

FCC REPORT

(Bluetooth)

Applicant: Unimax communications

Address of Applicant: 18201 McDermott St. West Suite E, Irvine, CA 92614.

Equipment Under Test (EUT)

Product Name: Smartphone

Model No.: U683CL

Trade mark: UMX

FCC ID: P46-U683CL

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 09 Dec., 2021

Date of Test: 10 Dec., 2021 to 15 Jan., 2022

Date of report issued: 16 Jan., 2022

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

2 Version

Version No.	Date	Description
00	16 Jan., 2022	Original

Tested by:



Test Engineer

Date:

16 Jan., 2022

Reviewed by:



Project Engineer

Date:

16 Jan., 2022

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4 Test Summary

Test Items	Section in CFR 47	Result
Antenna Requirement	15.203 & 15.247 (b)	Pass
AC Power Line Conducted Emission	15.207	Pass ¹
Conducted Peak Output Power	15.247 (b)(1)	Pass ²
20dB Occupied Bandwidth	15.247 (a)(1)	Pass ¹
Carrier Frequencies Separation	15.247 (a)(1)	Pass ¹
Hopping Channel Number	15.247 (a)(1)	Pass ¹
Dwell Time	15.247 (a)(1)	Pass ¹
Conducted Band Edge	15.247(d)	Pass ¹
Emissions in Restricted Frequency Bands	15.205 & 15.209	Pass ²
Conducted Spurious Emission	15.247(d)	Pass ¹
Radiated Spurious Emission	15.205 & 15.209	Pass ²
Remark: 1. Pass ¹ : Items data are refer from the original report issued by SGS-CSTC Standards Technical Services, Co., Ltd. Shenzhen Branch. (Date of Test: 2019/1/10-2019/1/24). The detailed data refer to Appendix- BT 2. Pass ² : These items are tested by JianYan Testing Group Shenzhen Co., Ltd. 3. Re-test statement: The EUT is operating at the same power level with the original testing of SGS-CSTC Standards Technical Services, Co Ltd. Shenzhen Branch. 4. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02	

5 General Information

5.1 Client Information

Applicant:	Unimax communications
Address:	18201 McDermott St. West Suite E, Irvine, CA 92614.
Manufacturer/ Factory:	Unimax communications
Address:	18201 McDermott St. West Suite E, Irvine, CA 92614.

5.2 General Description of E.U.T.

Product Name:	Smartphone
Model No.:	U683CL
Operation Frequency:	2402MHz~2480MHz
Transfer rate:	1/2/3 Mbits/s
Number of channel:	79
Modulation type:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Modulation technology:	FHSS
Antenna Type:	Integrated Antenna
Antenna gain:	1.2 dBi
Power supply:	Rechargeable Li-ion Battery DC3.85V, 2000mAh
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation Frequency each of channel for GFSK, $\pi/4$ -DQPSK, 8DPSK							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
...	...	...	...	...	...	...	...
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		
Remark: Channel 0, 39 & 78 selected for GFSK, $\pi/4$ -DQPSK and 8DPSK.							

5.3 Test environment and mode

Operating Environment:	
Temperature:	21.1 °C
Humidity:	45 % RH
Atmospheric Pressure:	1010 mbar
Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode with worst case data rate.
Hopping mode:	Keep the EUT in hopping mode.
Remark	GFSK (1 Mbps) is the worst case mode.

Radiated Emission: The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC	3.13 dB
Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC	3.13 dB
Radiated Emission (30MHz ~ 1GHz) for 3m SAC	4.45 dB
Radiated Emission (1GHz ~ 18GHz) for 3m SAC	5.34 dB
Radiated Emission (18GHz ~ 40GHz) for 3m SAC	5.34 dB

5.6 Additions to, deviations, or exclusions from the method

No

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://www.ccis-cb.com>

5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
3m SAC	ETS	RFD-100	Q1984	04-14-2021	04-13-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	9163-1246	03-07-2021	03-06-2022
Biconical Antenna	SCHWARZBECK	VUBA 9117	9117#359	06-17-2021	06-17-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	912D-916	03-07-2021	03-06-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1067	04-02-2021	04-01-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1068	04-02-2021	04-01-2022
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Band Reject Filter Group	Tonscend	JS0806	21B8060367	04-06-2021	04-05-2022
Low Pre-amplifier	SCHWARZBECK	BBV9743B	00305	03-07-2021	03-06-2022
High Pre-amplifier	SKET	LNPA_0118G-50	MF280208233	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-NN-8M	JYT3M-1	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-18G-NN-8M	JYT3M-2	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-BB-5M	JYT3M-3	03-07-2021	03-06-2022
Cable	Bost	JYT3M-40G-SS-8M	JYT3M-4	04-02-2021	04-01-2022
EMI Test Software	Tonscend	TS+	Version:3.0.0.1		

Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Power Detector Box	MWRF-test	MW100-PSB	MW201020JYT	11-19-2021	11-18-2022
RF Control Box	MWRF-test	MW100-RFCB	MW200927JYT	N/A	N/A
DC Power Supply	Keysight	E3642A	MY60296194	11-27-2020	11-26-2023
Test Software	MWRF-tes	MTS 8310	Version: 2.0.0.0		

6 Test results and measurement data

6.1 Antenna requirement:

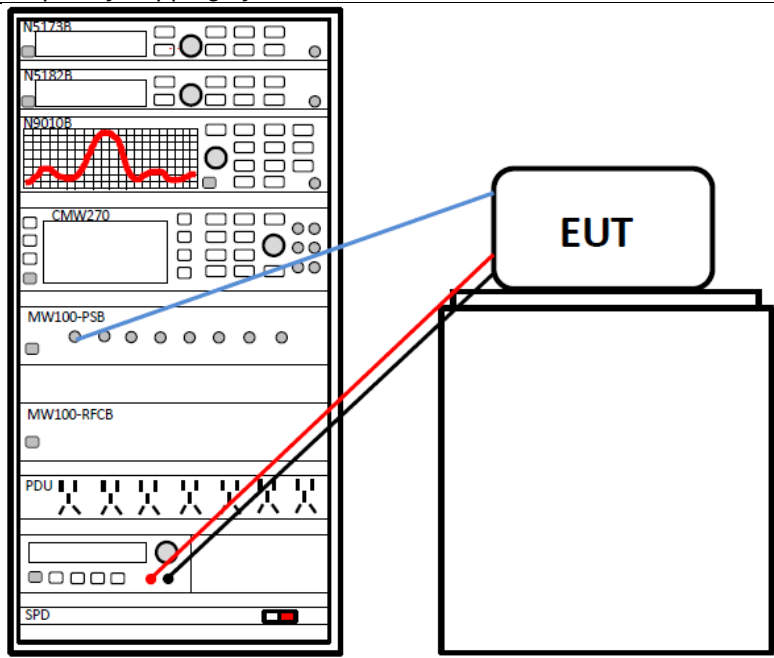
Standard requirement:	FCC Part 15 C Section 15.203 /247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
E.U.T Antenna:	
The BT antenna is an Integrated antenna which cannot replace by end-user, the best-case gain of the antenna is 1.2 dBi.	

6.2 Conducted Output Power

6.2.1 Re-test statement

Re-test statement: The EUT is operating at the same power level with the original testing of SGS-CSTC Standards Technical Services, Co Ltd. Shenzhen Branch.

