

1 CO-LOCATION

1.1 Transmitter Unwanted Emissions

1.1.1 Transmitter Unwanted Emissions Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

1.1.2 Measuring Instruments

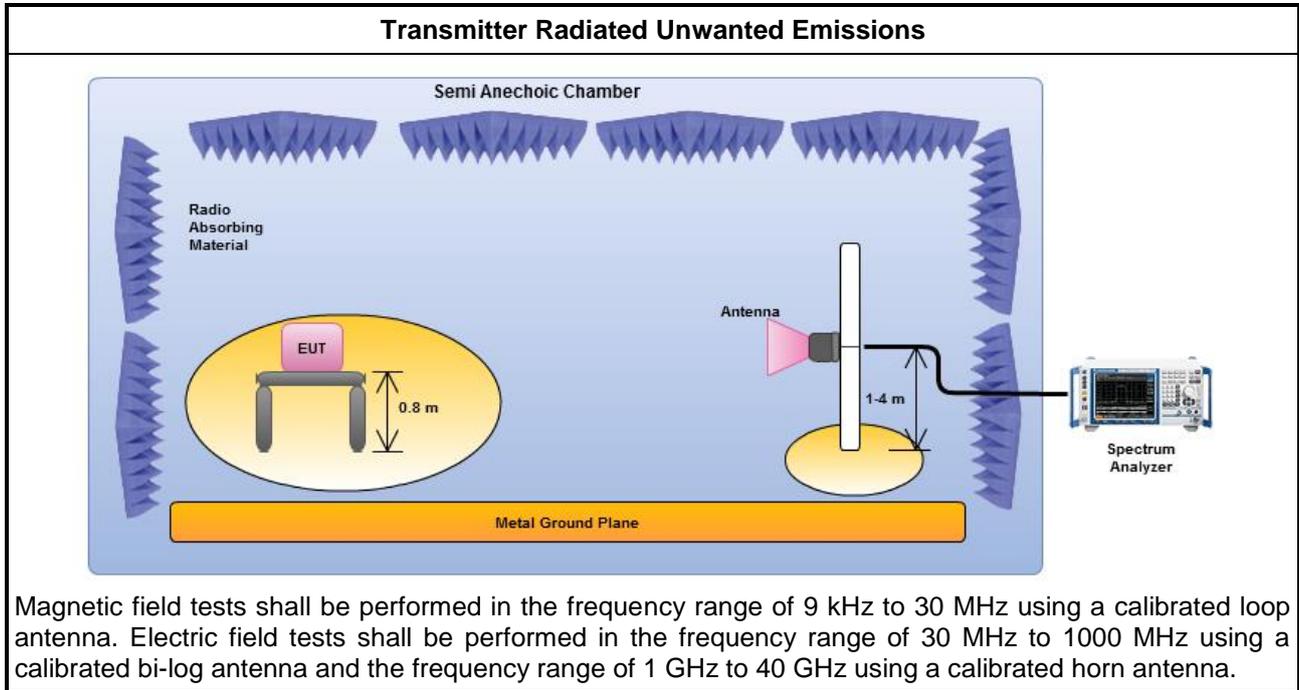
Refer a test equipment and calibration data table in this test report.



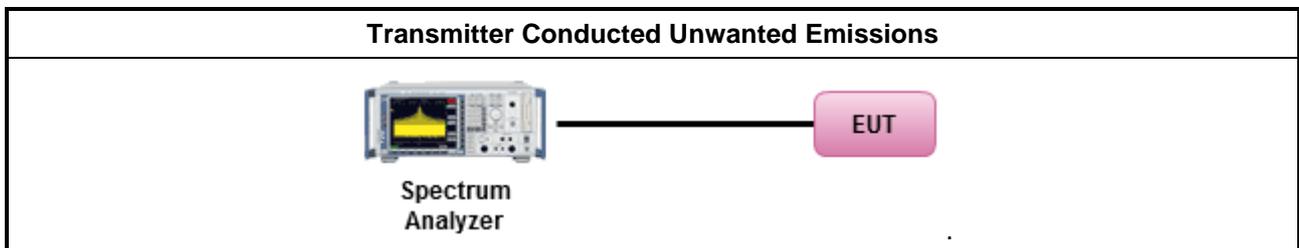
1.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 12.2.3 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For radiated measurement, refer as ANSI C63.10,
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

1.1.4 Test Setup



Note: Test distance is 3m.

