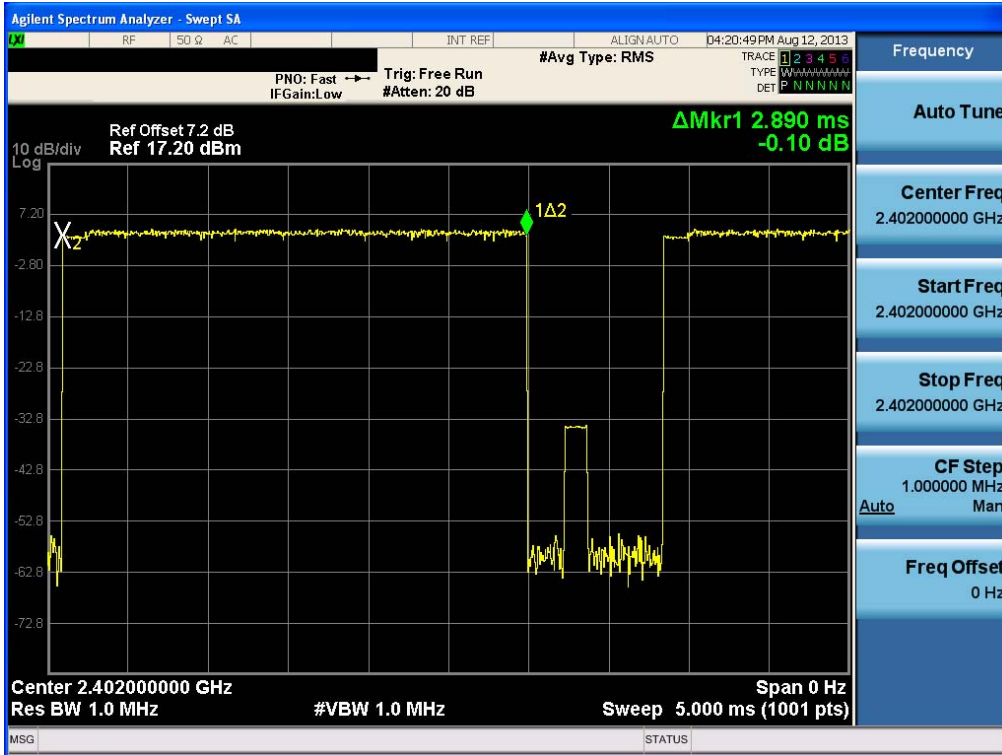


Test Plots (8DPSK)
Dwell Time (High-CH)

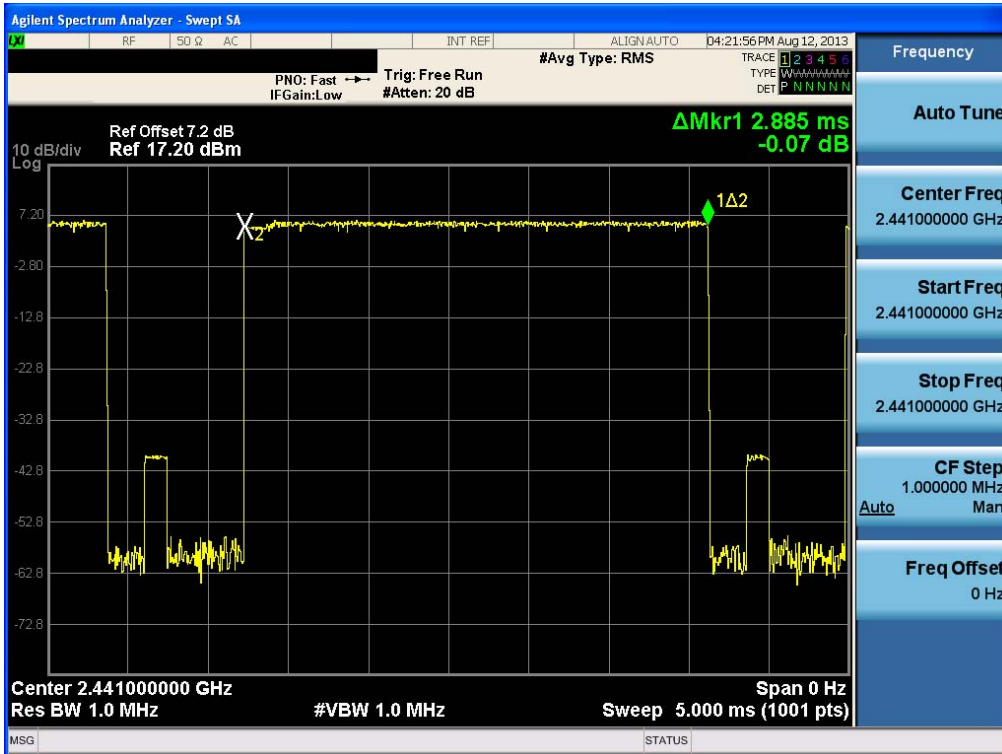


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Test Plots ($\pi/4$ DQPSK)
Dwell Time (Low-CH)



Test Plots ($\pi/4$ DQPSK)
Dwell Time (Mid-CH)



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8.6 SPURIOUS EMISSIONS

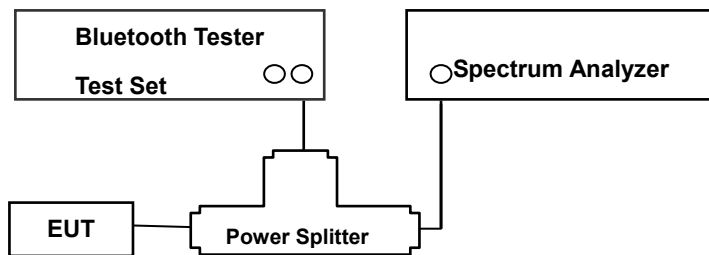
8.6.1 CONDUCTED SPURIOUS EMISSIONS

Test Requirements and limit, §15.247(d)

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

Limit : 20 dBc

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer.

The Spectrum Analyzer is set to (DA 00-705)

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions(e.g.,harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.
2. RBW = 100 kHz
3. VBW ≥ 300 kHz
4. Sweep = auto
5. Sweep point ≥ 2*span/RBW
5. Detector function = peak

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6. Trace = max hold

Measurements are made over the 30 MHz to 26 GHz range with the transmitter set to the lowest, middle, and highest channels.

This test is performed with hopping off.

TEST RESULTS

No non-compliance noted.

Note : In order to simplify the report, attached plots were only the worst case channel and data rate.

FACTORS FOR FREQUENCY

Freq(MHz)	Factor(dB)
30	10.01
100	10.02
200	10.10
300	10.09
400	10.13
500	10.21
600	10.13
700	10.31
800	10.18
900	10.30
1000	10.17
2000	8.53
2400*	7.18
2500*	7.21
3000	8.59
4000	10.02
5000	9.88
6000	5.70
7000	10.21
8000	6.13
9000	8.79
10000	12.46
11000	8.11
12000	9.52
13000	8.98
14000	8.13
15000	11.82
16000	6.92
17000	13.23
18000	10.25
19000	10.28
20000	9.10
21000	10.94
22000	11.54
23000	8.81
24000	11.71
25000	9.37
26000	9.34