6.2.2 Test Results

Test Requirement:	FCC Part 15 C Section 15.247 (b)(1)
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz) RBW=3MHz, VBW=10MHz, Detector=Peak (If 20dB BW > 1 MHz and < 3MHz)
Limit:	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

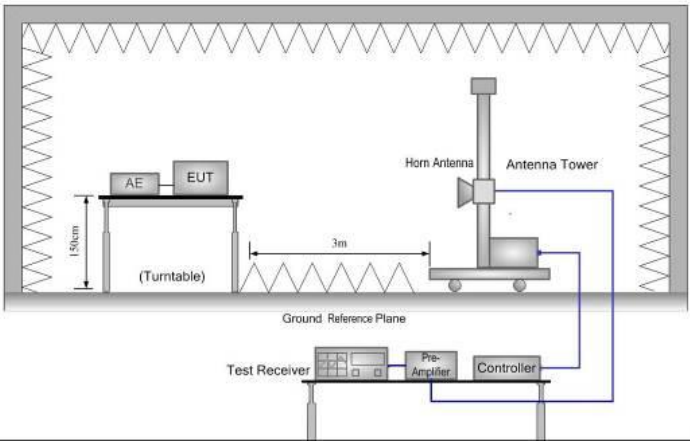
Measurement Data:

Mode	Test Channel	The Original Reports Level [dBm]	Re-Test Reports Level [dBm]	Power level
GFSK	Lowest	4.41	3.70	9
	Middle	6.24	5.47	9
	Highest	4.87	4.40	9

Remark:

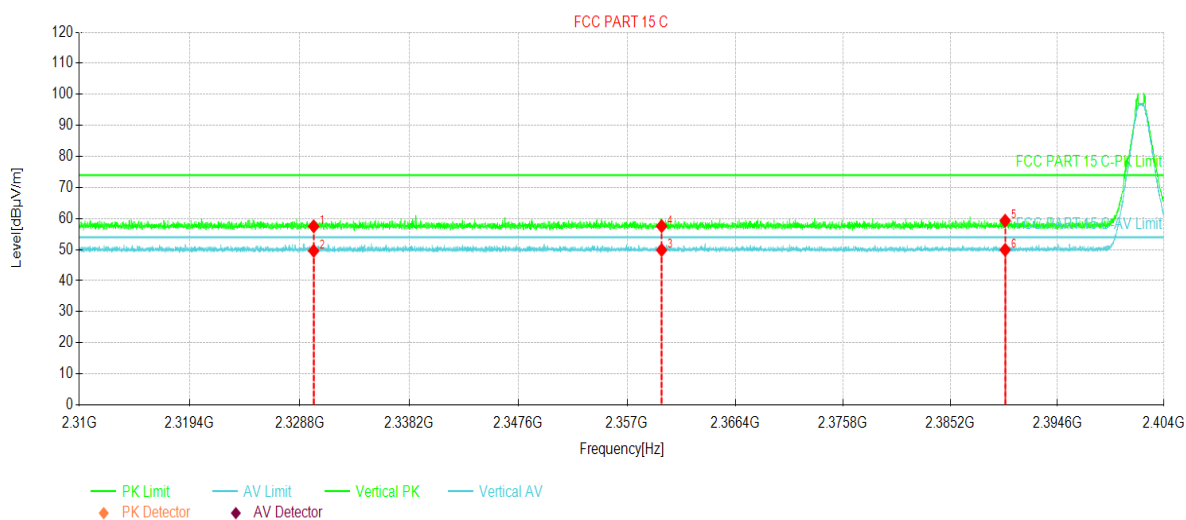
	The Original Reports	Re-Test Reports
File name:	test report BT	Test Report BT rev1
Test location:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch	JianYan Testing Group Shenzhen Co., Ltd.
The output power is re-test at JianYan Testing Group Shenzhen Co., Ltd.		

6.3 Emissions in Restricted Frequency Bands

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Frequency Range:	2310 MHz to 2390 MHz and 2483.5 MHz to 2500 MHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Test setup:					
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Non-hopping mode				
Test results:	Passed				

GFSK Mode:

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Humi: 45%

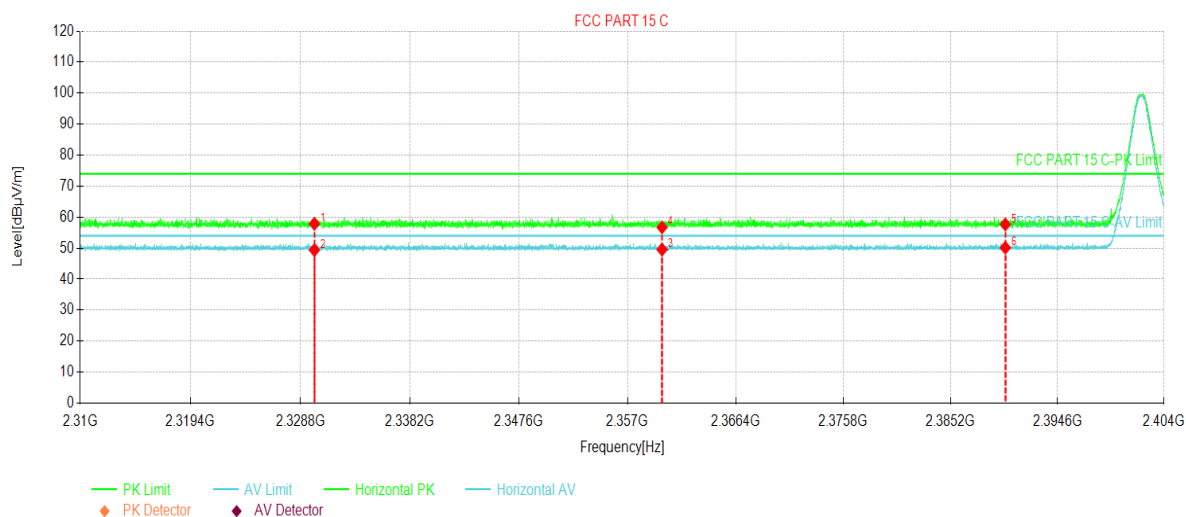


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	22.08	57.49	35.41	74.00	16.51	58	156	PK	Vertical
2	2330.0	14.20	49.61	35.41	54.00	4.39	207	149	AV	Vertical
3	2360.0	14.23	49.86	35.63	54.00	4.14	37	137	AV	Vertical
4	2360.0	21.94	57.57	35.63	74.00	16.43	329	154	PK	Vertical
5	2390.0	23.48	59.32	35.84	74.00	14.68	56	139	PK	Vertical
6	2390.0	14.10	49.94	35.84	54.00	4.06	319	166	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

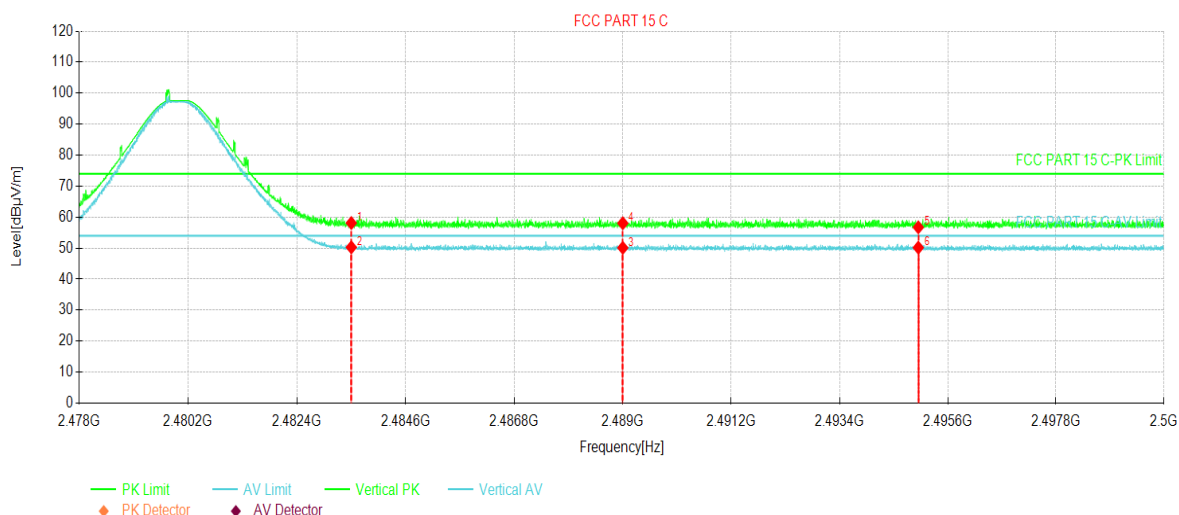


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	22.45	57.86	35.41	74.00	16.14	21	154	PK	Horizontal
2	2330.0	13.98	49.39	35.41	54.00	4.61	342	145	AV	Horizontal
3	2360.0	13.94	49.57	35.63	54.00	4.43	73	164	AV	Horizontal
4	2360.0	21.10	56.73	35.63	74.00	17.27	289	133	PK	Horizontal
5	2390.0	21.82	57.66	35.84	74.00	16.34	37	149	PK	Horizontal
6	2390.0	14.32	50.16	35.84	54.00	3.84	334	158	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

