# **TEST REPORT**



<b>KCTL KCTL Inc.</b> 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 <u>www.kctl.co.kr</u>		KR2	Report No.: 20-SRF0267-A age (1) of (16)	KCTL		
1. Client						
∘ Name		: Samsung	g Electron	ics Co	o., Ltd.	
g				'eongt	ong-gu, Suwon-e	si, Gyeonggi-do, 16677,
∘ Date of	Receipt	: 2020-09-	28			
2. Use of Re	eport	: Class II F	Permissive	e chai	nge	
3. Name of I	Product / N	lodel	: Mobil	e pho	ne / SM-F415F/[	DS
4. Manufactu	rer / Countr	y of Origin	: Sams	sung l	Electronics Co.,	Ltd. / Vietnam
5. FCC ID			: A3LS	SMM3	15F	
6. Date of To	est	: 2020-10-	06 to 202	0-10-	15	
7. Location	of Test	: 🔳 Permane	ent Testing La	ab 🗆 O	n Site Testing (Addre	ess: Address of testing location)
8. Test meth	nod used	: FCC Par				
			t 22 Subp t 24 Subp			
			t 27 Subp			
9. Test Resi	ults	: Refer to	the test re	esult ir	n the test report	
	Tested by				Technical Manag	ger
Affirmation			1			
	Name : Kw	onse Kim	(Signatur	<del>e)</del>	Name : Seungyo	ng Kim (Signature)
			•			
2020-10-19						
KCTL Inc.						
		r			10.	
As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.						

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### **REPORT REVISION HISTORY**

Date	Revision	Page No
2020-10-16	Originally issued	-
2020-10-19	Updated	3, 7

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Note. The report No. KR20-SRF0267 is superseded by the report No. KR20-SRF0267-A.

#### General remarks for test reports

Nothing significant to report.



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### 1. General information

Client	: Samsung Electronics Co., Ltd.		
Address	: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea		
Manufacturer	: Samsung Electronics Co., Ltd.		
Address	: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea		
Factory	: Samsung Electronics Vietnam Thai Nguyen Co., Ltd		
Address	506-723 16000 Yen Phong 1 Industrial Zone, Yen Trung Commu, Yen Phong District, Bac Ninh Province, Vietnm		
Factory	: Samsung India Electronics PVT. Ltd		
Address	: B-1, Sector-8 NOIDA Uttar Pradeshe, India 201-305		
Factory	Samsung Electronics Co., Ltd.		
Address	94-1, Imsu-dong, Gumi-si, Gyengsangbuk-ro, 730-722, Republic of Korea		
Laboratory	: KCTL Inc.		
Address	: 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea		
Accreditations	: FCC Site Designation No: KR0040, FCC Site Registration No: 687132		
	VCCI Registration No. : R-20080, G-20078, C-20059, T-20056		
	Industry Canada Registration No. : 8035A		
	KOLAS No.: KT231		

### 2. Device information

Equipment under test	Mobile phone					
Model	SM-F415F/DS					
Modulation technique	e : Bluetooth(BDR/EDR)_ GFSK, π/4DQPSK, 8DPSK					
	Bluetooth(BLE)_GFSK					
	WIFI(802.11b/g/n20/n40/ac20/ac40/ac80)_DSSS, OFDM					
	LTE_QPSK, 16QAM					
	WCDMA_QPSK					
	GSM_GMSK, 8-PSK					
Number of channels	Bluetooth(BDR/EDR)_79 ch / Bluetooth(BLE)_40 ch					
WIFI(802.11b/g/n20)_11 ch						
	UNII-1 : 4 ch (20 Mz), 2 ch (40 Mz), 1 ch (80 Mz)					
	UNII-2A : 4 ch (20 Mz), 2 ch (40 Mz), 1 ch (80 Mz)					
	UNII-2C : 12 ch (20 Mb), 6 ch (40 Mb), 3 ch (80 Mb)					
	UNII-3 : 5 ch (20 Mz), 2 ch (40 Mz), 1 ch (80 Mz)					
Power source	DC 3.85 V					
Antenna specification	LTE/GSM/WCDMA_LDS Antenna					
	WIFI/Bluetooth(BDR/EDR/BLE)_LDS Antenna					

