

Confidential Information

VLG TECHNOLOGY

VLG Communication Technology Limited

Antenna acknowledgment

Customer/ Project	GD201-OCTO			Band	GSM: 850/900/1800/1900 Mhz NB-IOT: B1/B3/B5/B8/12/20/28 EMTC: B1/B3/B5/B8/12/20/28 Bluetooth: 2402-2480 MHz		
VLG P/N	V1439-051-A-01			Version	R: A		
RF	Tangdahua	Confirm		QC	Yuhong	Confirm	
SE	Lipenggang			PM	Hefarong		
Data							
customer project name item number	Client project name: GD201-OCTO						
	Customer item number:						
Client confirmation							
VLG Wireless Technology							
R&D project customer satisfaction survey (customers please make a comment on our R&D or PM management staff, and urge us to serve you better)							
RF Technician	☐ Satisfied		☐ Basically satisfied		☐ dissatisfied		
Structural technician	☐ Satisfied		☐ Basically satisfied		☐ dissatisfied		
Project Management (PM Manager)	☐ Satisfied		☐ Basically satisfied		☐ dissatisfied		
Description of suggested items:							

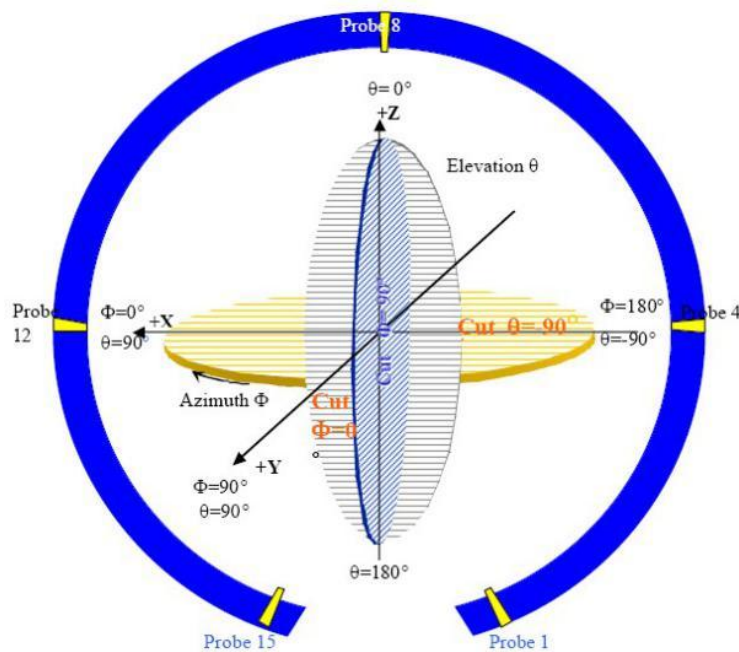
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2、 Antenna Test Equipment

2.1Antenna passive test equipment

Antenna input characteristic test uses Agilent E5071C vector network analyzer. Antenna radiation characteristics were tested using ET Satimo Starlab 3D near-field anechoic chamber. The test coordinate system is shown in Figure 7,



Picture 2.1.1 3Danechoic chamber test coordinate system(back view)

2.2 Antenna Active Test Equipment

The comprehensive tester uses an R&S CMW500. Antenna radiation characteristics were tested using ET Satimo Starlab 3D near-field anechoic chamber. The test coordinate system is shown in Figure 8.