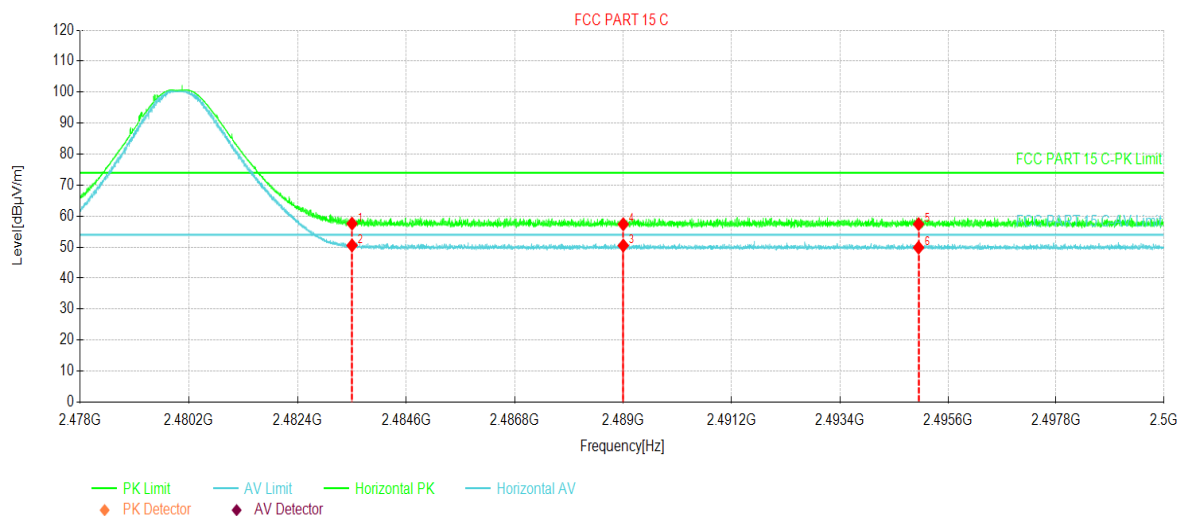


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	22.39	58.11	35.72	74.00	15.89	355	130	PK	Vertical
2	2483.5	14.55	50.27	35.72	54.00	3.73	8	165	AV	Vertical
3	2489.0	14.39	50.10	35.71	54.00	3.90	34	150	AV	Vertical
4	2489.0	22.32	58.03	35.71	74.00	15.97	336	141	PK	Vertical
5	2495.0	21.04	56.73	35.69	74.00	17.27	269	159	PK	Vertical
6	2495.0	14.49	50.18	35.69	54.00	3.82	99	143	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%



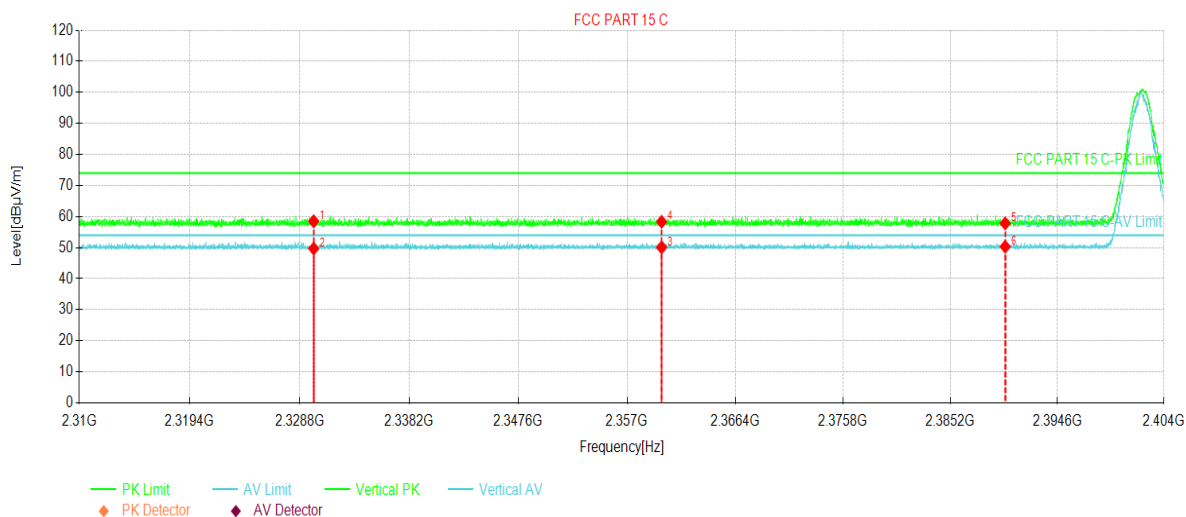
NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	21.88	57.60	35.72	74.00	16.40	119	156	PK	Horizontal
2	2483.5	14.83	50.55	35.72	54.00	3.45	251	145	AV	Horizontal
3	2489.0	14.81	50.52	35.71	54.00	3.48	31	134	AV	Horizontal
4	2489.0	21.68	57.39	35.71	74.00	16.61	335	159	PK	Horizontal
5	2495.0	21.73	57.42	35.69	74.00	16.58	49	148	PK	Horizontal
6	2495.0	14.16	49.85	35.69	54.00	4.15	322	164	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

$\pi/4$ -DQPSK mode

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	2DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Humi: 45%

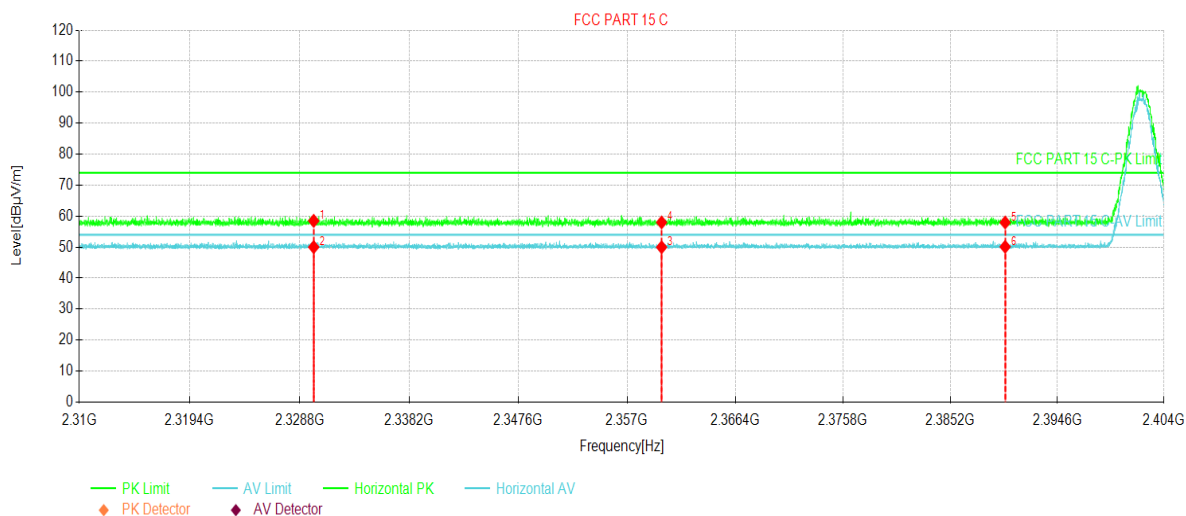


NO	Freq [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	23.08	58.49	35.41	74.00	15.51	55	161	PK	Vertical
2	2330.0	14.28	49.69	35.41	54.00	4.31	314	134	AV	Vertical
3	2360.0	14.45	50.08	35.63	54.00	3.92	169	154	AV	Vertical
4	2360.0	22.71	58.34	35.63	74.00	15.66	201	149	PK	Vertical
5	2390.0	21.97	57.81	35.84	74.00	16.19	316	152	PK	Vertical
6	2390.0	14.46	50.30	35.84	54.00	3.70	49	137	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	2DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

