

Data referencing for different Skus Template

Test Data Referencing

Justification of Test Data Referencing, for EMC/RF and SAR

Reference model: FCC ID: 2AFZZRAD4G for the O17 Redmi.

Variant model: FCC ID: 2AFZZPCC4G for the O17P POCO.

Revision:

Version	Description	Date
1.0	Initial release	2024/6/18

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- **Product Overview**

Radio	Frequency band	FCC Rule Part	FCC ID: 2AFZZRAD4G (O17)	FCC ID: 2AFZZPCC4G (O17P)
GSM	850,900,1800,1900	Part 22, 24	Supported	Supported
WCDMA	1,2,4,5,6,8,19	Part 22, 24, 27	Supported	Supported
LTE Band	1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 26, 28, 32, 38, 40, 41, 42,48, 66	Part 22, 24, 27, 90, 96	Supported	Supported
5G NR	n1, n2, n3, n5, n7, n8, n12, n20, n26, n28, n38, n40, n41, n48, n66, n77, n78	Part 22, 24, 27, 90, 96	Supported	Supported
Wi-Fi	2.4GHz: 2.400 – 2.4845GHz 5GHz: 5.15 – 5.35GHz, 5.47 – 5.725GHz, 5.725 – 5.85GHz	Part 15C&E	Supported	Supported
Bluetooth BR&EDR &BLE	2.4GHz: 2.400 – 2.4835GHz	Part 15C	Supported	Supported
NFC	13.56MHz	Part 15C	Supported	Supported

- **Antenna Diagram**

The Antenna diagram of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model).

FCC ID: 2AFZZRAD4G (O17 redmi as the Reference Model)

FCC ID: 2AFZZPCC4G (O17P POCO as the Variant model)

Please refer to Appendix A Note2 for details

Antenna No.	Redmi Global FCC ID: 2AFZZRAD4G	POCO Global FCC ID: 2AFZZPCC4G
Antenna 1	GSM-TRX: 2/3/5/8 WCDMA-TRX: 1/2/4/5/8/6/19 LTE-TRX: 1/2/3/4/5/7/8/12/13/17/18/19/20/26/28/38/40/ 41/66 NR-TRX:1/3/4/5/7/8/20/28/38/40/41/66 SRS:n41	GSM-TRX: 2/3/5/8 WCDMA-TRX: 1/2/4/5/8/6/19 LTE-TRX: 1/2/3/4/5/7/8/12/13/17/18/19/20/26/28/38/40/ 41/66 NR-TRX:1/3/4/5/7/8/20/28/38/40/41/66 SRS:n41
Antenna 2	NR-DM: n77/78/ N48/B42/B48 SRS: n77/78	NR-DM: n77/78/ N48/B42/B48 SRS: n77/78
Antenna 3	LTE-TRX: 1/3/4/7/20/32/38/40/41/66 LTE/NR-PM: 1/3/4/7/38/40/41/66/77/78/N48/B42/B48 SRS: n41/77/78	LTE-TRX: 1/3/4/7/20/32/38/40/41/66 LTE/NR-PM: 1/3/4/7/38/40/41/66/77/78/N48/B42/B48 SRS: n41/77/78
Antenna 4	GSM-DRX: 2/3/5/8 WCDMA-DRX: 1/2/4/5/8/6/19 LTE-DRX: 1/2/3/4/5/7/8/12/13/17/18/19/20/26/28/38/40/ 41/66 NR-DRX:1/3/4/5/7/8/20/28/38/40/41/66 SRS:n41	GSM-DRX: 2/3/5/8 WCDMA-DRX: 1/2/4/5/8/6/19 LTE-DRX: 1/2/3/4/5/7/8/12/13/17/18/19/20/26/28/38/40/ 41/66 NR-DRX:1/3/4/5/7/8/20/28/38/40/41/66 SRS:n41
Antenna 5	NR-TRX: n77/78/N48/B42/B48 SRS: n77/78	NR-TRX: n77/78/N48/B42/B48 SRS: n77/78
Antenna 6	GPS /2.4G/5G	GPS /2.4G/5G
Antenna 7	LTE-DRX: 32 NR-DRX: 77/78/ N48/B42/B48 LTE/NR-DM: 1/3/4/7/38/40/41/66	LTE-DRX: 32 NR-DRX: 77/78/48/B42/B48 LTE/NR-DM: 1/3/4/7/38/40/41/66

	SRS: n41/77/78	SRS: n41/77/78
NFC	The NFC antenna between FCC ID: 2AFZZRAD4G and FCC ID: 2AFZZPCC4G is same, including pattern/circuit/gain/shape	The NFC antenna between FCC ID: 2AFZZRAD4G and FCC ID: 2AFZZPCC4G is same, including pattern/circuit/gain/shape
Comments	N/A	

- **Comparison – Summary**

The hardware/software of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model) except for marketing name, please refer to the following for more details:

1. **Identical**

- Supports same RF bands;
- The antenna/hardware and components of the Cellular WLAN/BT/GNSS module;
- The size of dimensions/display area and housing material are identical;

2. **Difference:**

- The NFC antenna and marketing name, and the camera are difference.

- **Main board Schematic**

The Main board Schematic of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model) except for components on PCB (board ID).

- **Block Diagram**

The Block diagram of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model) without any differences.

- **BOM**

The Bomlist of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model) except for and camera, please refer to the following for more details:

Please refer to Appendix A Note 6 for details

Board ID:

Please refer to Appendix A Note 4 for details

The Redmi Global version has three cameras, while the POCO Global version has only two cameras. The POCO version does not have the following materials.