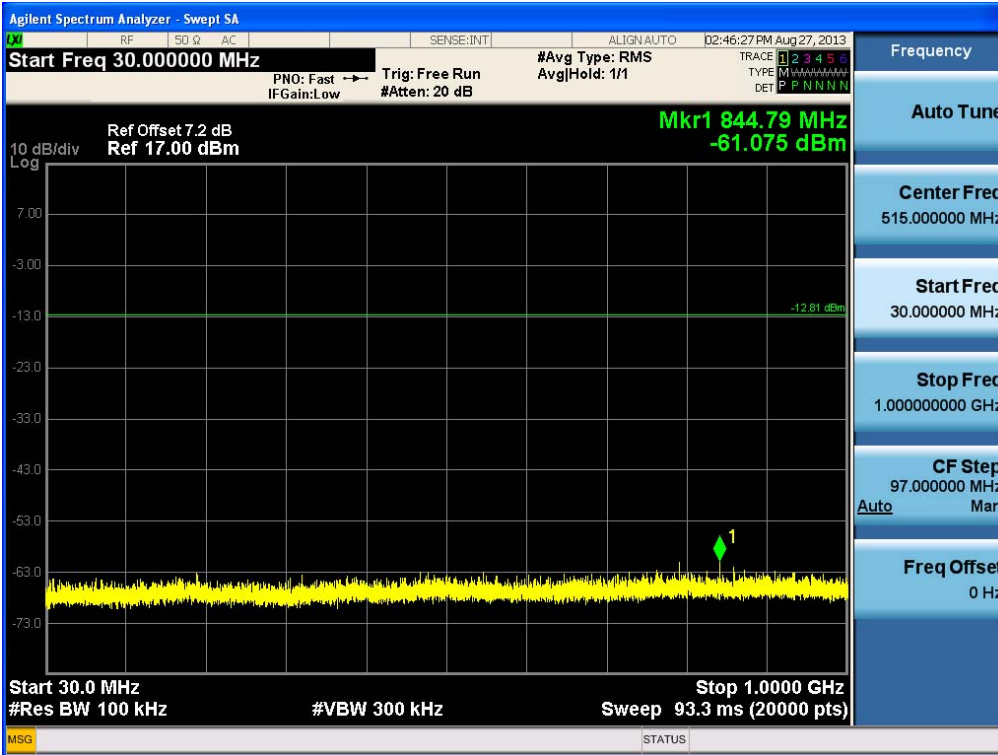
Note : 1. ** is fundamental frequency range.

2. Factor = Cable loss + Splitter loss

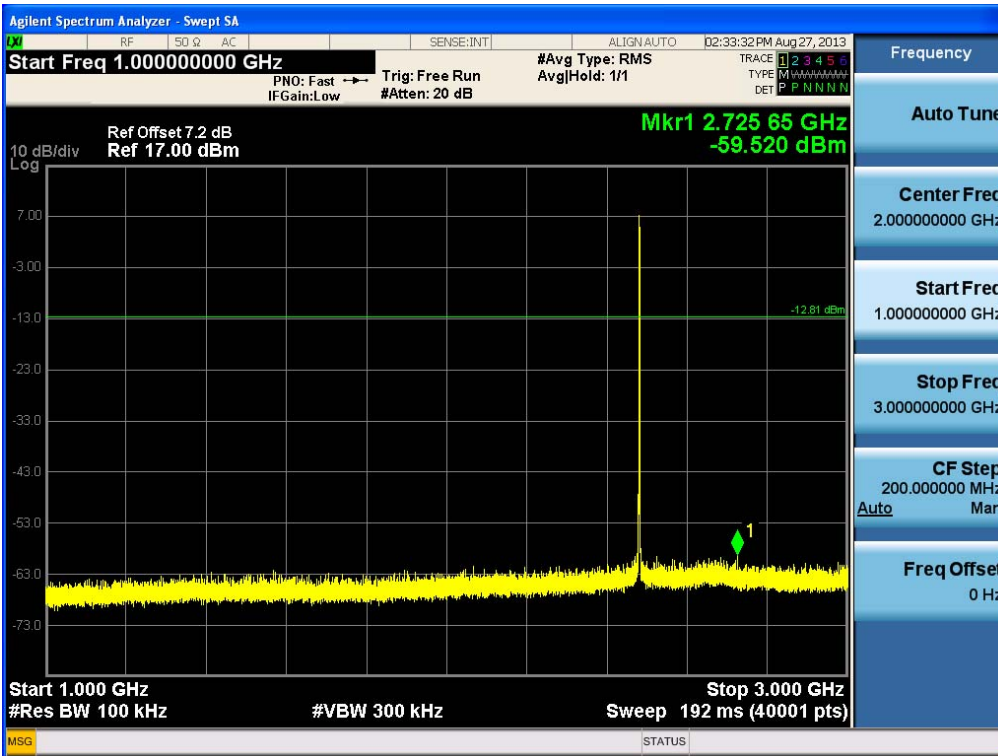
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
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Test Plots (8DPSK) - 30 MHz - 1 GHz
Spurious Emission (High-CH)



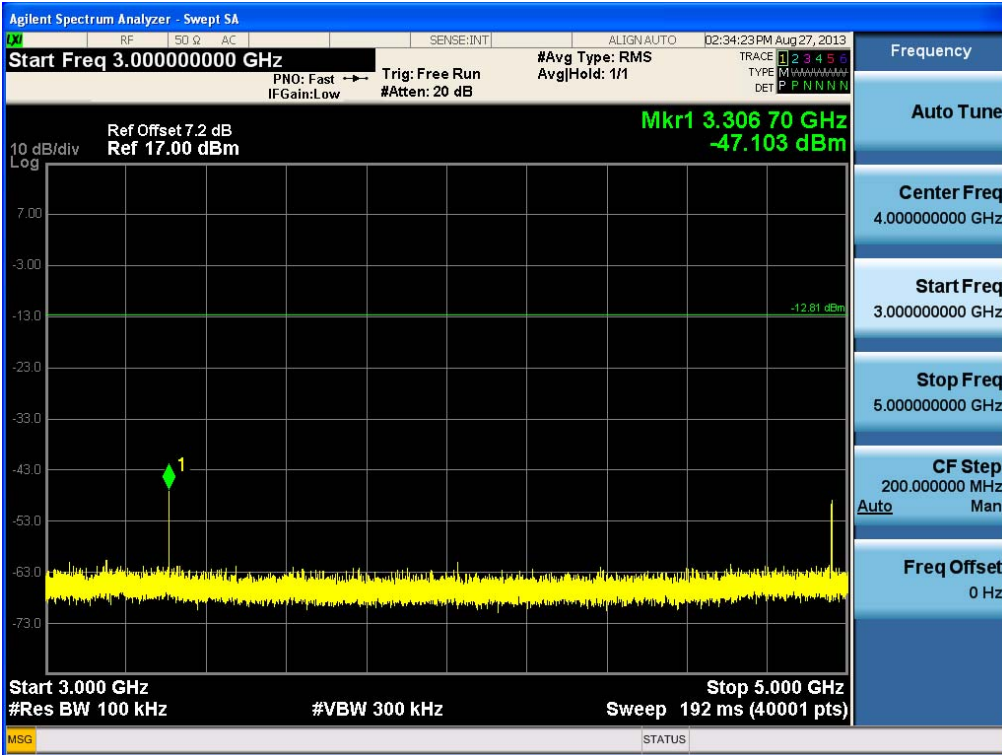
Test Plots (8DPSK) - 1 GHz - 3 GHz
Spurious Emission (High-CH)