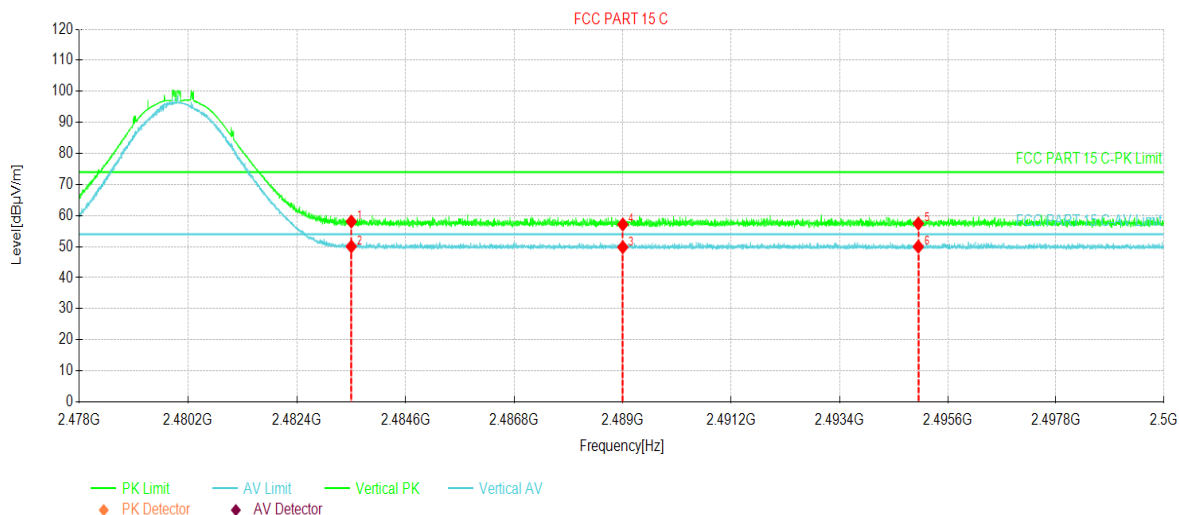


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	23.08	58.49	35.41	74.00	15.51	238	154	PK	Horizontal
2	2330.0	14.60	50.01	35.41	54.00	3.99	137	161	AV	Horizontal
3	2360.0	14.35	49.98	35.63	54.00	4.02	221	159	AV	Horizontal
4	2360.0	22.35	57.98	35.63	74.00	16.02	140	134	PK	Horizontal
5	2390.0	22.12	57.96	35.84	74.00	16.04	204	141	PK	Horizontal
6	2390.0	14.28	50.12	35.84	54.00	3.88	156	149	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	2DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

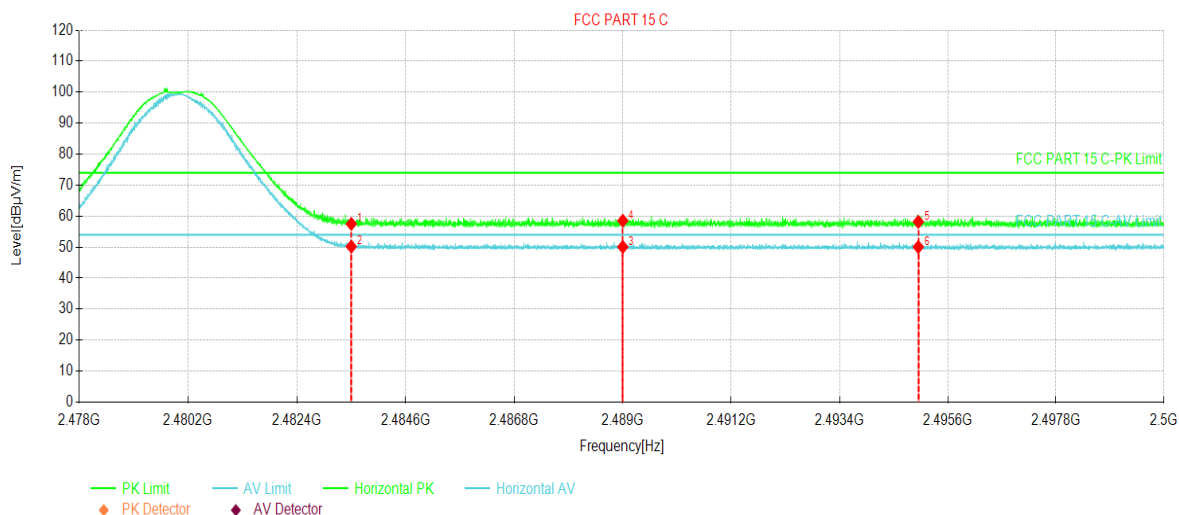


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	22.34	58.06	35.72	74.00	15.94	44	134	PK	Vertical
2	2483.5	14.32	50.04	35.72	54.00	3.96	323	156	AV	Vertical
3	2489.0	14.10	49.81	35.71	54.00	4.19	54	154	AV	Vertical
4	2489.0	21.42	57.13	35.71	74.00	16.87	310	149	PK	Vertical
5	2495.0	21.74	57.43	35.69	74.00	16.57	299	158	PK	Vertical
6	2495.0	14.29	49.98	35.69	54.00	4.02	67	144	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	2DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%



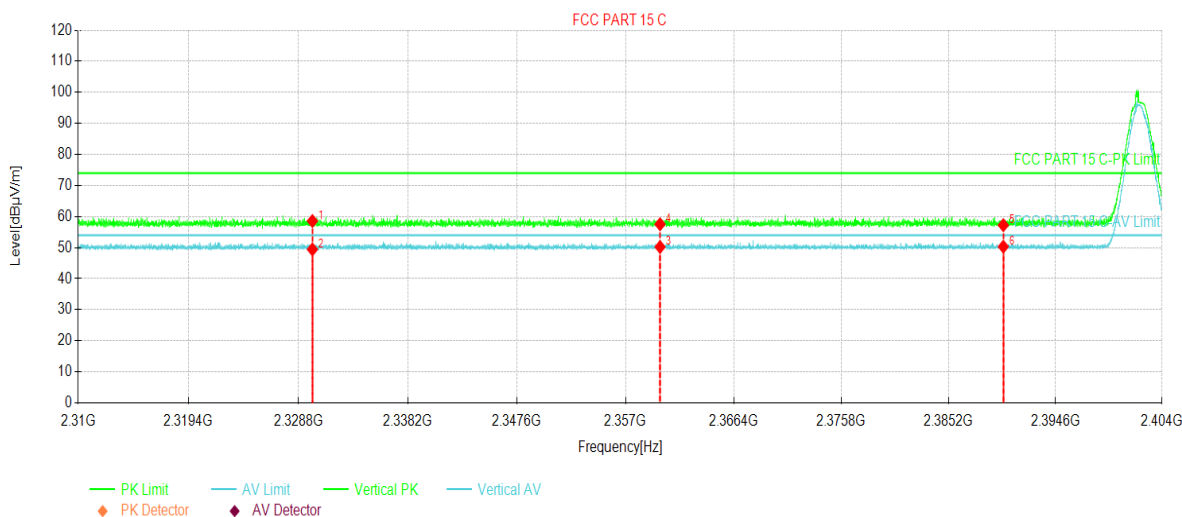
NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	21.77	57.49	35.72	74.00	16.51	154	159	PK	Horizontal
2	2483.5	14.46	50.18	35.72	54.00	3.82	213	152	AV	Horizontal
3	2489.0	14.35	50.06	35.71	54.00	3.94	314	134	AV	Horizontal
4	2489.0	22.81	58.52	35.71	74.00	15.48	52	146	PK	Horizontal
5	2495.0	22.48	58.17	35.69	74.00	15.83	341	161	PK	Horizontal
6	2495.0	14.36	50.05	35.69	54.00	3.95	25	148	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

8DPSK mode

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	3DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

