

## **1. Measurement Information**

- Measurement : Samsung Electronics Ant lab
- Calibration Due Date : 2023-01-31
- Equipment : RTS60 Chamber, ZNB 8 Network Analyzer

## **2. Return Loss & VSWR Test**

The VSWR measurement of antennas assembled into a fully operating SM-F721B is measured on the Network Analyzer. The handset is set up with a 50 Ohm coaxial cable connected to the 50 Ohm point. Calibration is done at the end of the 50 Ohm coaxial cable connection. The other end of the 50 Ohm coaxial cable is connected to a network analyzer. The handset is positioned on a non-conductive table for free space measurements.

Samsung Antenna Lab has a system that can measure VSWR using RTS60 chamber and ZNB8 network analyzer. In order to measure the VSWR of each antenna, the antenna lab connects the coaxial cable to the point in contact with the antenna on the main board. The VSWR is measured through the coaxial cable connected in the set. At this time, the SM-F721B is assembled in the same state as the user environment.

### **3. Radiation Pattern Test**

Antennas tested for Gain and Efficiency must be assembled into the enclosure and tested in the fully assembled and operating SM-F721B. The antenna is tested in free space in the anechoic chamber in the H, E1 and E2 Planes.

### **4. Test Method(Manufacturing)**

All measurements are done with SM-F721B fully assembled. Measure in consideration of the customer's usage environment. Use a fully shielded chamber environment to prevent any noise-induced errors. Typically, the electrical properties of the antenna are measured using a jig that can hold the set.

## 5. Antenna Gain

### <Main Antenna>

-. Antenna Manufacturer: SVCC

-. Antenna Type: Metal

ANT	Band	Freq.	EFF	Peak
		(MHz)		
Main1	GSM850, W5, LTE B5, N5	814	23.4	-3.3
		831	20.9	-3.8
		849	19.5	-4.1
		859	20.9	-3.8
		876	20.4	-3.9
		894	19.5	-4.1
	GSM1900, W2, LTE B2, N2	1850	30.9	-2.1
		1880	32.4	-1.9
		1915	30.9	-2.1
		1930	31.6	-2.0
		1960	30.2	-2.2
		1995	30.2	-2.2
	W4, LTE B4, B66, N66	1710	26.3	-2.8
		1745	27.5	-2.6

ANT	Band	Freq.	EFF	Peak
		(MHz)		
Sub1	N77	3300	18.2	-4.4
		3750	23.0	-3.4
		4200	20.2	-4.0
Sub2	N41	2496	18.2	-4.6
		2593	20.2	-4.5
		2690	16.1	-4.9
	N77	3300	25.7	-3.2
3750		27.6	-2.9	
4200		23.1	-3.0	
Sub5	N2	1850	22.5	-3.9
		1880	23.3	-3.8
		1915	22.5	-3.8
		1930	23.7	-3.7
		1960	27.4	-2.9

		1780	28.8	-2.4
		2110	20.4	-3.9
		2155	20.0	-4.0
		2200	20.9	-3.8
	LTE B12, N12	699	20.0	-4.0
		707	22.4	-3.5
		716	25.1	-3.0
		729	26.3	-2.8
		737	25.1	-3.0
		746	24.5	-3.1
	LTE B13	746	26.3	-2.8
		751	24.5	-3.1
		756	24.5	-3.1
		777	22.4	-3.5
		782	22.4	-3.5
		787	21.4	-3.7
	LTE B17	704	22.4	-3.5
		710	24.0	-3.2
		716	25.1	-3.0
		734	25.1	-3.0
		740	24.5	-3.1
		746	24.5	-3.1
	LTE B25, N25	1850	30.9	-2.1

		1995	26.6	-3.1
	N25	1850	22.5	-3.9
		1882.5	23.8	-3.7
		1915	22.5	-3.8
		1930	23.7	-3.7
		1962.5	26.9	-2.9
		1995	26.6	-3.1
	N38	2570	23.2	-3.5
		2595	22.8	-3.5
		2620	22.8	-3.4
	N41	2496	16.1	-5.2
		2593	23.2	-3.7
		2690	17.5	-4.8
	N77	3300	17.2	-4.6
		3750	9.1	-7.5
		4200	9.1	-7.4
	B4, N66_upper	1710	23.9	-3.7
		1745	22.0	-4.1
		1780	24.9	-3.5
		2110	21.4	-4.1
		2155	27.1	-3.1
		2200	27.1	-2.9

		1882.5	32.4	-1.9
		1915	30.9	-2.1
		1930	31.6	-2.0
		1962.5	30.2	-2.2
		1995	30.2	-2.2
	LTE B26	814	22.4	-3.5
		831.5	20.9	-3.8
		849	19.5	-4.1
		859	20.9	-3.8
		876.5	20.4	-3.9
		894	19.5	-4.1
Main2	LTE B41, n41	2496	24.0	-3.2
		2593	20.9	-3.8
		2690	20.0	-4.0
Main3	n77	3300	28.2	-2.5
		3750	20.9	-3.8
		4200	26.3	-2.8
	n41	2496	17.8	-4.5
		2593	18.6	-4.3
		2690	19.1	-4.2

## <WLAN Antenna>

-. Antenna Manufacturer: SVCC

-. Antenna Type: Metal

WIFI/BT ANT 2					
Freq.[MHz]	Eff.[%]	Peak[dBi]	Freq.[MHz]	Eff.[%]	Peak[dBi]
2400	16	-5.2	2400	8	-7.1
2437	17	-5.1	2437	8	-7
2462	16	-5.3	2462	8	-7.2
2485	16	-5.2	2485	9	-7.3
5150	21	-4.4	5150	12	-5.9
5280	21	-4.6	5280	11	-6.1
5500	20	-4.8	5500	12	-6
5850	16	-5	5850	14	-6