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Antenna gain	:	WIFI/Bluetooth(BDR/EDR/BLE): -3.4 dBi   UNII-1 -5.9 dBi   UNII-2A -6.3 dBi   UNII-2C -5.3 dBi   UNII-3 -6.6 dBi
Frequency range		Bluetooth(BDR/EDR/BLE)_2 402 Mb ~ 2 480 Mb $2 412 Mb ~ 2 462 Mb (802.11b/g/n_HT20)$ UNII-1: 5 180 Mb ~ 5 240 Mb (802.11a/n_HT20/ac_VHT20) UNII-1: 5 190 Mb ~ 5 230 Mb (802.11a/n_HT20/ac_VHT40) UNII-1: 5 210 Mb (802.11ac_VHT80) UNII-2A: 5 260 Mb ~ 5 320 Mb (802.11a/n_HT20/ac_VHT20) UNII-2A: 5 270 Mb ~ 5 310 Mb (802.11a/n_HT20/ac_VHT40) UNII-2A: 5 270 Mb ~ 5 720 Mb (802.11a/n_HT20/ac_VHT40) UNII-2A: 5 290 Mb (802.11ac_VHT80) UNII-2C: 5 500 Mb ~ 5 720 Mb (802.11a/n_HT20/ac_VHT40) UNII-2C: 5 500 Mb ~ 5 720 Mb (802.11a/n_HT20/ac_VHT40) UNII-2C: 5 510 Mb ~ 5 710 Mb (802.11a_VHT80) UNII-2C: 5 530 Mb ~ 5 690 Mb (802.11a_VHT80) UNII-3: 5 745 Mb ~ 5 825 Mb (802.11a_VHT80) UNII-3: 5 775 Mb (802.11ac_VHT80) LTE Band 2_1 850.7 Mb ~ 1 909.3 Mb LTE Band 2_1 850.7 Mb ~ 1 909.3 Mb LTE Band 12_699.7 Mb ~ 715.3 Mb LTE Band 13_779.5 Mb ~ 784.5 Mb LTE Band 13_779.5 Mb ~ 2 687.5 Mb LTE Band 14_2 498.5 Mb ~ 2 687.5 Mb LTE Band 41_2 498.5 Mb ~ 2 687.5 Mb LTE Band 41_2 498.5 Mb ~ 2 687.5 Mb UTE Band 66_1 710.7 Mb ~ 1 779.3 Mb GSM 850_824.2 Mb ~ 848.8 Mb GSM 1900_1 850.2 Mb ~ 1 909.8 Mb WCDMA 850_826.4 Mb ~ 846.6 Mb WCDMA 1700_1 712.4 Mb ~ 1 752.6 Mb WCDMA 1900 1 852.4 Mb ~ 1 907.6 Mb
Software version Hardware version Test device serial No. Operation temperature	:	M315F.001 REV1.0 Conducted(RZ8N122TM7N), Radiated(R38N8004GLE) -30 ℃ ~ 50 ℃

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#### 2.1. Accessory information Equipment Manufacturer Model Serial No. **Power source** AC 100-240V Samsung 50-60 Hz, 0.5A, Electronics Co., **Travel Adapter EP-TA200** R37M4NR27T1SE3 9.0V-1.67A, Ltd. 5.0V-2.0A Samsung Micro USB Data Electronics Co., Cable Ltd.

#### 2.2. **Frequency/channel operations**

This device contains the following capabilities:

WIFI (802.11a/b/g/n/ac), Bluetooth (BDR/EDR/BLE),

LTE Band 2, LTE Band 4, LTE Band 5, LTE Band 12, LTE Band 13, LTE Band 17, LTE Band 26,

LTE Band 41, LTE Band 66, WCDMA 850, WCDMA 1700, WCDMA 1900, GSM 850, GSM 1900

GSM 850			
Ch.	Frequency (Mb)		
128	824.2		
190	836.6		
251	848.8		
Table 2.2.1.			