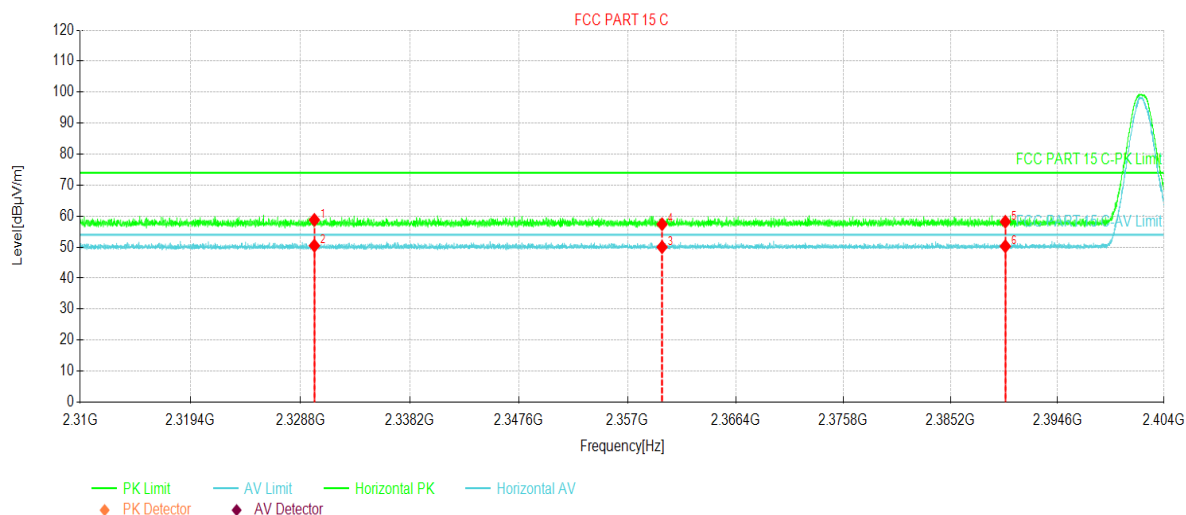


NO	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	23.15	58.56	35.41	74.00	15.44	110	154	PK	Vertical
2	2330.0	14.01	49.42	35.41	54.00	4.58	254	161	AV	Vertical
3	2360.0	14.59	50.22	35.63	54.00	3.78	348	157	AV	Vertical
4	2360.0	21.89	57.52	35.63	74.00	16.48	24	134	PK	Vertical
5	2390.0	21.39	57.23	35.84	74.00	16.77	315	145	PK	Vertical
6	2390.0	14.46	50.30	35.84	54.00	3.70	54	165	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	3DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

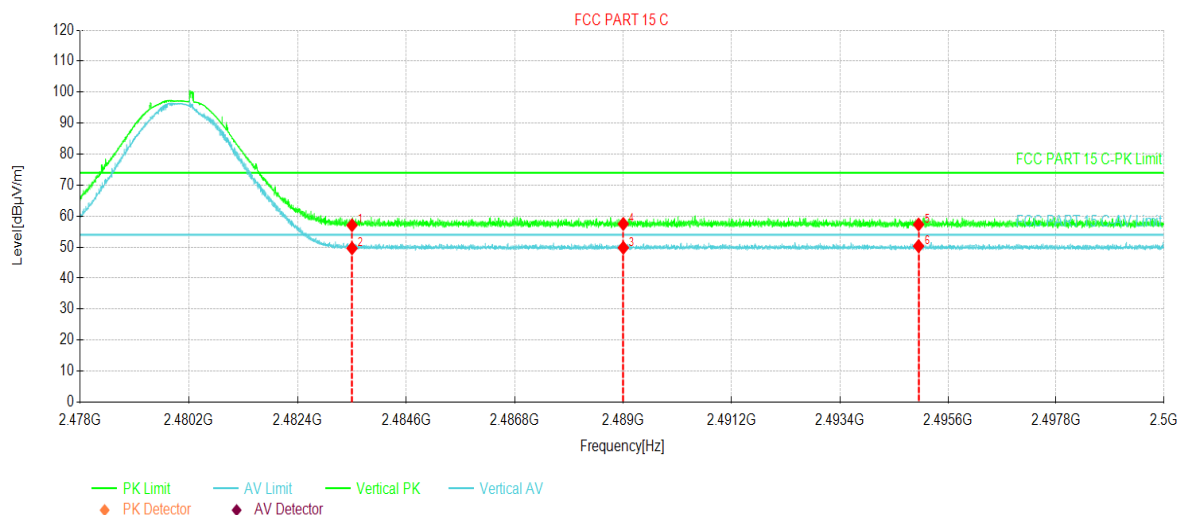


NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2330.0	23.38	58.79	35.41	74.00	15.21	231	157	PK	Horizontal
2	2330.0	15.06	50.47	35.41	54.00	3.53	134	169	AV	Horizontal
3	2360.0	14.39	50.02	35.63	54.00	3.98	156	154	AV	Horizontal
4	2360.0	21.75	57.38	35.63	74.00	16.62	215	134	PK	Horizontal
5	2390.0	22.36	58.20	35.84	74.00	15.80	314	151	PK	Horizontal
6	2390.0	14.44	50.28	35.84	54.00	3.72	57	142	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	3DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%

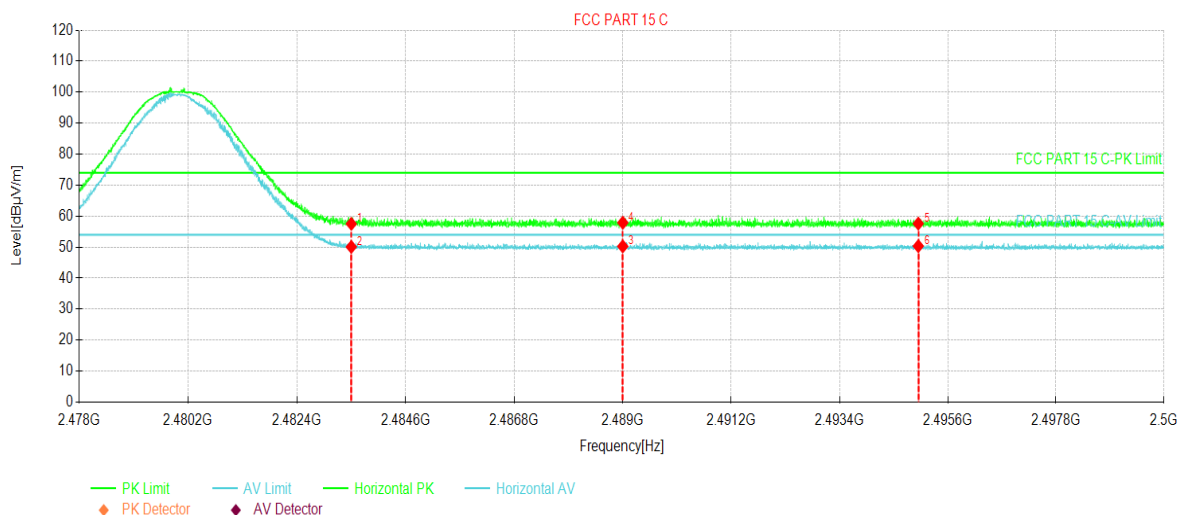


NO	Freq [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	21.34	57.06	35.72	74.00	16.94	91	155	PK	Vertical
2	2483.5	13.91	49.63	35.72	54.00	4.37	287	130	AV	Vertical
3	2489.0	14.08	49.79	35.71	54.00	4.21	39	160	AV	Vertical
4	2489.0	21.79	57.50	35.71	74.00	16.50	328	19	PK	Vertical
5	2495.0	21.62	57.31	35.69	74.00	16.69	44	159	PK	Vertical
6	2495.0	14.64	50.33	35.69	54.00	3.67	319	143	AV	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	3DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Huni: 45%