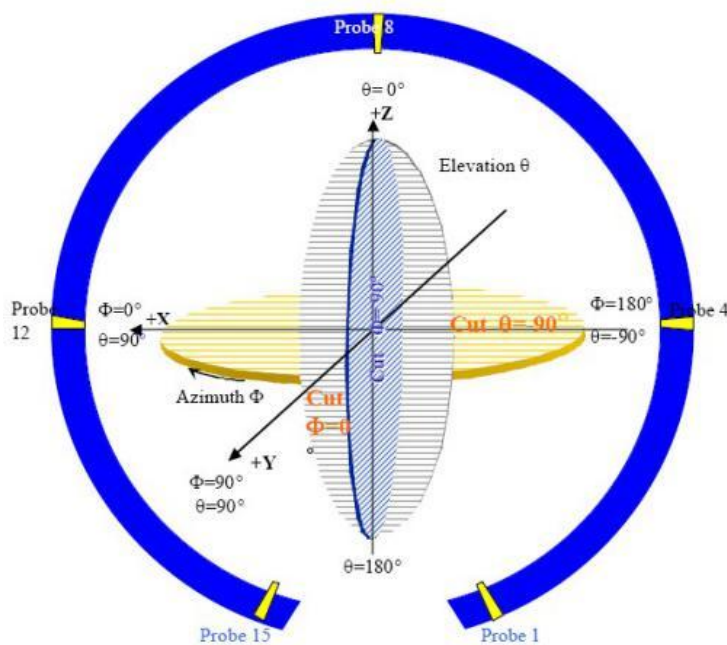


Figure 2.2.1 3D anechoic chamber test coordinate system(back view)

Physical map of antenna test equipment



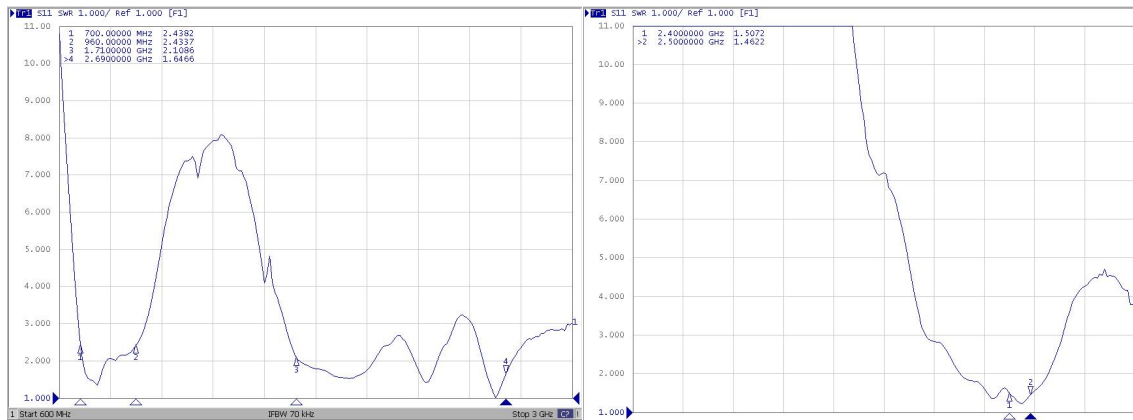
Figure 2.2.2 Physical map of darkroom

3、Performance parameters

3.1、matching circuit

LTE Antenna: ANT-P0.5pF-S3.9nH-P12nH-S3.3pF-PORT, inside feed point 3nH
BLE; ANT-S0ou-PORT