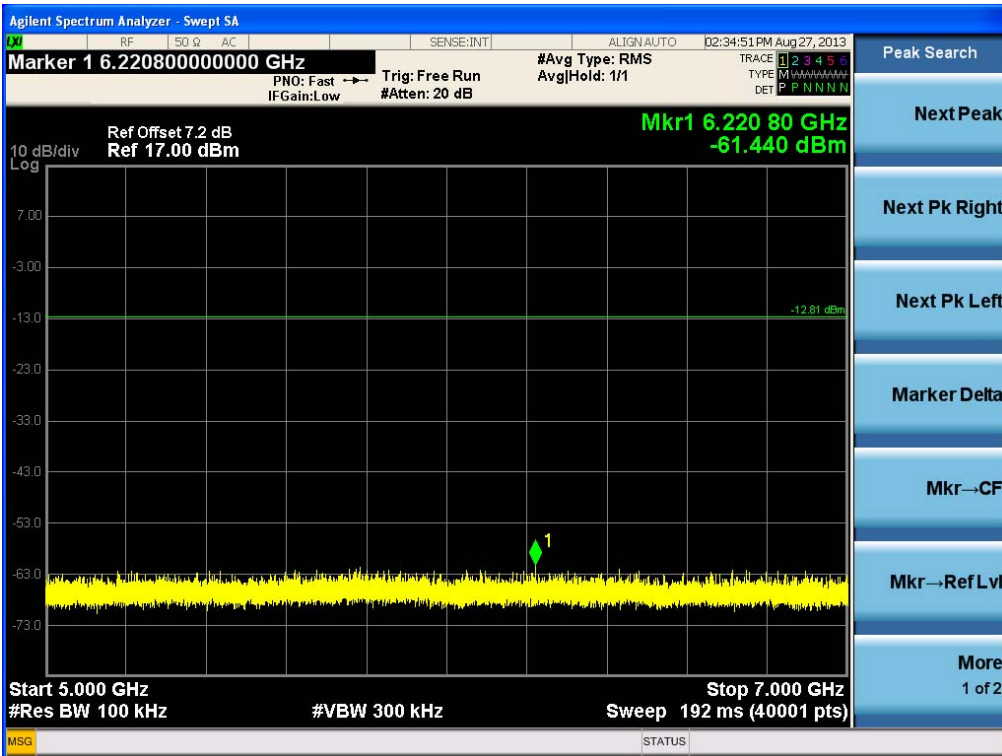
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
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Test Plots (8DPSK) - 3 GHz - 5 GHz
Spurious Emission (High-CH)



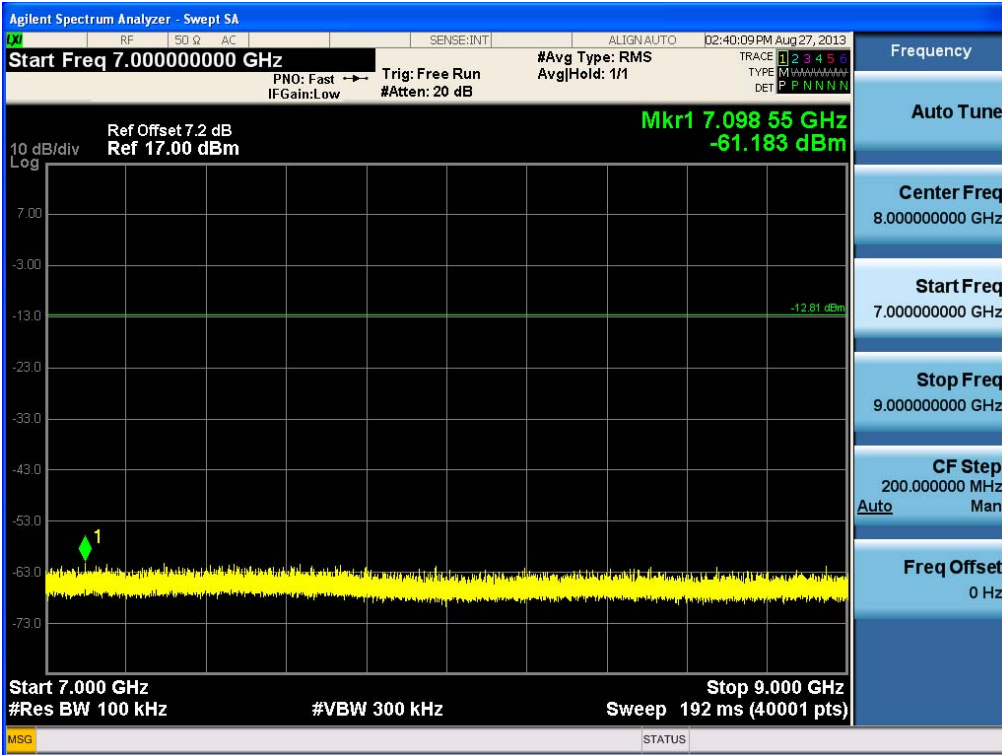
Test Plots (8DPSK) - 5 GHz - 7 GHz
Spurious Emission (High-CH)



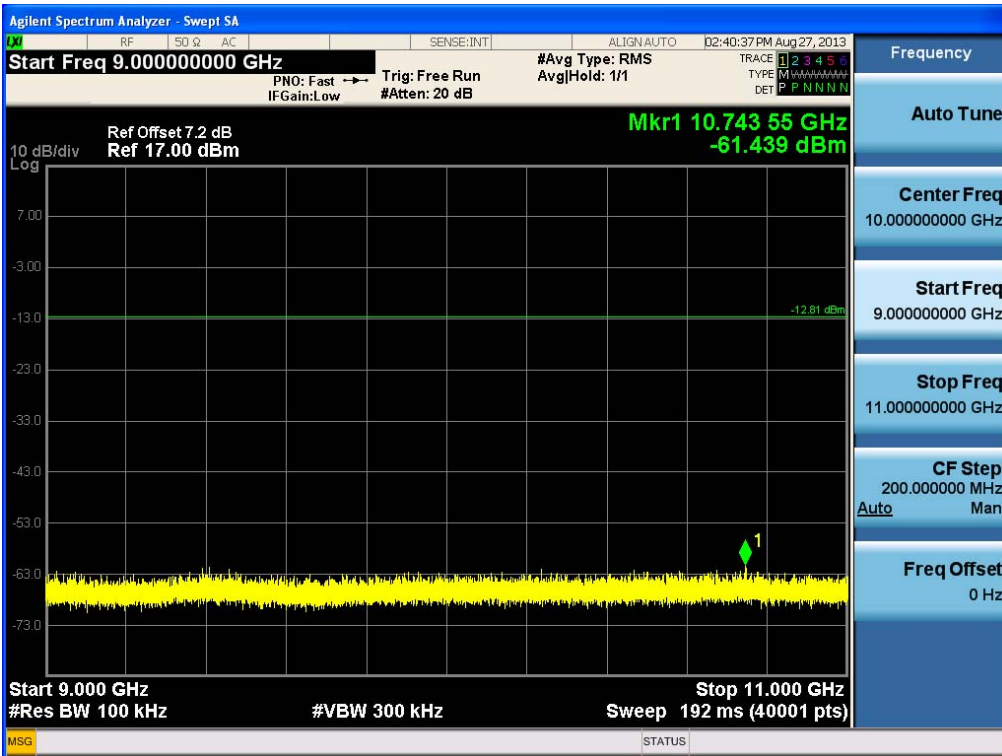
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
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Test Plots (8DPSK) -7 GHz - 9 GHz
Spurious Emission (High-CH)



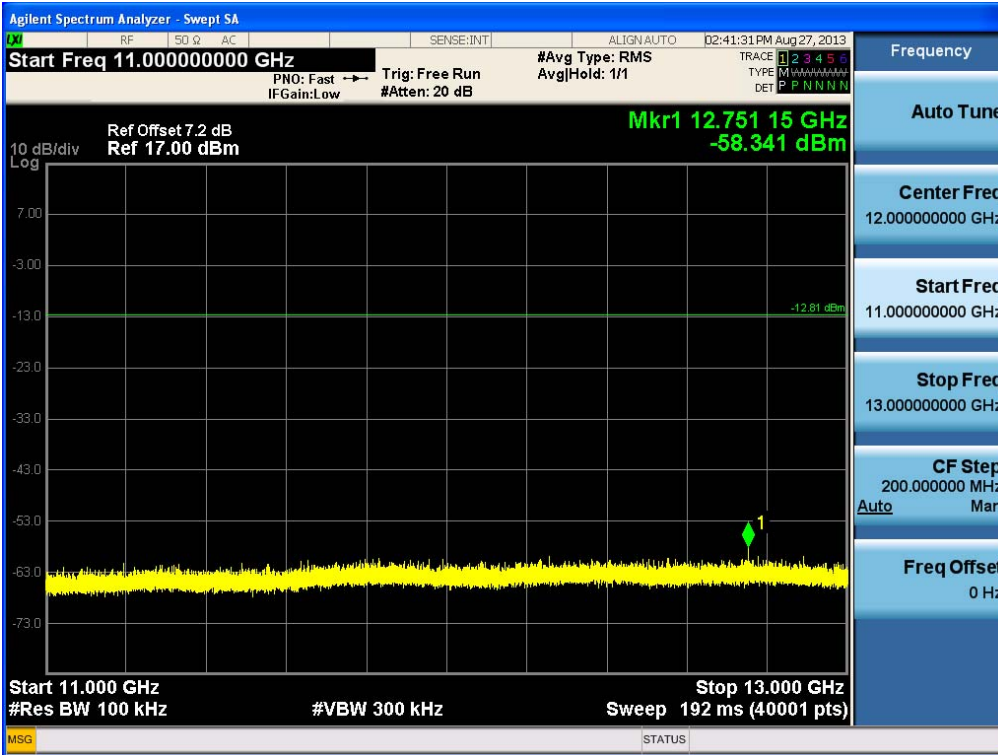
Test Plots (8DPSK) - 9 GHz - 11 GHz
Spurious Emission (High-CH)