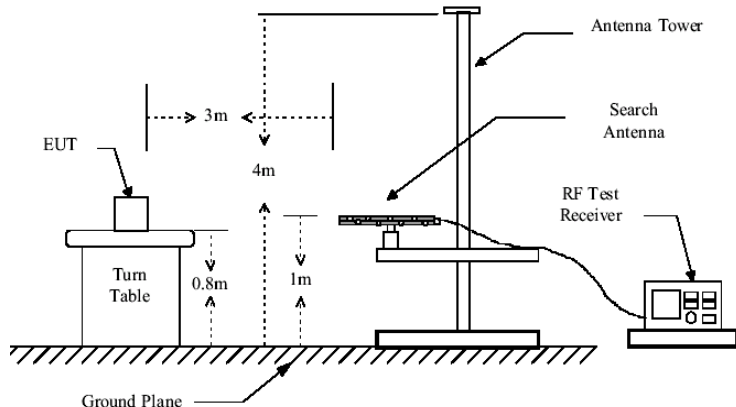
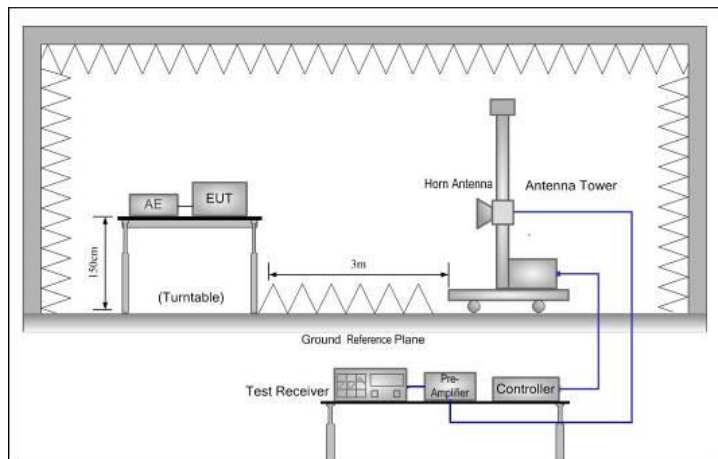
NO	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	2483.5	21.79	57.51	35.72	74.00	16.49	166	156	PK	Horizontal
2	2483.5	14.37	50.09	35.72	54.00	3.91	202	149	AV	Horizontal
3	2489.0	14.54	50.25	35.71	54.00	3.75	188	143	AV	Horizontal
4	2489.0	22.16	57.87	35.71	74.00	16.13	191	157	PK	Horizontal
5	2495.0	21.91	57.60	35.69	74.00	16.40	170	135	PK	Horizontal
6	2495.0	14.65	50.34	35.69	54.00	3.66	194	162	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

6.4 Spurious Emission

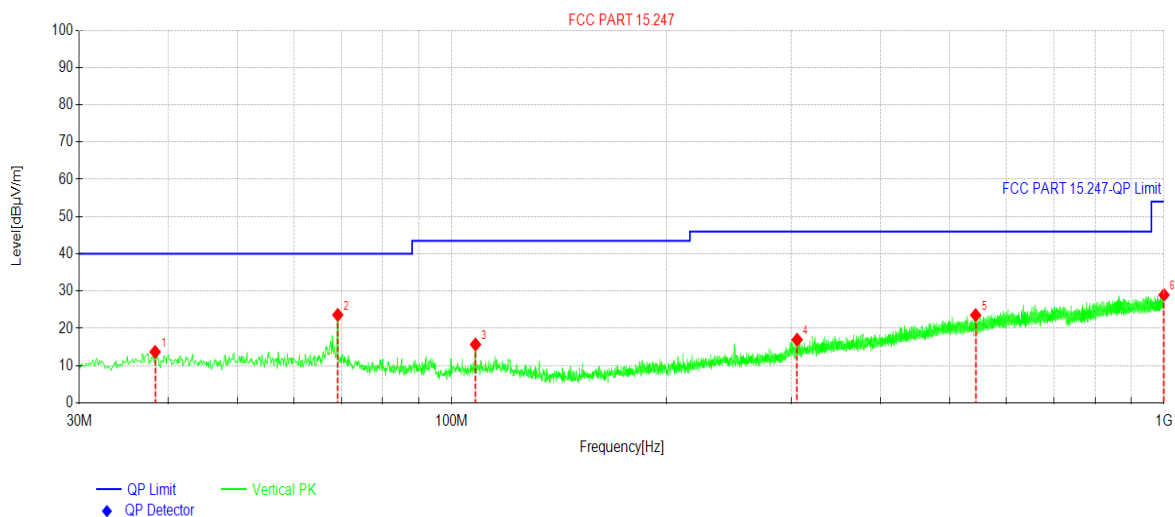
6.4.1 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209				
Test Frequency Range:	9 kHz to 25 GHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
74.0			Peak Value		
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz) /1.5m(above 1GHz) above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.				

	- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Remark:	- Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 9 kHz to 30 MHz is noise floor and lower than the limit 20dB, so only shows the data of above 30MHz in this report.

Measurement Data (worst case):
Below 1GHz:

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Humi: 45%

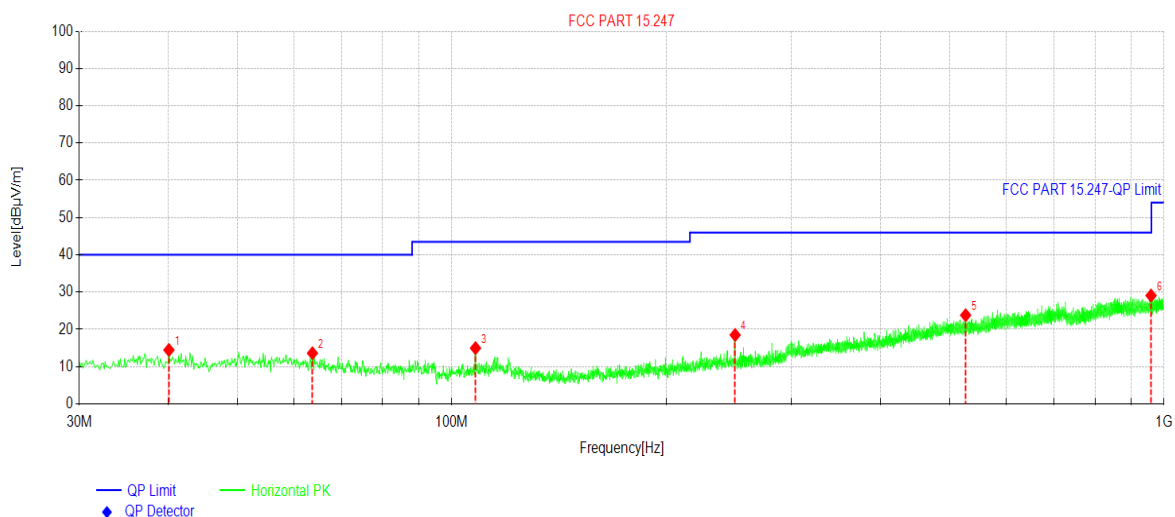


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	38.3428	28.33	13.69	-14.64	40.00	26.31	289	124	PK	Vertical
2	69.1919	40.33	23.60	-16.73	40.00	16.40	146	109	PK	Vertical
3	107.995	31.62	15.68	-15.94	43.50	27.82	137	112	PK	Vertical
4	305.410	29.51	16.95	-12.56	46.00	29.05	25	104	PK	Vertical
5	544.054	30.40	23.56	-6.84	46.00	22.44	167	123	PK	Vertical
6	1000.00	29.50	28.97	-0.53	54.00	25.03	305	116	PK	Vertical

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.1℃ Humi: 45%



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	40.0890	28.94	14.47	-14.47	40.00	25.53	222	102	PK	Horizontal
2	63.7594	29.07	13.59	-15.48	40.00	26.41	237	124	PK	Horizontal
3	107.995	30.89	14.95	-15.94	43.50	28.55	15	115	PK	Horizontal
4	250.018	32.28	18.49	-13.79	46.00	27.51	34	121	PK	Horizontal
5	526.689	30.68	23.80	-6.88	46.00	22.20	318	105	PK	Horizontal
6	958.964	29.96	29.07	-0.89	46.00	16.93	325	129	PK	Horizontal

Remark:

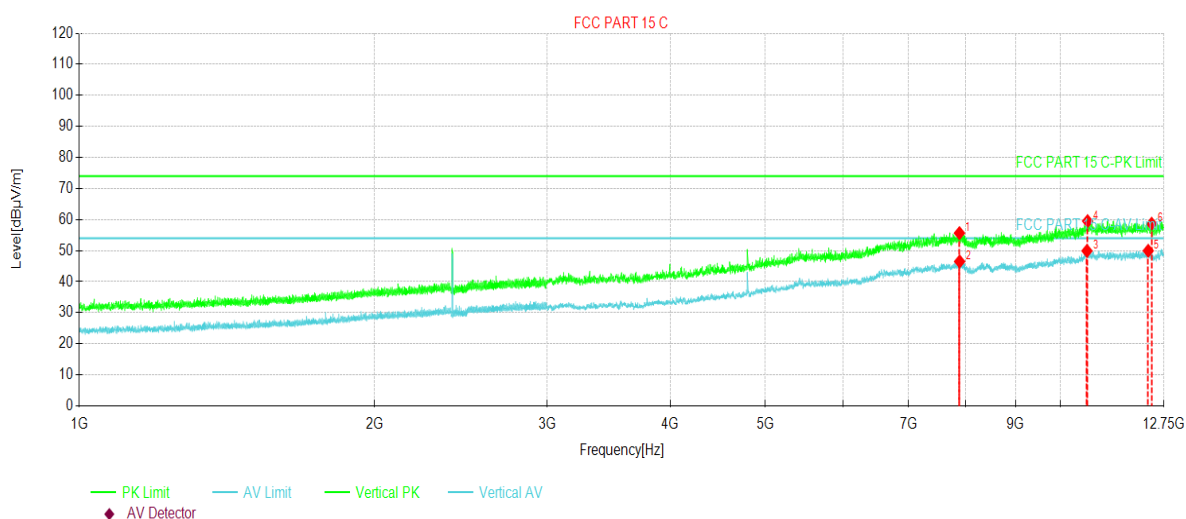
- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Above 1GHz:

Remark:

1. When testing spurs above 1GHz, use Band Reject Filter Group to filter out fundamental signal
2. Tested all modulation modes and found that GFSK is the worst case mode, the report only reflects the worst mode

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx Low CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2°C Humi: 52%

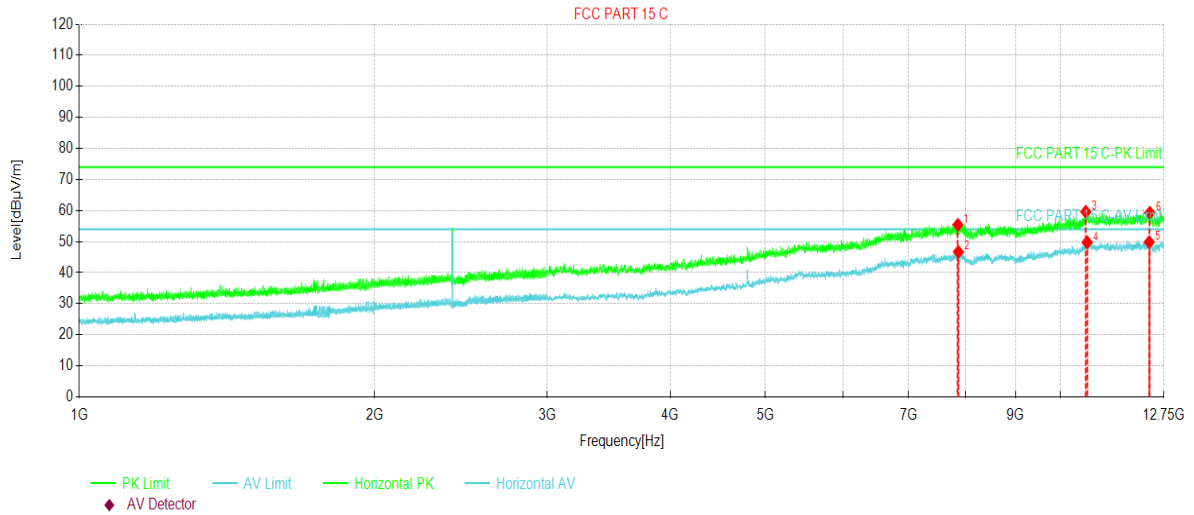


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7889.62	54.63	55.64	1.01	74.00	18.36	69	137	PK	Vertical
2	7893.28	45.49	46.50	1.01	54.00	7.50	78	142	AV	Vertical
3	10641.5	42.84	49.91	7.07	54.00	4.09	116	153	AV	Vertical
4	10657.4	52.38	59.50	7.12	74.00	14.50	129	157	PK	Vertical
5	12286.8	42.10	49.94	7.84	54.00	4.06	209	161	AV	Vertical
6	12385.5	50.84	58.68	7.84	74.00	15.32	224	167	PK	Vertical

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx Low CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2℃ Humi: 52%

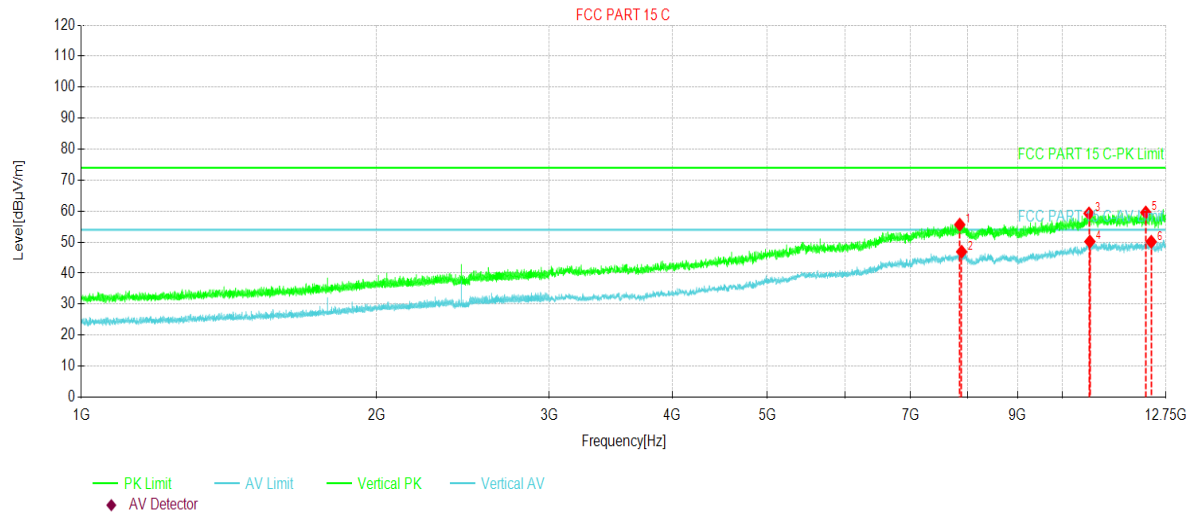


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7860.37	54.41	55.42	1.01	74.00	18.58	137	146	PK	Horizontal
2	7870.12	45.69	46.70	1.01	54.00	7.30	121	138	AV	Horizontal
3	10612.3	52.62	59.60	6.98	74.00	14.40	56	144	PK	Horizontal
4	10646.4	42.69	49.78	7.09	54.00	4.22	68	132	AV	Horizontal
5	12314.9	42.01	49.84	7.83	54.00	4.16	301	152	AV	Horizontal
6	12333.1	51.46	59.29	7.83	74.00	14.71	289	157	PK	Horizontal

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx Mid CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2℃ Humi: 52%