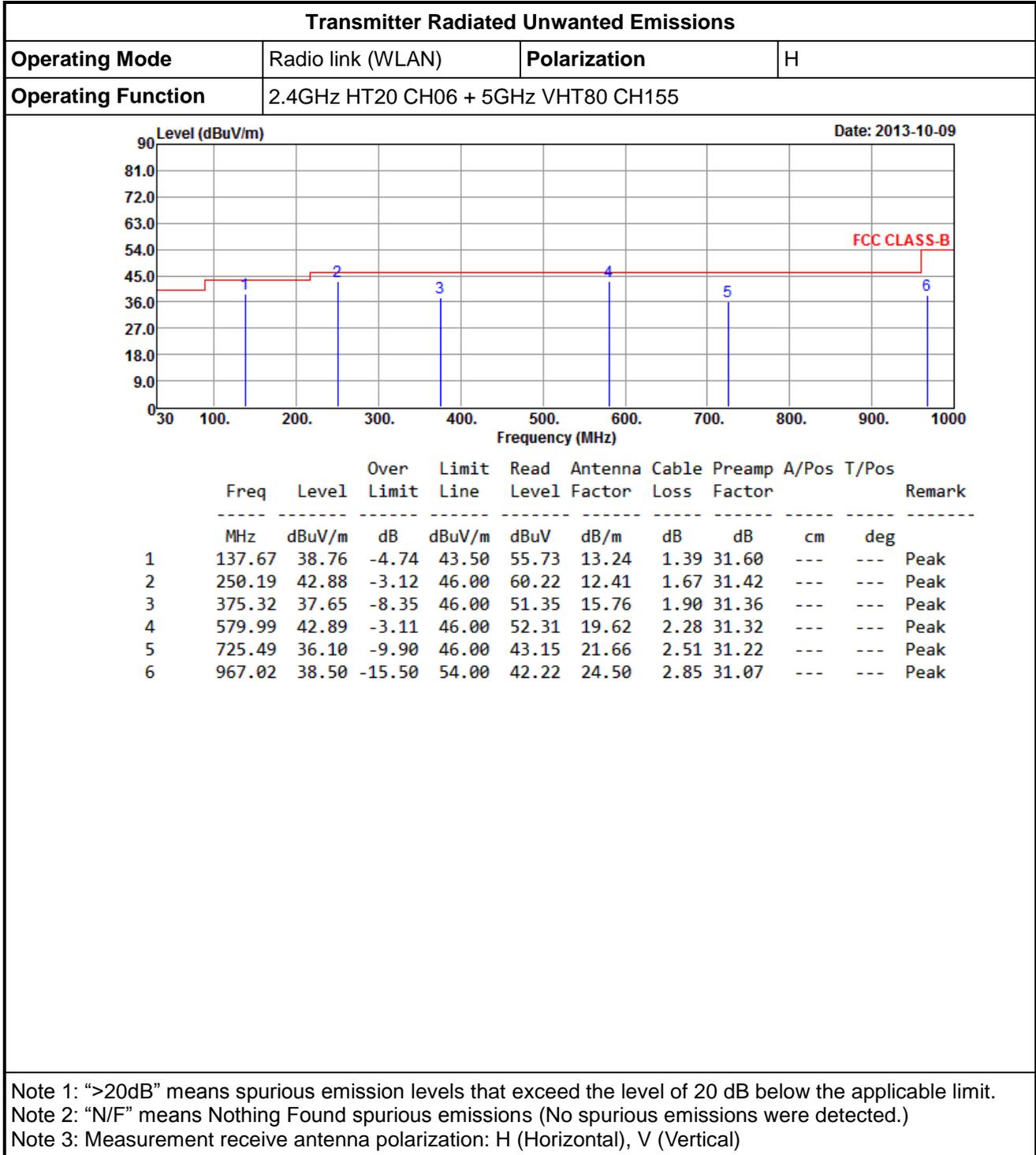


1.1.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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