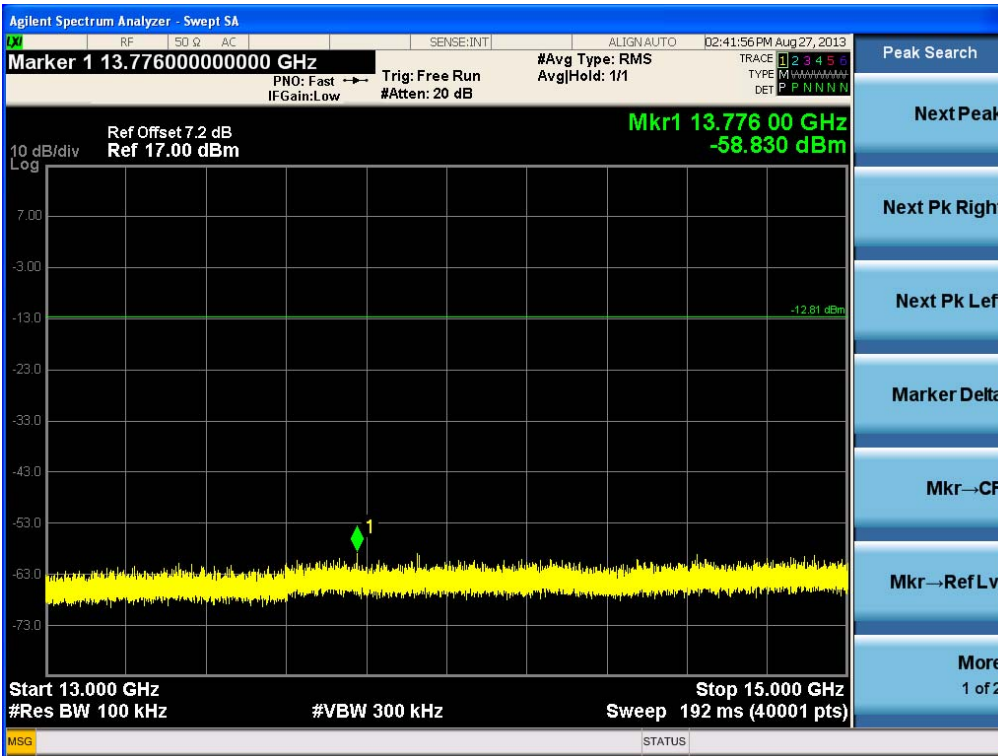
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1308FR45-1	Date of Issue: September 09, 2013	EUT Type: 1900 GSM/EDGE/GPRS Phone with BT v3.0 EDR , 802.11b/g/n and Hotspot	FCC ID: A3LGTS7568I



Test Plots (8DPSK) - 11 GHz - 13 GHz
Spurious Emission (High-CH)



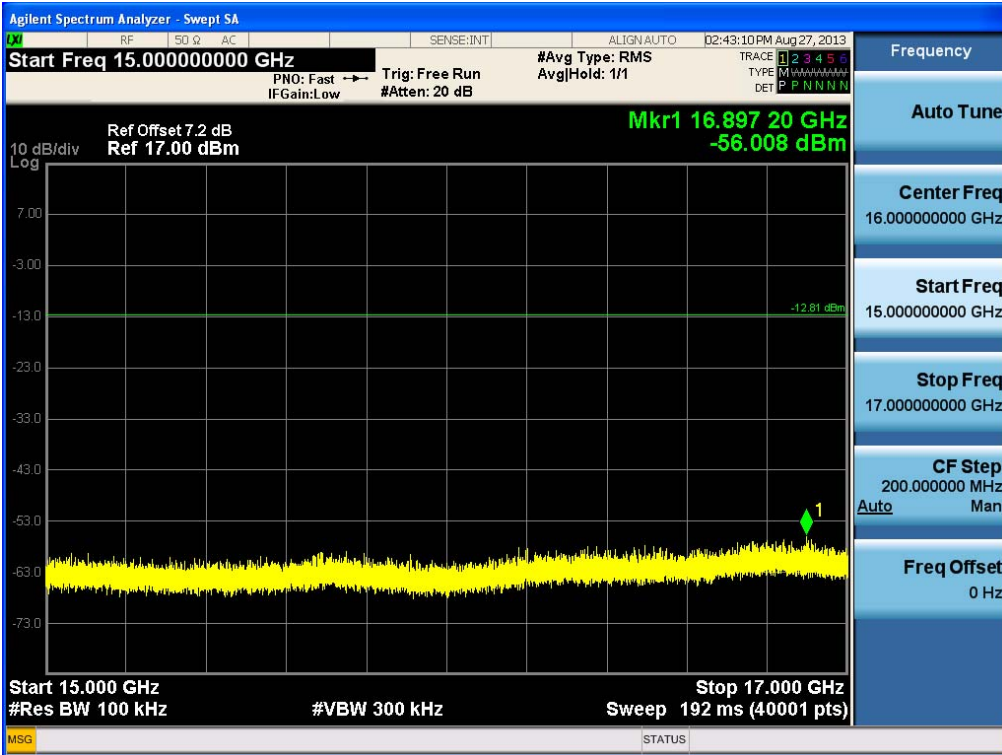
Test Plots (8DPSK) - 13 GHz - 15 GHz
Spurious Emission (High-CH)



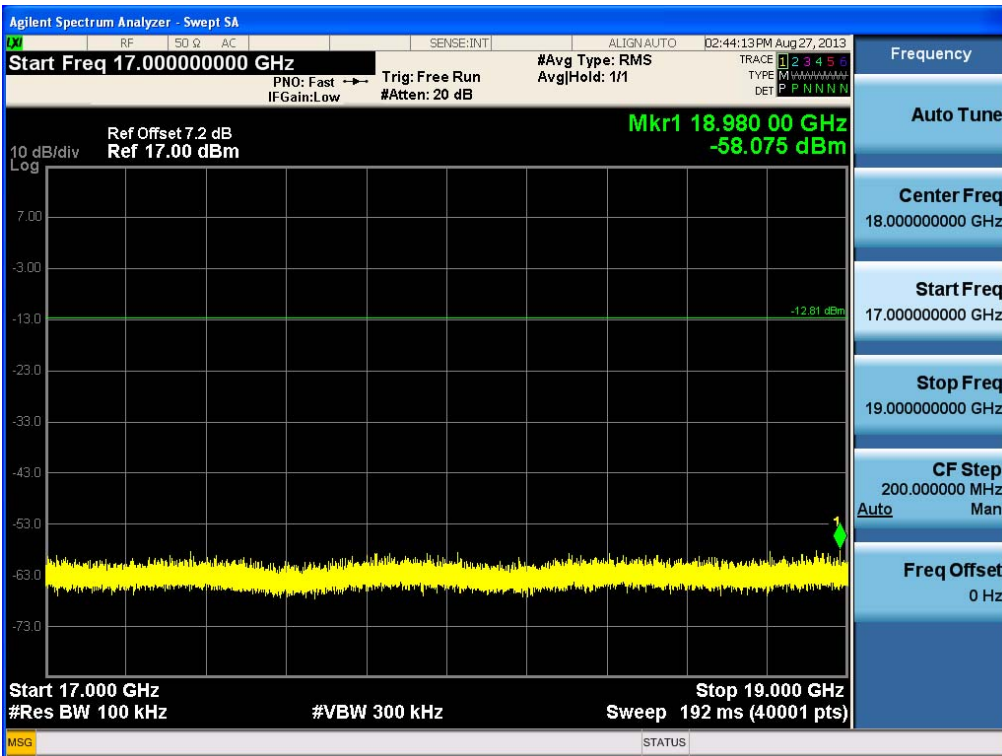
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1308FR45-1	Date of Issue: September 09, 2013	EUT Type: 1900 GSM/EDGE/GPRS Phone with BT v3.0 EDR , 802.11b/g/n and Hotspot	FCC ID: A3LGT57568I