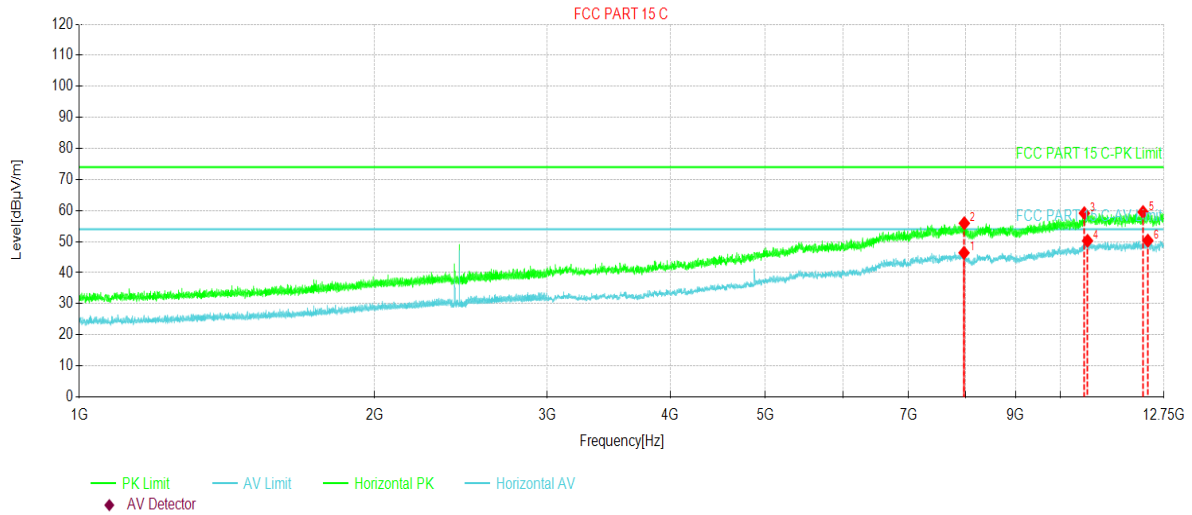


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7857.93	54.64	55.65	1.01	74.00	18.35	279	153	PK	Vertical
2	7893.28	45.89	46.90	1.01	54.00	7.10	283	148	AV	Vertical
3	10642.7	52.18	59.26	7.08	74.00	14.74	129	140	PK	Vertical
4	10664.7	43.04	50.19	7.15	54.00	3.81	115	136	AV	Vertical
5	12158.9	51.97	59.57	7.60	74.00	14.43	12	157	PK	Vertical
6	12316.1	42.28	50.11	7.83	54.00	3.89	24	165	AV	Vertical

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx Mid CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2℃ Humi: 52%

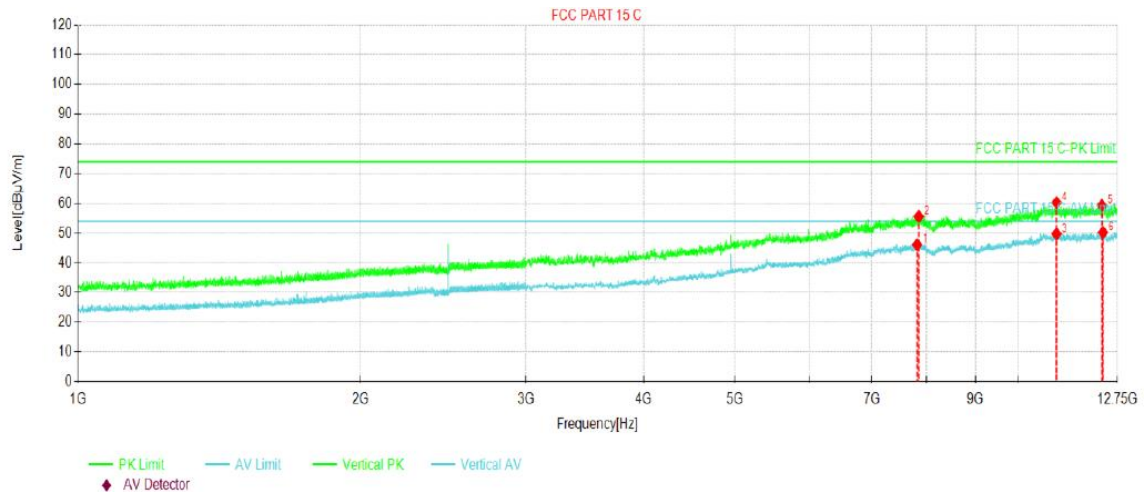


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7974.93	45.46	46.39	0.93	54.00	7.61	318	141	AV	Horizontal
2	7981.03	55.00	55.92	0.92	74.00	18.08	297	136	PK	Horizontal
3	10575.7	52.34	59.15	6.81	74.00	14.85	12	151	PK	Horizontal
4	10654.9	43.14	50.26	7.12	54.00	3.74	20	155	AV	Horizontal
5	12136.9	52.06	59.51	7.45	74.00	14.49	208	164	PK	Horizontal
6	12277.1	42.47	50.31	7.84	54.00	3.69	219	160	AV	Horizontal

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx High CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Vertical
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2℃ Humi: 52%

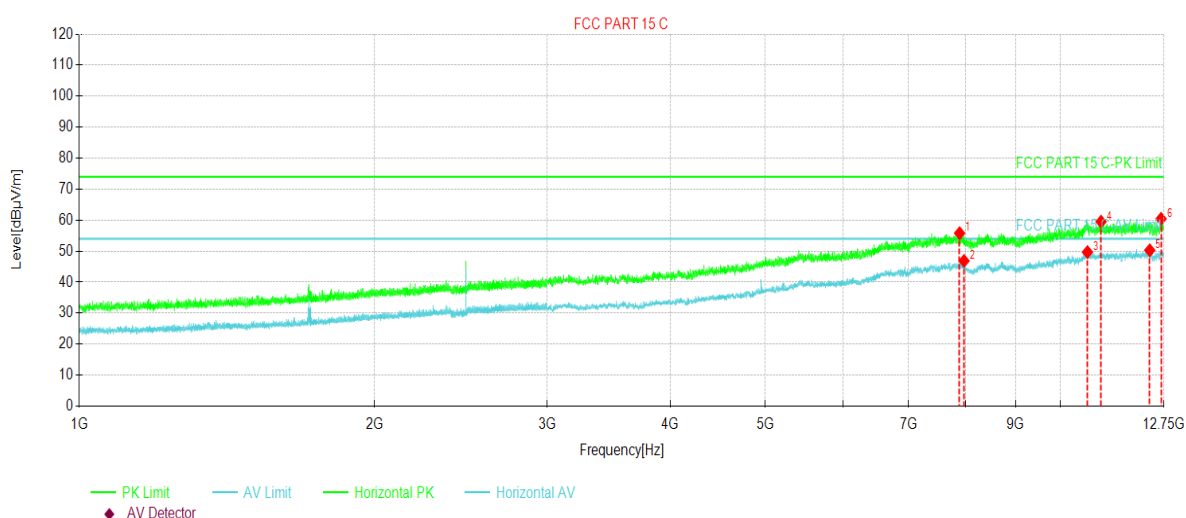


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7821.37	45.05	46.07	1.02	54.00	7.93	116	145	AV	Vertical
2	7854.28	54.56	55.57	1.01	74.00	18.43	252	135	PK	Vertical
3	10976.7	42.29	49.72	7.43	54.00	4.28	127	151	AV	Vertical
4	10979.1	52.79	60.22	7.43	74.00	13.78	241	160	PK	Vertical
5	12267.3	51.43	59.28	7.85	74.00	14.72	269	166	PK	Vertical
6	12300.2	42.39	50.22	7.83	54.00	3.78	89	158	AV	Vertical

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

Product Name:	Smartphone	Product Model:	U683CL
Test By:	Mike	Test mode:	BT Tx High CH
Test Frequency:	1 GHz ~ 25 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.85V	Environment:	Temp: 21.2℃ Huni: 52%



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Angle [°]	Height [cm]	Trace	Polarity
1	7892.06	54.78	55.79	1.01	74.00	18.21	44	141	PK	Horizontal
2	7974.93	45.92	46.85	0.93	54.00	7.15	261	133	AV	Horizontal
3	10653.7	42.58	49.69	7.11	54.00	4.31	187	152	AV	Horizontal
4	10999.8	52.04	59.51	7.47	74.00	14.49	194	157	PK	Horizontal
5	12330.7	42.44	50.27	7.83	54.00	3.73	267	164	AV	Horizontal
6	12663.4	52.16	60.42	8.26	74.00	13.58	271	169	PK	Horizontal

Remark:

- Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of above 12.75GHz are lower than the limit 20dB and not show in test report.

7 Appendix

The below Appendix was detail result tested by SGS-CSTC Standards Technical Services, Co., Ltd.Shenzhen Branch.

(Date of Test: 2019/1/10-2019/1/24).

Appendix	Item
Appendix - BT	Bluetooth