	GSM 1900					
	Ch.	Frequency (Mb)				
	512	1 850.2				
	661	1 880.0				
	810	1 909.8				
Table 2.2.2						

GSM/GPRS/EDGE

#### able 2.2.2. GSM/GPRS/EDGE

Ch.

9262

9400

WCDMA 1700

WCDMA 1900

Frequency

(M⊞z)

1 852.4

1 880.0

WC	<b>DMA</b>	850

Ch.

4132

4183

4233

Frequency (Mb)	Ch.	Frequency (朏)	
826.4	1312	1 712.4	
836.6	1412	1 732.4	
846.6	1513	1 752.6	

Table 2.2.3. RMC/HSDPA/HSUPA/ DC-HSDPA

Table 2.2.4. RMC/HSDPA/HSUPA/ DC-HSDPA

1 907.6 9538 Table 2.2.5. RMC/HSDPA/HSUPA/ DC-HSDPA

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3.	Summary	of tests

<b>J</b> .	Summar	y of lesis			
	FCC Part Section(s)	Parameter	Test Limit	Test Condition	Test results
	22.913(a)(5)	Effective Radiated Power	< 7 Watts max. ERP	Radiated	Pass
	24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		Pass
	27.50(d)(4)		< 1 Watts max. EIRP		Pass
	2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Spurious Emissions	<43 + 10Log₁₀(P) dB		Pass

#### Notes:

- 1. The test procedure(s) in this report were performed in accordance as following.
  - ANSI C63.26-2015
  - ANSI/TIA-603-E-2016
  - KDB 971168 D01 v03r01
- This is the C2PC test report to add a variant model, SM-F415F/DS as documented in the C2PC letter. Because the change does not affect RF characteristics, therefore, only radiated spurious emission test was done against the worst case from the main model, SM-M315F/DS, documented in the original filing and approved in 02/07/2020. All rest tests documented in original filing under model SM-M315F/DS remains representative of the variant model, SM-F415F/DS.

### 3.1. Worst case orientation

- 1. All modes of operation were investigated and the worst case emissions are reported with the EUT positioning, modulations in the test data.
- 2. For GSM850 and WCDMA 850, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation.
- 3. For GSM1900, WCDMA 1700 and 1900, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that **Z** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **Z** orientation.

Test condition	Modulation	Mode		
Radiated	GMSK	GPRS (1 Tx Slot)		
	QPSK	RMC (12.2 kbps)		

### 4. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)					
Dedicted enurious emissions	30 MHz ~ 1 GHz	<b>3.7</b> dB				
Radiated spurious emissions	Above 1 GHz	<b>5.7</b> dB				

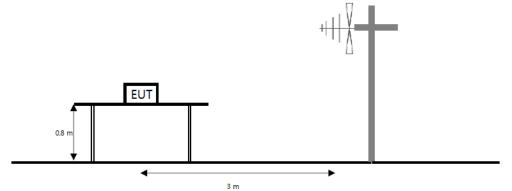
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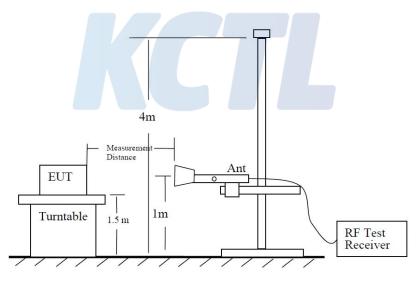
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### 5. Test results 5.1. Radiated Power (ERP/EIRP) Test setup

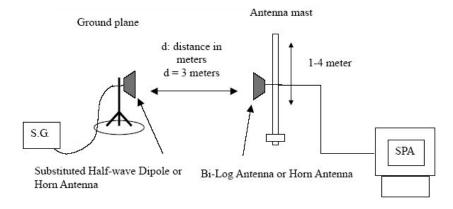
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 Mz to 1 Gz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 Gh to the tenth harmonic of the highest fundamental frequency or to 40 Gh emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



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#### <u>Limit</u>

According to §22.913(a)(5), the ERP of transmitters in the cellular radiotelephone service must not exceed the limits in this section. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to \$27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710~1755 Mb band and mobile and portable stations operating in the 1695~1710 Mb and 1755~1780 Mb bands are 1 watt EIRP.