Test Plots (8DPSK) - 15 GHz - 17 GHz
Spurious Emission (High-CH)

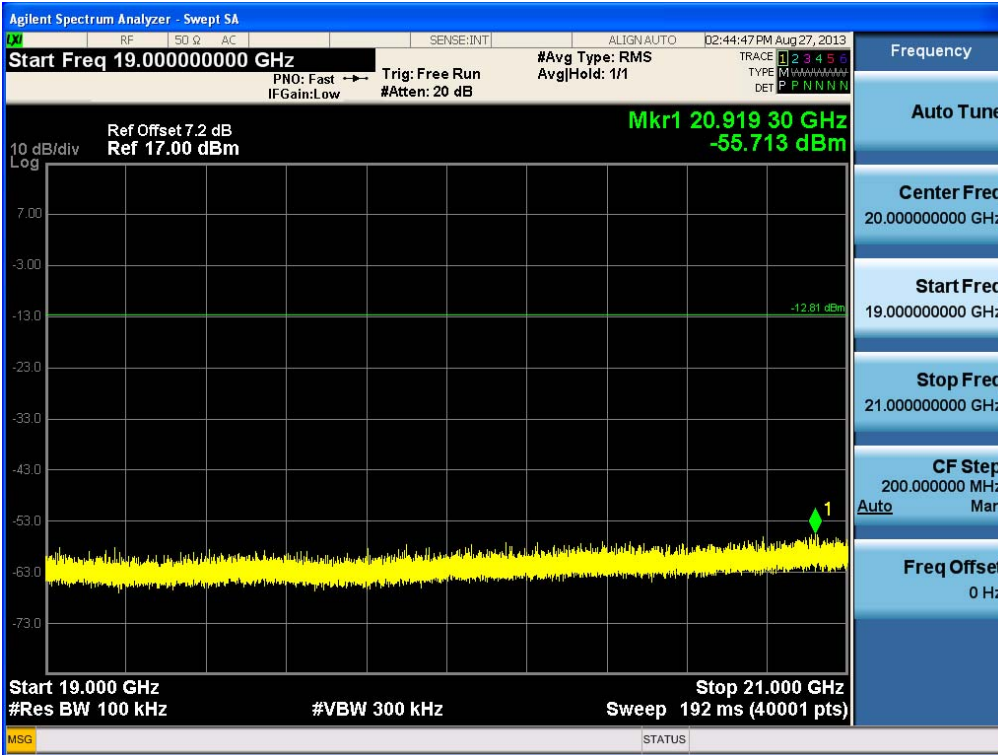


Test Plots (8DPSK) - 17 GHz - 19 GHz
Spurious Emission (High-CH)

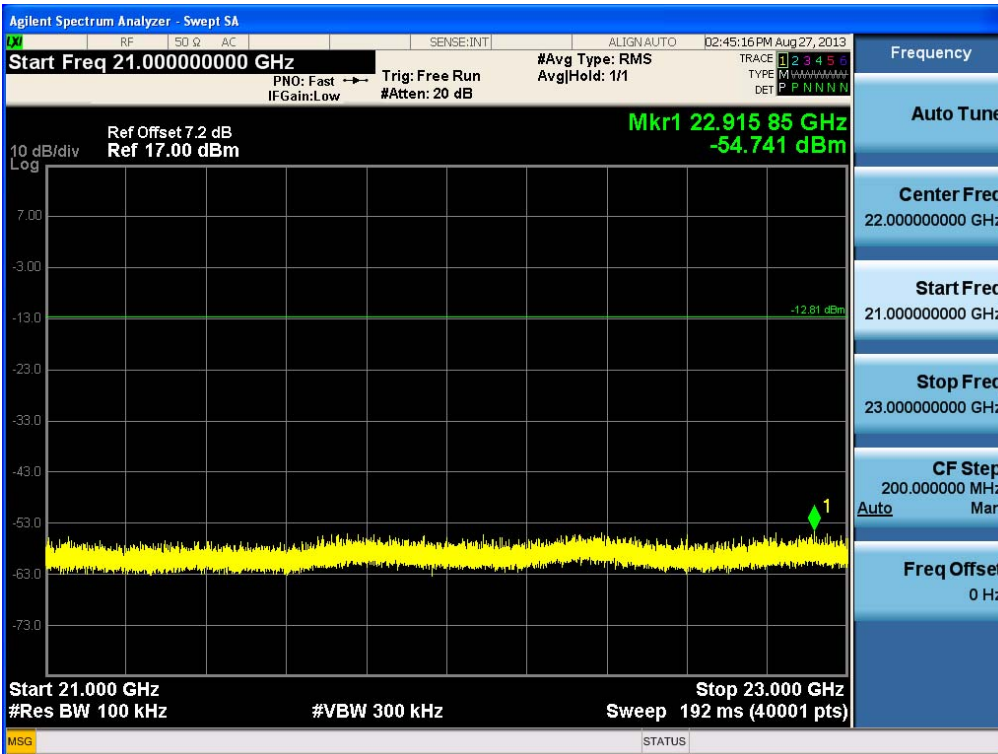


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Test Plots (8DPSK) - 19 GHz - 21 GHz
Spurious Emission (High-CH)

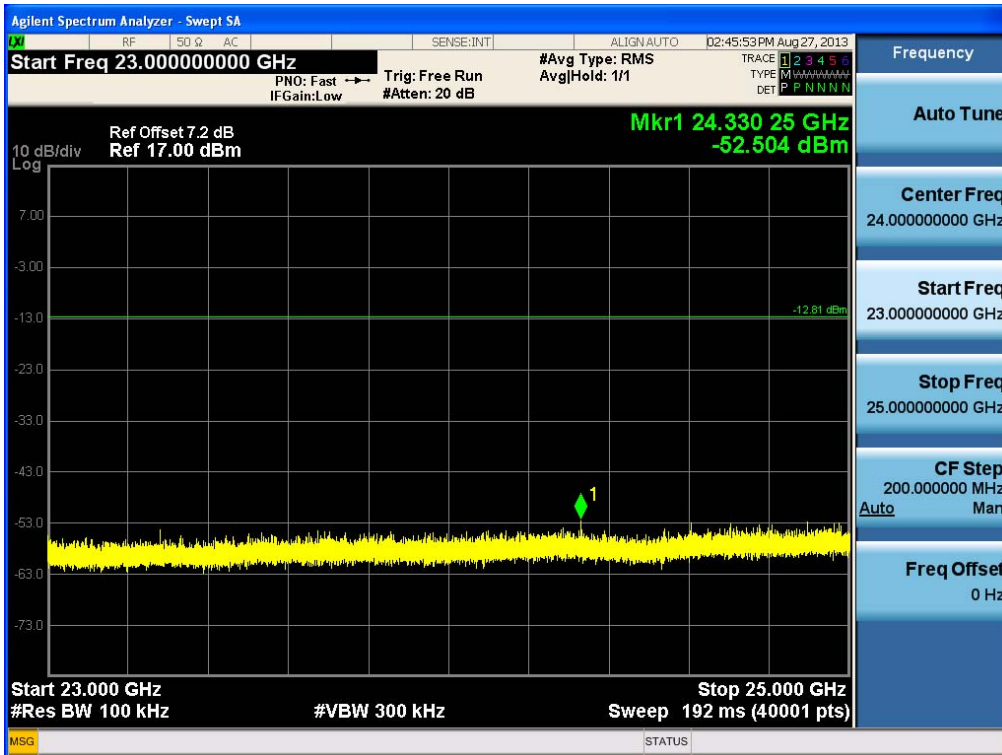


Test Plots (8DPSK) - 21 GHz - 23 GHz
Spurious Emission (High-CH)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Test Plots (8DPSK) - 23 GHz - 25 GHz
Spurious Emission (High-CH)