Please refer to Appendix A Note 5 for details

- **PCB Layout:**

The PCB layout of the FCC ID: 2AFZZPCC4G (Variant model) is same as the FCC ID: 2AFZZRAD4G (Reference model) except for the camera, please refer to the following for more details:

		FCC ID: 2AFZZRAD4G (Reference model)	FCC ID: 2AFZZPCC4G (Variant model)
NFC	IC	PN560FUK	PN560FUK
	Component on PCB	same	
	Antenna	same	
WWAN	IC	MT6190MV/A	
	Component on PCB	same	
	Antenna	same	
WLAN 2.4GHz, 5GHz	IC	MT6631N/B	
	Component on PCB	same	

	Antenna	same
BT	IC	MT6631N/B
	Component on PCB	same
	Antenna	same
SAR cap Sensor	IC	AW96305BFOR
	Component on PCB	same
	Antenna	same

	FCC ID: 2AFZZRAD4G (Reference model)	FCC ID: 2AFZZPCC4G (Variant model)
Carema	Please refer to Appendix A Note 3 for details	
FCC ID: 2AFZZRAD4G (Reference model)	FCC ID: 2AFZZPCC4G (Variant model)	

Please refer to Appendix A Note 1 for details

- **Test Strategy**

- FCC ID: 2AFZZRAD4G as reference model to conduct full test for EMC/RF, SAR.
- FCC ID: 2AFZZPCC4G as Variant model data referencing from the reference model for EMC/RF and SAR additional NFC/EMC testing.
- EMC/RF/SAR spot check justification:
Reference KDB484596 D01 Referencing Test Data v02r01
 - Verify the Worst-Case Configuration of the Reference Model, do spot check conducted power and RSE.
 - For every exposure condition (head, body, etc) and for every transmit antenna and frequency band, spot check SAR at the highest SAR configuration found in the referenced mode. The spot-check measurements that meet the following criteria:

- Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, may show a deviation d_{dB} from the reference data no larger than 3 dB (applicable for both field and power quantities):

$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad , (1)$$

where between V_{dB} , the variant spot-check level in dB, and R_{dB} is the corresponding measurement level in dB for the reference model.

- An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} = |C_{dB} - R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation d_{dB} from the reference data satisfies the following condition:

$$d_{dB} = |V_{dB} - R_{dB}| \leq (3 + M_{dB}/20) \text{ dB} \quad , \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad . (2)$$

$$d_{dB} = |V_{dB} - R_{dB}| = 6 \text{ dB} \quad , \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB}$$

When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB (as shown in Fig. 2):

- for $M_{dB}=0$ dB, then $d_{dB}=3$ dB, that is when R_{dB} is right at the compliance threshold C_{dB} , thus the margin $M_{dB}=0$ and the variant can only be allowed to go lower than R_{dB} ;
- for $M_{dB}=60$ dB, then $d_{dB}=6$ dB, i.e., the reference model data is 60 dB below the compliance threshold M_{dB} .

- Compliance is determined by both the spot check data and the referenced test data.
- Test strategy is tabulated in next page

Reference Device	Variant Device	Reference model
FCC ID : 2AFZZRAD4G	FCC ID: 2AFZZPCC4G	Refer to Comparison – Summary
Fully test	Spot-check	

Rule Part	Test item	Data Reference(Y/N)	Spot-check test
Part 22, 24, 27, 90,96 GSM, UMTS, LTE, 5G NR	Conducted Output Power	Verify power	
	Effective Radiated Power &Equivalent Isotropic Radiated Power	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Peak-to-Average Ratio	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Occupied Bandwidth	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Conducted Band Edge Measurement	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Conducted Spurious Emission	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Frequency Stability Temperature & Voltage	Y	Verify each one of 2G, 3G, 4G ,5G max ERP&EIRP channel
	Radiated Spurious Emission	Verify RSE worse case	
	End User Device additional requirement	N	
Part 15C For BT2.0	Number of Channels	Y	Verify one mode max power Number of Channels
	Hopping Channel Separation	Y	Verify one mode max power Number of Channels
	Dwell Time of Each Channel	Y	Verify one mode max power Number of Channels
	20dB Bandwidth	Y	Verify one mode max power Channel
	99% Bandwidth	Y	Verify one mode max power Channel

	Peak Output Power	Verify power	
	Conducted Band Edges	Y	Verify one mode max power Channel
	Conducted Spurious Emission	Y	Verify one mode max power Channel
	Radiated Band Edges and Radiated Spurious Emission	Verify RSE worse case	Verify one mode max power Channel
	AC Conducted Emission	N	
Part 15C For BLE & 2.4G WLAN	6dB Bandwidth	Y	Verify one mode max power Channel
	99% Bandwidth	Y	Verify one mode max power Channel
	Peak Output Power	Verify power	
	Power Spectral Density	Y	Verify one mode max power Channel
	Conducted Band Edges and Spurious Emission	Y	Verify one mode max power Channel
	Radiated Band Edges and Spurious Emission	Verify RSE worse case	
	AC Conducted Emission	N	
Part 15E For 5G WLAN	26dB & 99% Bandwidth	Y	Verify one mode max power Channel
	Maximum Conducted Output Power	Verify power	
	Power Spectral Density	Y	Verify one mode max power Channel
	Unwanted Emissions	Verify RSE worse case	Verify one mode max power Channel
	DFS	Y	Verify MAX bandwidth channel
	AC Conducted Emission	N	
Part 15C For NFC	20dB Spectrum Bandwidth	N	
	99% OBW Spectrum Bandwidth	N	
	Frequency Stability	N	
	Field Strength of Fundamental Emissions	Verify power	
	Radiated Spurious Emissions	Verify RSE	
	AC Power Line Conducted Emissions	N	
Part 15B	AC Conducted Emission	N	

	Radiated Emission	N	
SAR	SAR Testing	Y	verify the each frequency band worst case per Head/Body/Hotspot/Extremity exposure conditions

Signature :

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