1.1.6 Results of Radiated Emissions (30MHz~1GHz)



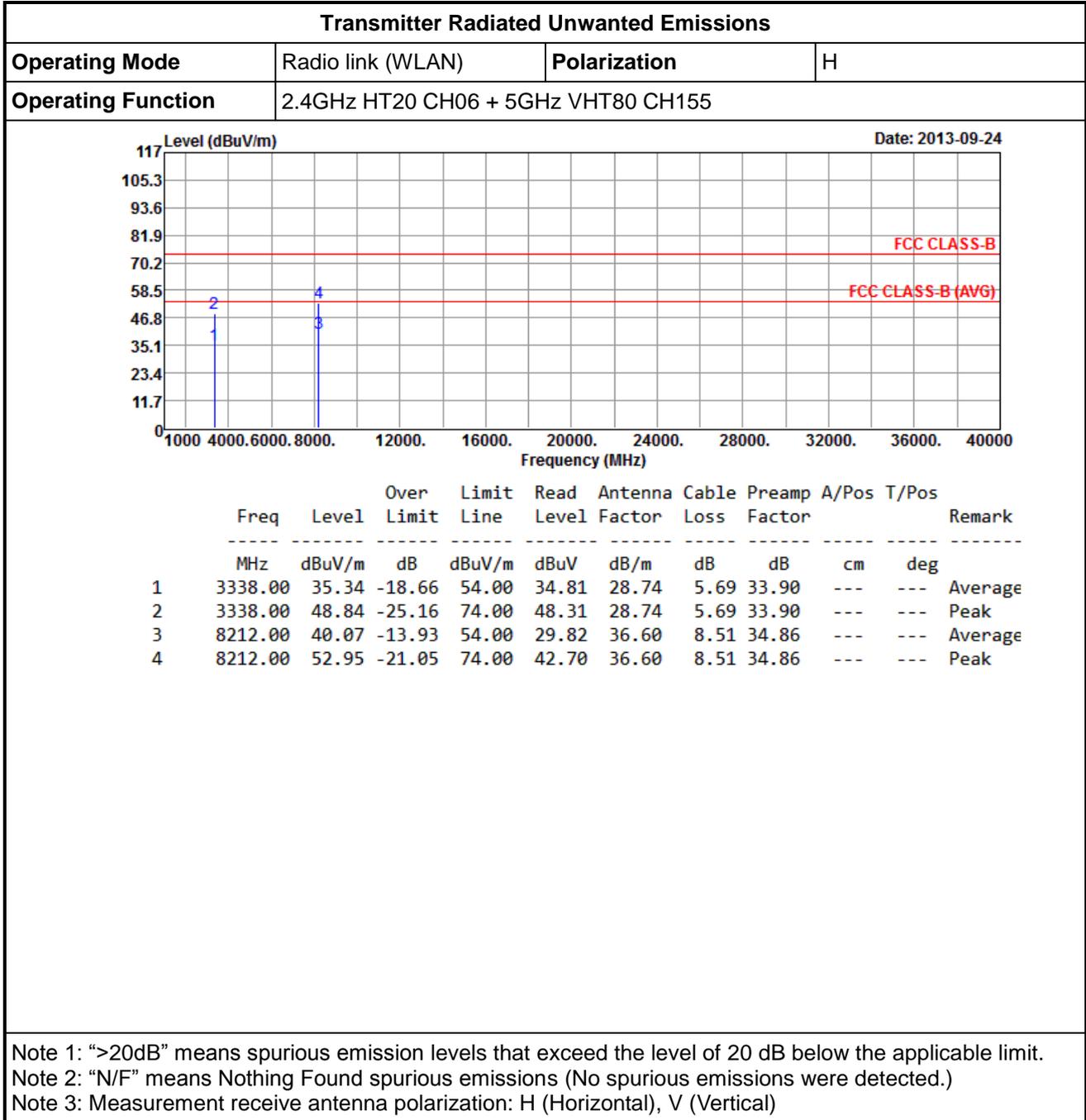


Transmitter Radiated Unwanted Emissions											
Operating Mode	Radio link (WLAN)			Polarization			V				
Operating Function	2.4GHz HT20 CH06 + 5GHz VHT80 CH155										
<div style="display: flex; justify-content: space-between;"> <div> <p>Level (dBuV/m)</p> <p>Frequency (MHz)</p> </div> <div> <p>Date: 2013-10-09</p> </div> </div>											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	62.01	36.62	-3.38	40.00	53.71	13.50	1.20	31.79	100	9	QP
2	250.19	38.30	-7.70	46.00	55.64	12.41	1.67	31.42	---	---	Peak
3	338.46	39.61	-6.39	46.00	54.27	14.85	1.82	31.33	---	---	Peak
4	482.99	40.34	-5.66	46.00	51.57	17.96	2.12	31.31	---	---	Peak
5	579.99	40.09	-5.91	46.00	49.51	19.62	2.28	31.32	---	---	Peak
6	967.02	40.04	-13.96	54.00	43.76	24.50	2.85	31.07	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