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
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8.6.2 RADIATED SPURIOUS EMISSIONS

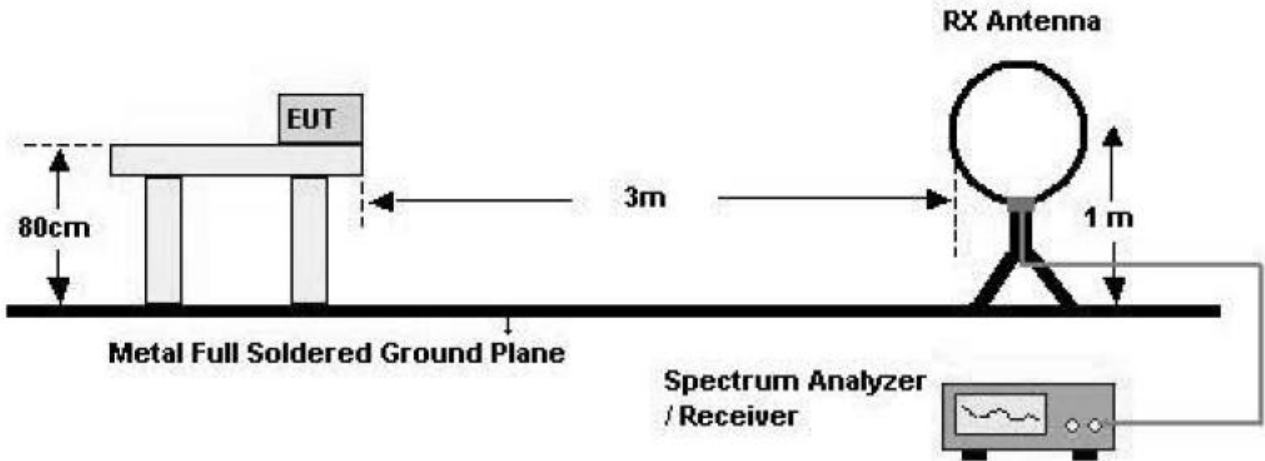
LIMIT : §15.247(d), §15.205, §15.209

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.

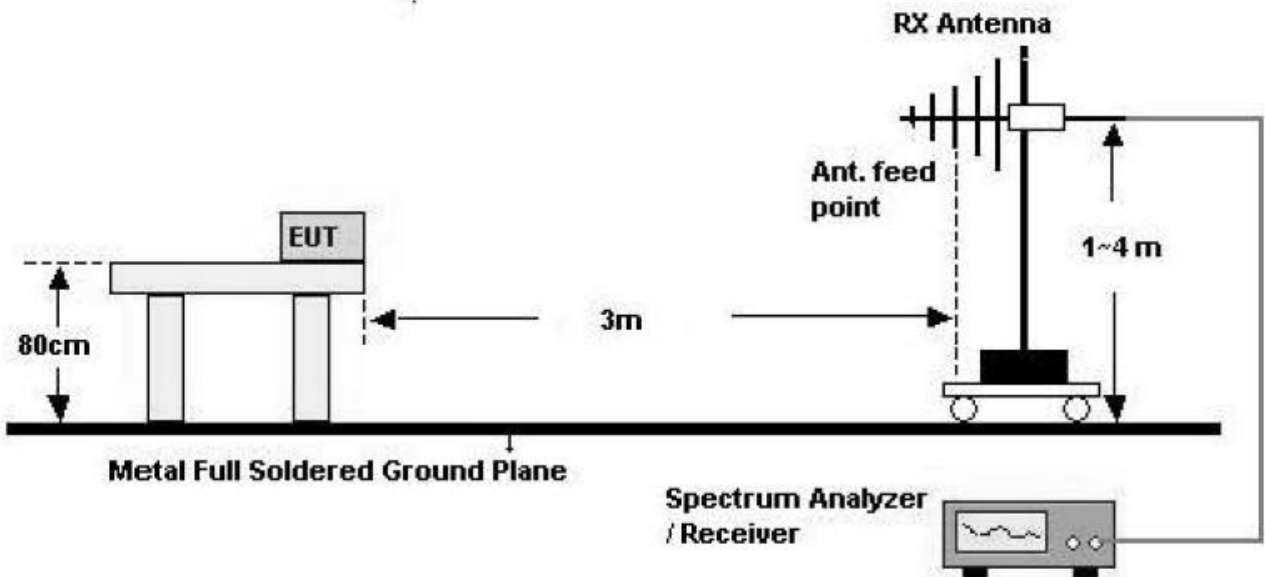
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

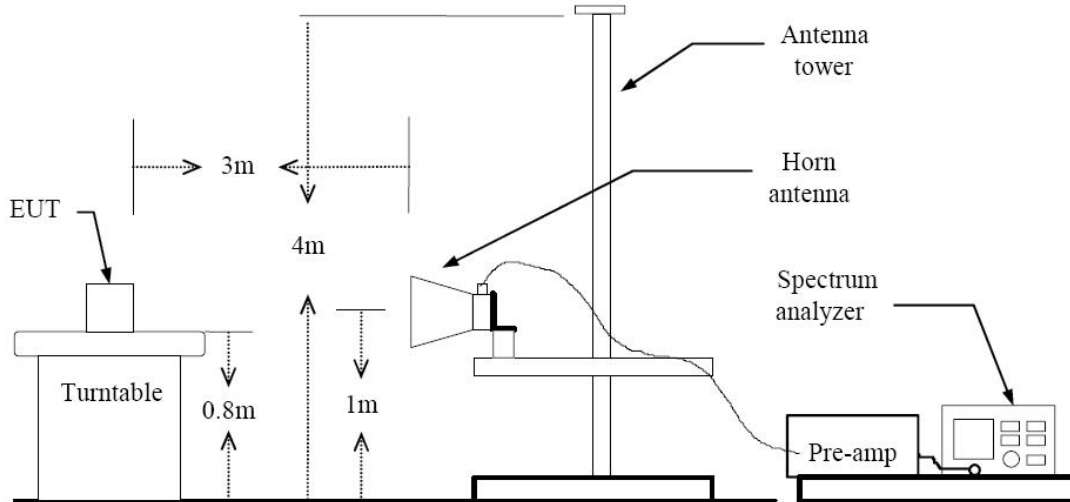
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 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 Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.

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TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/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	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/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]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4804	55.03	-4.32	V	50.71	74	23.27	PK
4804	44.10	-4.32	V	39.78	54	14.20	AV
7206	53.04	5.18	V	58.22	74	15.76	PK
7206	41.06	5.18	V	46.24	54	7.74	AV
4804	56.24	-4.32	H	51.92	74	22.06	PK
4804	46.70	-4.32	H	42.38	54	11.60	AV
7206	53.19	5.18	H	58.37	74	15.61	PK
7206	41.03	5.18	H	46.21	54	7.77	AV

Operation Mode: CH Low(8DPSK)

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4804	54.29	-4.32	V	49.97	74	24.01	PK
4804	42.60	-4.32	V	38.28	54	15.70	AV
7206	53.30	5.18	V	58.48	74	15.50	PK
7206	41.04	5.18	V	46.22	54	7.76	AV
4804	55.55	-4.32	H	51.23	74	22.75	PK
4804	44.05	-4.32	H	39.73	54	14.25	AV
7206	53.34	5.18	H	58.52	74	15.46	PK
7206	41.01	5.18	H	46.19	54	7.79	AV

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

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4804	51.51	-4.32	V	47.19	74	26.79	PK
4804	42.52	-4.32	V	38.20	54	15.78	AV
7206	53.51	5.18	V	58.69	74	15.29	PK
7206	41.06	5.18	V	46.24	54	7.74	AV
4804	54.81	-4.32	H	50.49	74	23.49	PK
4804	44.10	-4.32	H	39.78	54	14.20	AV
7206	53.25	5.18	H	58.43	74	15.55	PK
7206	41.04	5.18	H	46.22	54	7.76	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 – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.
We performed using a reduced video BW method was done with the analyzer in linear mode.
6. We have done Normal Mode and EDR Mode test.
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.