#### Test procedure

971168 D01 v03r01 - Section 5.2.2 ANSI 63.26-2015 – Section 5.2.4.4.1 ANSI/TIA-603-E-2016 - Section 2.2.17

#### <u>Test settings</u>

- 1) RBW = 1 % to 5 % of the OBW.
- 2) VBW  $\geq$  3 × RBW.
- 3) SPAN =  $2 \times \text{to } 3 \times \text{the OBW}$ .
- 4) Number of measurement points in sweep  $\geq$  2 × span / RBW.
- 5) Sweep time :
  - 1) Auto couple, or
  - 2) ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
- 6) Detector = RMS
- 7) If the EUT can be configured to transmit continuously, then set the trigger to free run.
- 8) If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full -power transmissions).
- 9) Trace mode = trace averaging (RMS) over 100 sweeps.
- 10) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- 11) Allow trace to fully stabilize.

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#### Notes:

- 1. On a test site, the EUT shall be placed at 80 cm height on a turn table, and in the position close To normal use as declared by the applicant.
- 2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to Correspond to the fundamental frequency of the transmitter.
- 3. The turntable is rotated through 360°, and the receiving antenna scans in order to determine the Level of the maximized emission.
- 4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
- 5. The maximum signal level detected by the measuring receiver shall be noted.
- 6. The EUT was replaced by half-wave dipole (1 <sup>GHz</sup> below) or horn antenna (1 <sup>GHz</sup> above) connected to a signal generator.

The power is calculated by the following formula;

Pd(dBm) = Pg(dBm) – Cable loss (dB) + Antenna gain (dB)

- Note. Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.
- 7. The test antenna shall be raised and lowered through the specified range of height to ensure that The maximum signal is received.
- 8. The input signal to the substitution antenna shall be adjusted to the level that produces a level Detected by the measuring corrected for the change of input attenuator setting of the measuring Receiver.
- 9. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for Any change of input attenuator setting of the measuring receiver.
- 10. The measurement shall be repeated with the test antenna and the substitution antenna Orientated for horizontal polarization.

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### Test results

#### Test mode: GSM 850

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	Ef	RP
		[MHz]	[V/H]	[dBi]	[dB]	[dB m]	[dB m]	[W]
GPRS	128	824.2	Н	-0.30	3.74	32.73	28.69	0.74

#### Test mode: GSM 1900

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EII	RP
		[MHz]	[V/H]	[dBi]	[dB]	[dB m]	[dB m]	[W]
GPRS	512	1 850.2	Н	5.46	5.63	26.25	26.08	0.41

#### Test mode: WCDMA 850

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EF	RP
mouo		[MHz]	[V/H]	[dBi]	[dB]	[dB m]	[dB m]	[W]
RMC	4132	826.40	Н	0.70	3.76	22.39	19.33	0.09

#### Test mode: WCDMA 1700

Mode Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EI	RP	
		[MHz]	[V/H]	[dBi]	[dB]	[dB m]	[dB m]	[W]
RMC	1412	1 732.4	V	5.74	5.40	19.41	19.75	0.09

#### Test mode: WCDMA 1900

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EII	RP
		[MHz]	[V/H]	[dBi]	[dB]	[dB m]	[dB m]	[W]
RMC	9400	1 880.0	V	5.39	5.71	18.37	18.05	0.06

#### Note.

1. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBi) - C.L(Cable loss) (dB)