1.1.7 Results for Radiated Emissions (1GHz~10th Harmonic)

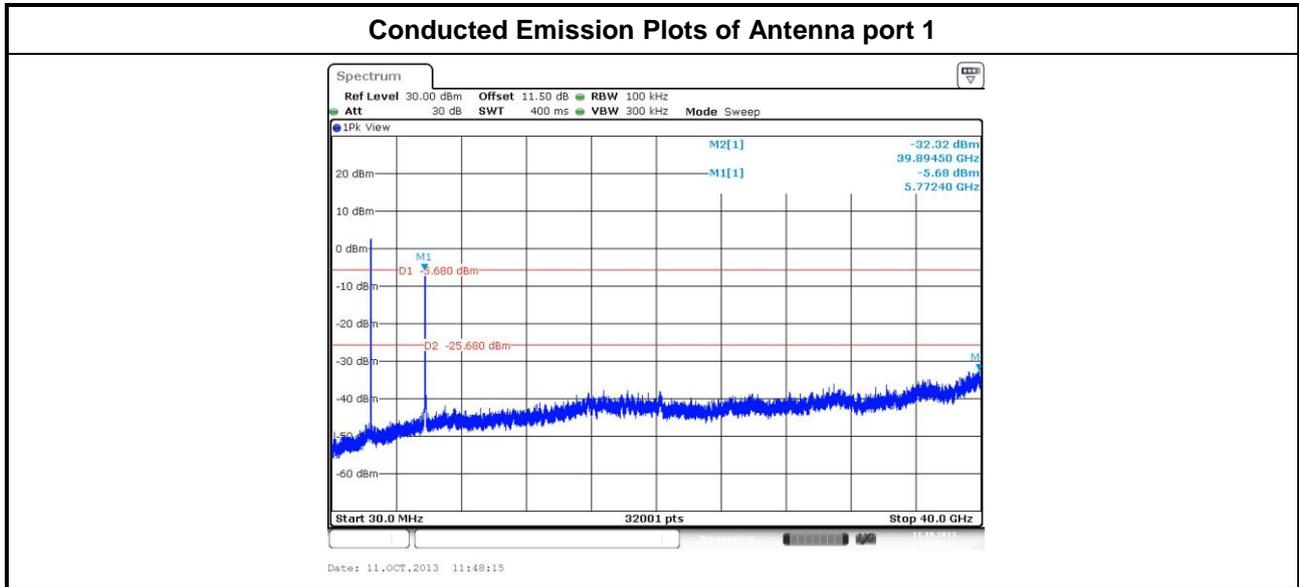




Transmitter Radiated Unwanted Emissions											
Operating Mode	Radio link (WLAN)			Polarization	V						
Operating Function	2.4GHz HT20 CH06 + 5GHz VHT80 CH155										
<p style="text-align: right;">Date: 2013-09-24</p>											
Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		
1	3338.00	33.34 -20.66	54.00	32.81	28.74	5.69	33.90	---	---	Average	
2	3338.00	46.74 -27.26	74.00	46.21	28.74	5.69	33.90	---	---	Peak	
3	8212.00	39.15 -14.85	54.00	28.90	36.60	8.51	34.86	---	---	Average	
4	8212.00	52.35 -21.65	74.00	42.10	36.60	8.51	34.86	---	---	Peak	
<p>Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.) Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)</p>											



1.1.8 Results for Conducted Emissions (30MHz~40GHz)





2 TEST EQUIPMENT AND CALIBRATION DATA

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV40	101499	9Kz – 40GHz	Jan. 28, 2013	Radiation (03CH08-HY)
Receiver	R&S	ESR3	101657	9KHz – 3GHz	Jan. 30,2013	Radiation (03CH08-HY)
Amplifier	COM-POWER	PA-103	161241	10MHz ~ 1000MHz	Feb. 26, 2013	Radiation (03CH08-HY)
Amplifier	Agilent	8449B	3008A02665	1GHz – 26.5 GHz	Mar 28, 2013	Radiation (03CH08-HY)
Horn Antenna	ETS-LINDGREN	3117	66584	1GHz~18GHz	Apr 29, 2013	Radiation (03CH08-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 08, 2013	Radiation (03CH08-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 10, 2013	Radiation (03CH08-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	MITEQ	AMF-7D-001018 00-30-10P	9121372	26.5GHz ~ 40GHz	Feb. 27, 2013	Radiation (03CH08-HY)
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz - 30 MHz	Dec. 02, 2012	Radiation (03CH08-HY)

Note: Calibration Interval of instruments listed above is two year.