Operation Mode: CH Mid(GFSK)

Frequency [MHz]	Reading dBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4882	54.53	-3.95	V	50.58	74	23.40	PK
4882	44.65	-3.95	V	40.70	54	13.28	AV
7323	53.51	5.46	V	58.97	74	15.02	PK
7323	41.03	5.46	V	46.49	54	7.50	AV
4882	56.00	-3.95	H	52.05	74	21.93	PK
4882	46.60	-3.95	H	42.65	54	11.33	AV
7323	53.41	5.46	H	58.87	74	15.12	PK
7323	41.01	5.46	H	46.47	54	7.52	AV

Operation Mode: CH Mid(8DPSK)

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4882	53.66	-3.95	V	49.71	74	24.27	PK
4882	42.45	-3.95	V	38.50	54	15.48	AV
7323	53.53	5.46	V	58.99	74	15.00	PK
7323	41.03	5.46	V	46.49	54	7.50	AV
4882	54.87	-3.95	H	50.92	74	23.06	PK
4882	44.30	-3.95	H	40.35	54	13.63	AV
7323	53.14	5.46	H	58.60	74	15.39	PK
7323	41.05	5.46	H	46.51	54	7.48	AV

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

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4882	53.69	-3.95	V	49.74	74	24.24	PK
4882	42.51	-3.95	V	38.56	54	15.42	AV
7323	53.34	5.46	V	58.80	74	15.19	PK
7323	40.98	5.46	V	46.44	54	7.55	AV
4882	54.69	-3.95	H	50.74	74	23.24	PK
4882	44.15	-3.95	H	40.20	54	13.78	AV
7323	53.48	5.46	H	58.94	74	15.05	PK
7323	41.03	5.46	H	46.49	54	7.50	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 – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.
We performed using a reduced video BW method was done with the analyzer in linear mode.
6. We have done Normal Mode and EDR Mode test.
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.

Operation Mode: CH High(GFSK)

Frequency [MHz]	Reading dBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	53.83	-3.49	V	50.34	74	23.64	PK
4960	44.14	-3.49	V	40.65	54	13.33	AV
7440	52.58	5.10	V	57.68	74	16.30	PK
7440	40.64	5.10	V	45.74	54	8.24	AV
4960	56.17	-3.49	H	52.68	74	21.30	PK
4960	47.30	-3.49	H	43.81	54	10.17	AV
7440	52.74	5.10	H	57.84	74	16.14	PK
7440	40.70	5.10	H	45.80	54	8.18	AV

Operation Mode: CH High(8DPSK)

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	53.38	-3.49	V	49.89	74	24.09	PK
4960	42.13	-3.49	V	38.64	54	15.34	AV
7440	52.54	5.10	V	57.64	74	16.34	PK
7440	40.68	5.10	V	45.78	54	8.20	AV
4960	55.26	-3.49	H	51.77	74	22.21	PK
4960	44.60	-3.49	H	41.11	54	12.87	AV
7440	52.80	5.10	H	57.90	74	16.08	PK
7440	40.70	5.10	H	45.80	54	8.18	AV

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

Frequency [MHz]	Reading DBuV	※A.F+CL-AMP GAIN [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4960	53.71	-3.49	V	50.22	74	23.76	PK
4960	42.10	-3.49	V	38.61	54	15.37	AV
7440	52.48	5.10	V	57.58	74	16.40	PK
7440	40.71	5.10	V	45.81	54	8.17	AV
4960	54.87	-3.49	H	51.38	74	22.60	PK
4960	44.51	-3.49	H	41.02	54	12.96	AV
7440	52.67	5.10	H	57.77	74	16.21	PK
7440	40.65	5.10	H	45.75	54	8.23	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 – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.
We performed using a reduced video BW method was done with the analyzer in linear mode.
6. We have done Normal Mode and EDR Mode test.
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.

8.6.3 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
Channel No	CH 0

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	24.66	33.90	H	58.56	74	15.42	PK
2390.0	13.35	33.90	H	47.25	54	6.73	AV
2390.0	25.04	33.90	V	58.94	74	15.04	PK
2390.0	13.50	33.90	V	47.40	54	6.58	AV

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

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	24.71	33.90	H	58.61	74	15.37	PK
2390.0	13.30	33.90	H	47.20	54	6.78	AV
2390.0	24.98	33.90	V	58.88	74	15.10	PK
2390.0	13.48	33.90	V	47.38	54	6.60	AV

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

Frequency [MHz]	Reading dBuV	※A.F+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	24.57	33.90	H	58.47	74	15.51	PK
2390.0	13.31	33.90	H	47.21	54	6.77	AV
2390.0	24.94	33.90	V	58.84	74	15.14	PK
2390.0	13.45	33.90	V	47.35	54	6.63	AV

※ A.F: ANTENNA FACTOR
 C.L: CABLE LOSS

Notes:

- 1.. Frequency range of measurement = 2310 MHz ~ 2390 MHz
2. Total = Fundamental Reading Value + Antenna Factor + Cable Loss
3. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.
 We performed using a reduced video BW method was done with the analyzer in linear mode.
4. We have done Normal Mode and EDR Mode.
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



Operation Mode Normal(GFSK)
 Operating Frequency 2480 MHz
 Channel No 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]	Detect
2483.5	31.43	33.99	H	0	65.42	73.98	8.56	PK
2483.5	24.66	33.99	H	-24.76	33.89	53.98	20.09	AV
2483.5	30.44	33.99	V	0	64.43	73.98	9.55	PK
2483.5	23.60	33.99	V	-24.76	32.83	53.98	21.15	AV

Operation Mode EDR(8DPSK)
 Operating Frequency 2480 MHz
 Channel No 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]	Detect
2483.5	31.28	33.99	H	0	65.27	73.98	8.71	PK
2483.5	23.40	33.99	H	-24.76	32.63	53.98	21.35	AV
2483.5	30.23	33.99	V	0	64.22	73.98	9.76	PK
2483.5	22.42	33.99	V	-24.76	31.65	53.98	22.33	AV

Operation Mode EDR(π /4DQPSK)
 Operating Frequency 2480 MHz
 Channel No CH 78

Frequency [MHz]	*Fund. Reading dBuV	※ A.F.+CL [dB]	Ant. Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2483.5	31.34	33.99	H	0	65.33	73.98	8.65	PK
2483.5	23.30	33.99	H	-24.76	32.53	53.98	21.45	AV
2483.5	30.38	33.99	V	0	64.37	73.98	9.61	PK
2483.5	22.50	33.99	V	-24.76	31.73	53.98	22.25	AV



- ※ A:F: ANTENNA FACTOR
- C:L: CABLE LOSS
- AMP GAIN: AMPLIFIER GAIN

Notes:

1. Frequency range of measurement = 2483.5 MHz ~ 2485.5 MHz
2. Total = Fundamental Reading Value + Antenna Factor + Cable Loss – Delta Value + Duty Cycle Correction Factor
3. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds.
4. FYI : Duty Cycle Correction Factor (79 channel hopping)
 - a. Time to cycle through all channels= $\Delta t = \tau$ [ms] x 79 channels = 228.310 ms, where τ = pulse width
 - b. $100 \text{ ms} / \Delta t$ [ms] = $H \rightarrow$ Round up to next highest integer, $H' = 1$
 - c. Worst Case Dwell Time = τ [ms] x $H' = 2.890$ ms
 - d. Duty Cycle Correction = $20\log$ (Worst Case Dwell Time/ 100ms) dB = -30.782 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 = 57.80 ms, where τ = pulse width
 - b. $100 \text{ ms} / \Delta t$ [ms] = $H \rightarrow$ Round up to next highest integer, $H' = 2$
 - c. Worst Case Dwell Time = τ [ms] x $H' = 5.780$ ms
 - d. Duty Cycle Correction(AFH) = $20\log$ (Worst Case Dwell Time/ 100ms) dB = -24.7614 dB
 - e. We applied DCCF in the test result which hopping channel number is 20.
6. Radiated Restricted Band Edge measures by marker-delta method according to ANSI C63.10(version : 2009)
7. We have done Normal Mode, EDR Mode. Worst case of EUT is Normal Mode.
8. This test is performed with hopping off.
9. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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8.7 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 (dB μ V)	
	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.
5. This test is performed with hopping off and 3 Mbps (3-DH5) data rate of No.78 channel.