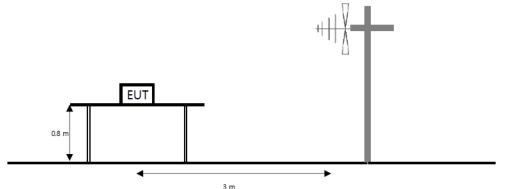
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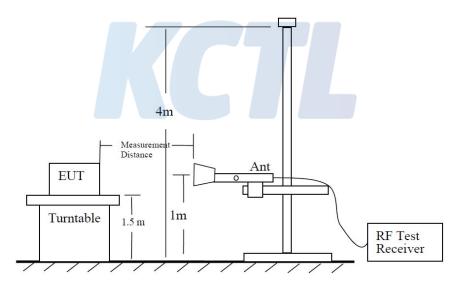
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### 5.2. Radiated Spurious Emissions Test setup

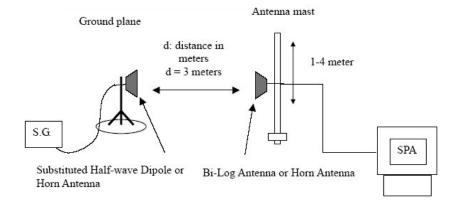
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 Mb to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



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#### <u>Limit</u>

According to \$22.917(a), \$24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

According to 27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10\log(P_{Watts})$  dB.

#### Test procedure

971168 D01 v03r01 - Section 5.8 ANSI 63.26-2015 – Section 5.5 ANSI/TIA-603-E-2016 - Section 2.2.12

#### Test settings

- 1) RBW = 1 kHz for below 1 GHz and 1 MHz for above 1 GHz.
- 2) VBW  $\geq$  3 × RBW.
- 3) Detector = RMS
- 4) Trace mode = Max hold
- 5) Sweep time = Auto couple
- 6) Number of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 7) Allow trace to fully stabilize.

### Notes:

- 1. On a test site, the EUT shall be placed at 80 cm height on a turn table, and in the position close To normal use as declared by the applicant.
- 2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to Correspond to the fundamental frequency of the transmitter.
- 3. The turntable is rotated through 360°, and the receiving antenna scans in order to determine the Level of the maximized emission.
- 4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
- 5. The maximum signal level detected by the measuring receiver shall be noted.
- 6. The EUT was replaced by half-wave dipole (1 <sup>GHz</sup> below) or horn antenna (1 <sup>GHz</sup> above) connected to a signal generator.
- 7. The test antenna shall be raised and lowered through the specified range of height to ensure that The maximum signal is received.
- 8. The input signal to the substitution antenna shall be adjusted to the level that produces a level Detected by the measuring corrected for the change of input attenuator setting of the measuring Receiver.
- 9. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for Any change of input attenuator setting of the measuring receiver.
- 10. The measurement shall be repeated with the test antenna and the substitution antenna Orientated for horizontal polarization.

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#### Test results (Above 1 000 Mb)

<u>Test mode</u>	:	<u>GSM 850</u>

: <u>824.2</u> Frequency(Mb)

Channel : 128

	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
Mode	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
	1 648.45	Н	5.94	5.30	-40.84	-40.20	-13.00	27.20
0000	2 472.85	Н	6.14	6.50	-46.74	-47.10	-13.00	34.10
GPRS	3 296.80	V	7.73	8.36	-55.87	-56.50	-13.00	43.50
	4 121.20	Н	8.83	9.69	-56.34	-57.20	-13.00	44.20

Test mode

: <u>GSM 1900</u>

Frequency(Mb) : <u>1 850.2</u> <u>Channel</u>

: <u>512</u>

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
GPRS	3 698.25	Н	8.54	9.41	-55.73	-56.60	-13.00	43.60
	5 549.25	Н	10.51	11.90	-55.21	-56.60	-13.00	43.60
	7 401.00	Н	11.96	13.96	-52.70	-54.70	-13.00	41.70
	9 250.50	V	13.20	14.74	-50.46	-52.00	-13.00	39.00

Note.