3.2、 S11



LTE Antenna

BLE Antenna

3.3、 Passive Efficiency/Gain

Frequency	Efficiency	Efficiency.db	Gain		Frequency	Efficiency	Efficiency.db	Gain
700000000	29%	-5.33	-2.37		1700000000	39%	-4.12	-0.83
710000000	37%	-4.31	-1.21		1740000000	45%	-3.50	0.08
720000000	42%	-3.74	-0.55		1780000000	48%	-3.21	0.73
730000000	44%	-3.54	0.13		1820000000	49%	-3.11	1.00
740000000	42%	-3.77	0.17		1860000000	49%	-3.08	1.03
750000000	41%	-3.88	0.27		1900000000	49%	-3.12	0.57
760000000	34%	-4.62	-0.61		1940000000	47%	-3.29	0.03
770000000	31%	-5.13	-1.83		1980000000	46%	-3.33	-0.58
780000000	30%	-5.27	-2.25		2020000000	48%	-3.19	-0.07
790000000	38%	-4.22	-1.26		2060000000	48%	-3.23	0.10
800000000	48%	-3.21	-0.44		2100000000	46%	-3.36	0.18
810000000	49%	-3.11	-0.52		2140000000	47%	-3.28	0.64
820000000	51%	-2.91	-0.48		2180000000	42%	-3.74	0.29
830000000	52%	-2.82	-0.47		2220000000	41%	-3.90	1.54
840000000	53%	-2.72	-0.40		2260000000	45%	-3.49	2.73
850000000	56%	-2.55	-0.33		2300000000	46%	-3.36	2.97
860000000	57%	-2.41	-0.16		2340000000	47%	-3.28	2.30
870000000	58%	-2.37	0.10		2380000000	44%	-3.53	0.47
880000000	59%	-2.31	0.25		2420000000	40%	-4.02	-0.35
890000000	61%	-2.15	0.39		2460000000	38%	-4.21	-0.05
900000000	61%	-2.13	0.31		2500000000	38%	-4.25	0.02
910000000	60%	-2.22	0.19		2540000000	41%	-3.83	-0.03
920000000	59%	-2.28	0.10		2580000000	48%	-3.19	1.60
930000000	57%	-2.46	-0.21		2620000000	56%	-2.51	2.39
940000000	55%	-2.62	-0.18		2660000000	60%	-2.24	2.78
950000000	53%	-2.73	-0.22		2700000000	55%	-2.57	2.81
960000000	51%	-2.94	-0.29					

LTE Antenna

Frequency	Efficiency	Efficiency. db	Gain
2400000000	38%	-4. 16	-0. 32
2410000000	38%	-4. 18	-0. 39
2420000000	37%	-4. 28	-0. 12
2430000000	39%	-4. 10	-0. 07
2440000000	41%	-3. 86	-0. 09
2450000000	42%	-3. 77	-0. 08
2460000000	43%	-3. 62	0. 12
2470000000	44%	-3. 52	0. 18
2480000000	45%	-3. 45	0. 24
2490000000	47%	-3. 29	0. 47
2500000000	48%	-3. 22	0. 75

BLE Antenna

3.4、Active OTA

NB					EUTRAN					GPRS				
B1	18001	17.93	1	-113.47	B1	18050	18.25	50	-104.9	850	128	31.22	128	-109.25
	18300	18.48	300	-112.87		18300	18.53	300	-104.32		190	31.53	190	-109.31
	18599	18.05	599	-112.9		18550	18.43	550	-104.5		251	32.09	251	-109.59
B3	19201	18.72	1201	-113.98	B3	19250	16.56	1250	-105.5	900	975	31.94	975	-108.6
	19575	18.59	1575	-113.33		19575	16.88	1575	-104.32		38	31.32	38	-108.83
	19949	17.91	1949	-113.78		19900	15.86	1900	-105.72		124	31.3	124	-108.46
B5	20401	18.86	2401	-114.07	B5	20450	17.12	2450	-105.33	1800	512	27.38	512	-108.24
	20525	18.93	2525	-114.19		20525	17.05	2525	-105.35		698	27.77	698	-107.54
	20649	19.03	2649	-113.95		20600	16.93	2600	-105.45		885	27.71	885	-107.03
B8	21451	19.34	3451	-112.98	B8	21500	17.27	3500	-103.44	1900	512	27.42	512	-108.88
	21625	18.45	3625	-113.74		21625	16.55	3625	-104.67		661	28.52	661	-108.66
	21799	18.13	3799	-112.66		21750	16.42	3750	-104		810	28.73	810	-108.81
B12	23011	16.34	5011	-108.7	B12	23035	15.14	5035	-101.1					
	23095	17.48	5095	-108.62		23095	16.25	5095	-100.51					
	23179	17.26	5179	-109.3		23155	16.06	5155	-101.31					
B20	24151	18.81	6151	-111.14	B20	24200	17.08	6200	-103.91					
	24300	18.97	6300	-112.8		24300	16.92	6300	-103.64					
	24449	19.17	6449	-113.49		24400	17.53	6400	-101.82					
B28	27211	18.23	9211	-109.15	B28	27260	16.16	9260	-100.02					
	27435	17.18	9435	-110.82		27410	16.07	9410	-101.11					
	27659	16.99	9659	-113.74		27610	15.18	9610	-103.72					