■ RESULT PLOTS

Conducted Emissions (Line 1)

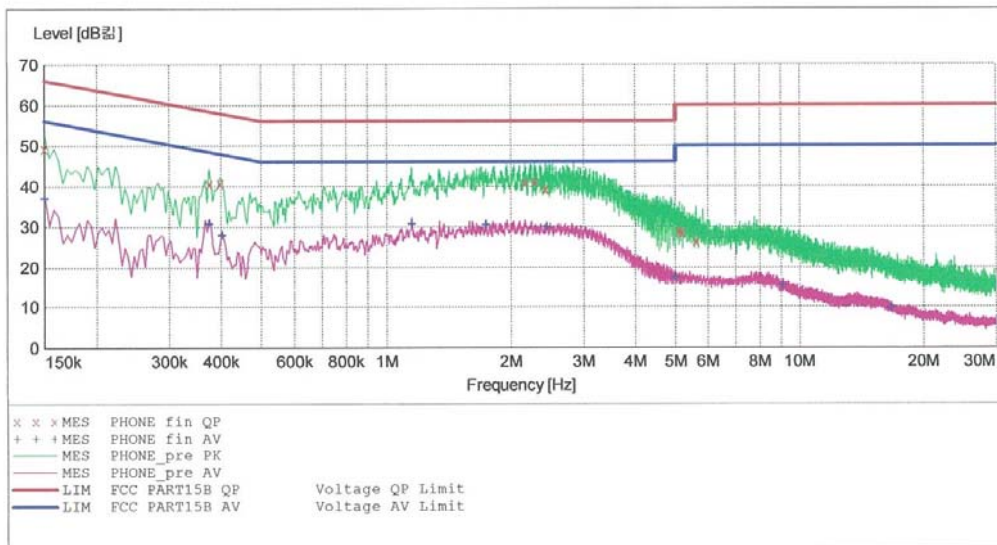
HCT

EMC

EUT: GT-S7568I
 Manufacturer: SAMSUNG
 Operating Condition: BT MODE
 Test Site: SHIELD ROOM
 Operator: JC SHIN
 Test Specification: FCC PART15 B
 Comment: H

SCAN TABLE: "FCC CLASS B(H)"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin_QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	49.30	9.8	66	16.7	---	---
0.374001	40.60	9.8	58	17.8	---	---
0.398001	40.70	9.8	58	17.2	---	---
2.168000	40.90	10.0	56	15.1	---	---
2.288000	41.20	10.0	56	14.8	---	---
2.432000	39.20	10.0	56	16.8	---	---
5.116000	28.90	10.2	60	31.1	---	---
5.196000	28.70	10.2	60	31.3	---	---
5.612000	26.40	10.2	60	33.6	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

2013-08-22 7:25오-후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.150001	37.00	9.8	56	19.0	---	---
0.374001	30.70	9.8	48	17.7	---	---
0.402001	27.80	9.8	48	20.0	---	---
1.152000	30.70	9.9	46	15.3	---	---
1.744000	30.50	9.9	46	15.5	---	---
2.452000	29.90	10.0	46	16.1	---	---
5.000000	17.40	10.2	46	28.6	---	---
9.112000	15.20	10.4	50	34.8	---	---
16.656000	9.70	10.8	50	40.3	---	---

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Conducted Emissions (Line 2)

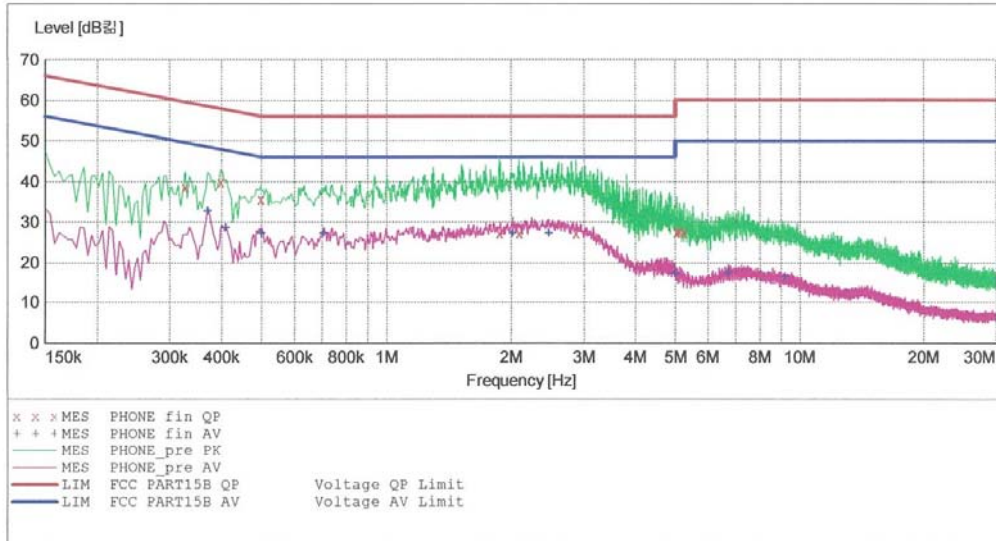
HCT

EMC

EUT: GT-S7568I
 Manufacturer: SAMSUNG
 Operating Condition: BT MODE
 Test Site: SHIELD ROOM
 Operator: JC SHIN
 Test Specification: FCC PART15 B
 Comment: N

SCAN TABLE: "FCC CLASS B(N)"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	KN22 CLASS B	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

2013-08-22 7:29오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.326001	38.50	10.0	60	21.0	---	---
0.398001	39.90	10.0	58	17.9	---	---
0.498001	35.70	10.0	56	20.3	---	---
1.872000	27.30	10.1	56	28.7	---	---
2.092000	27.30	10.2	56	28.7	---	---
2.876000	27.30	10.2	56	28.7	---	---
5.040000	27.60	10.4	60	32.4	---	---
5.116000	27.70	10.4	60	32.3	---	---
5.252000	27.40	10.4	60	32.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-08-22 7:29오 후

Frequency MHz	Level dB _{μV}	Transd dB	Limit dB _{μV}	Margin dB	Line	PE
0.370001	32.70	10.0	49	15.8	---	---
0.410001	28.70	10.0	48	19.0	---	---
0.500000	27.30	10.0	46	18.7	---	---
0.708000	27.30	10.0	46	18.7	---	---
2.020000	27.30	10.1	46	18.7	---	---
2.468000	27.30	10.2	46	18.7	---	---
5.000000	17.30	10.4	46	28.7	---	---
6.708000	17.50	10.5	50	32.5	---	---
9.196000	16.20	10.7	50	33.8	---	---

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9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/17/2014	3150
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	04/16/2014	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	04/25/2014	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	05/14/2014	MY51110063
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2014	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	04/16/2014	MY4442009
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	Annual	02/08/2014	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	04/16/2014	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	04/16/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	03/19/2014	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Agilent	87300B/Directional Coupler	Annual	12/24/2013	3116A03621
Hewlett Packard	11667B / Power Splitter	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/24/2014	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	04/25/2014	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
CERNEX	CBLU1183540 / POWER AMP	Annual	07/24/2014	21691
Agilent	8493C / Attenuator(10 dB)	Annual	07/24/2014	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617

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