1. Limit Calculation(dBm)= 43 + 10log(P[Watts])

2. Level(dBm) = Antenna gain(dBi) - Cable loss(dB) - Substitute level(dBm)

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### Test mode : WCDMA 850

<u>Frequency(∭₂)</u> Channel

: <u>4132</u>

: <u>826.4</u>

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
	1 653.85	V	5.93	5.20	-61.83	-61.10	-13.00	48.10
5140	2 480.05	Н	6.16	6.51	-56.55	-56.90	-13.00	43.90
RMC	3 305.35	н	7.75	8.38	-55.97	-56.60	-13.00	43.60
	4 133.35	V	8.82	9.70	-55.12	-56.00	-13.00	43.00

### Test mode : WCDMA 1700

Frequency(Mlz) : <u>1 732.4</u>

<u>Channel</u>

: <u>1412</u>

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
	3 463.50	V	8.20	8.81	-56.59	-57.20	-13.00	44.20
DMO	5 196.75	Н	10.26	11.40	-55.06	-56.20	-13.00	43.20
RMC	6 928.50	Н	11.31	13.43	-52.78	-54.90	-13.00	41.90
	8 661.75	Н	13.06	14.51	-52.65	-54.10	-13.00	41.10

### Test mode : WCDMA 1900

Frequency(Mtz) : <u>1 880.0</u>

<u>Channel</u>

: 9400

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
RMC	3 760.50	Н	8.61	9.30	-55.11	-55.80	-13.00	42.80
	5 641.50	V	10.53	11.74	-54.39	-55.60	-13.00	42.60
	7 518.00	Н	12.11	13.98	-50.93	-52.80	-13.00	39.80
	9 403.50	Н	13.20	14.93	-50.07	-51.80	-13.00	38.80

Note.

1. Limit Calculation(dBm)= 43 + 10log(P[Watts])

2. Level(dB m) = Antenna gain(dB i) - Cable loss(dB) - Substitute level(dB m)

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6. Measurement equipment										
Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date						
Spectrum Analyzer	R&S	FSV30	100807	21.07.29						
Spectrum Analyzer	AGILENT	N9040B	MY57010132	21.07.29						
Vector Signal Generator	R&S	SMBV100A	257566	21.07.13						
Signal Generator	R&S	SMR40	100007	21.04.08						
Signal Generator	R&S	SMB100A	176206	21.01.21						
Wideband Radio Communication Tester	R&S	CMW500	141780	21.04.16						
Wideband Radio Communication Tester	R&S	CMW500	132423	21.03.12						
Biconical VHF-UHF Broadband Antenna	SCHWARZBECK	VUBA9117	275	22.04.09						
Bilog Antenna	Teseq GmbH	CBL 6143A	35039	21.05.21						
Horn Antenna	ETS.lindgren	3117	00227509	21.09.23						
Horn Antenna	ETS.lindgren	3117	161225	21.05.12						
Horn Antenna	ETS.lindgren	3116	00086632	21.02.17						
Horn Antenna	ETS.lindgren	3116	00086635	21.05.12						
High pass Filter	Wainwright Instruments GmbH	WHKX3.0/18G-12SS	44	21.01.21						
High pass Filter	Wainwright Instruments GmbH	WHKX1.0/1.5S-10SS	14	21.01.21						
Attenuator	Weinschel ENGINEERING	10	AJ1239	21.05.15						
Amplifier	SONOMA INSTRUMENT	310N	186280	21.01.21						
Amplifier	L-3 Narda-MITEQ	AFS5-00101800-25-S-5	2054570	21.05.22						
Amplifier	L-3 Narda-MITEQ	JS44-18004000-33-9P	2000996	21.01.22						
Antenna Mast	MATURO	EAS 1.5	042/8941211	N/A						
Antenna Mast	MATURO	EAS 1.5	043/8941211	N/A						
Turn Table	MATURO	TT 0.8 PF	041/8941211	N/A						

End of test report