

Test report No.: KES-RF-16T0095 Page (1) of (23)

# **TEST REPORT**

# Part 22 Subpart H, Part 24 Subpart E

Equipment under test Vehicle Security Gateway

Model name ST-900-CF

FCC ID KL7ST-900-CF

Applicant Savi Technology Inc.

Manufacturer Dae Kyung Philippines, Inc.

Date of test(s) 2016.10.04 ~ 2016.10.16

Date of issue 2016.10.17

**Issued** to

Savi Technology Inc.

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**Issued by** 

## KES Co., Ltd.

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Test engineer	Technical manager

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## **Revision history**

Revision	Date of issue	Test report No.	Description
-	2016.10.17	KES-RF-16T0095	Initial



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## 1. General information

Applicant:	Savi Technology Inc.					
Applicant address:	3601 Eisenhower Avenue, STE 280, Alexandria VA 22304					
Test site:	KES Co., Ltd.					
Test site address:	C-3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Korea					
	473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea					
FCC rule part(s):	Part 22 Subpart H, Part 24 Subpart E					
FCC ID:	KL7ST-900-CF					
Test device serial No.:	➢ Production ☐ Pre-production ☐ Engineering					

## 1.1. EUT description

1	
Equipment under test	Vehicle Security Gateway
Frequency range	Tx:433.92 Mlz
	Rx:433.92 Mz
	GSM 850:824.2 MHz ~848.8 MHz
	GSM 1900 : 1850.2 M₂ ~ 1909.8 M₂
Modulation technique	433.92 MHz : FSK
	GSM : GMSK
Number of channels	433.92 MHz : 1ch
	GSM 850 : 125ch, GSM 1900 : 300ch
Antenna specification	433.92 UHF Antenna type: PCB, Peak gain: -0.97 dBi
	GSM 850 Antenna type: PCB, Peak gain: -0.30 dBi
	GSM 1900 Antenna type: PCB, Peak gain: -1.70 dBi
Power source	External Power : DC 24.0 V / 2A
	Backup Battery : DC 3.7 V / 1400 mAh Li-polymer battery
NT 4	

## Note:

1. Certificated GSM/GPRS module is mounted in the EUT as following

- Applicant: Shanghai Simcom Ltd.
- FCC Identifier : UDV-20160416
- Model: SIM808

2. The installed module is completed identical as original.

## **1.2.** Test configuration

The <u>Savi Technology, Inc. Vehicle Security Gateway FCC ID: KL7ST-900-CF</u> was tested per the guidance of ANSI/TIA 603-D:2010 was used to reference the appropriate EUT setup for radiated spurious emissions.

## **1.3.** Device modifications

N/A

## 1.4. Derivation model information

N/A

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## **1.5.** Frequency/channel operations

Band	Ch.	Frequency (Mb)	Mode
	128	824.2	GSM, GPRS
	•	- -	
GSM800	190	836.6	GSM, GPRS
	251	848.8	GSM, GPRS
Band	Ch.	Frequency (Mb)	Mode
	512	1850.2	GSM, GPRS
		- -	
GSM1900	661	1880.0	GSM, GPRS
		· .	
	810	1909.8	GSM, GPRS

## 1.6. Worst case configuration

The EUT was investigated in each of its External power mode and Battery mode. All radiated test and power line conducted test was performed with the EUT set to transmit mode. The test results shown in the following sections represent the worst case emissions for External power mode and middle channel.



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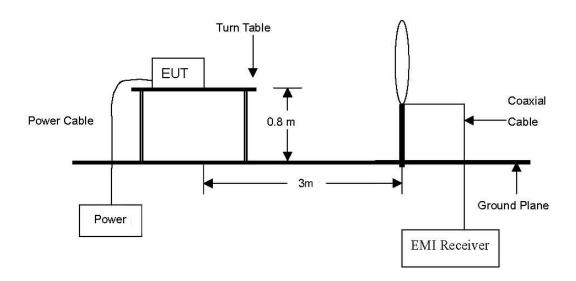
2.	Summary	of	tests	
	$\sim$ minimum $_{J}$	· · ·		

	Test results
ed spurious emission	Pass
6	ed spurious emission

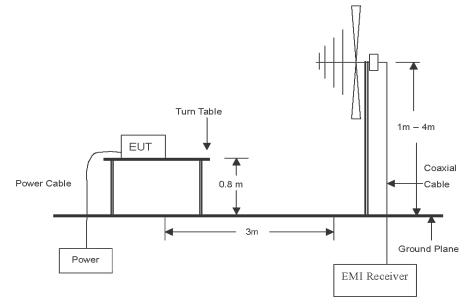


# Test results Radiated spurious emission Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



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

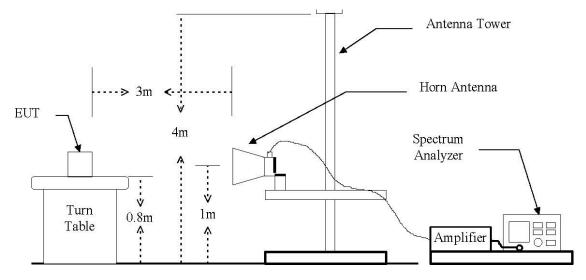


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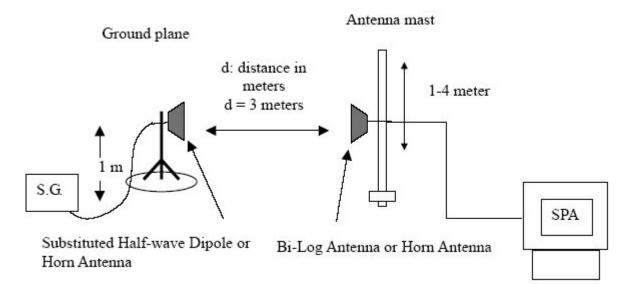


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The diagram below shows the test setup that is utilized to make the measurements for emission from 1  $\mathbb{G}\mathbb{H}$  to the tenth harmonic of the highest fundamental frequency or to 40  $\mathbb{G}\mathbb{H}$  emissions, whichever is lower.



The diagram below shows the test setup for substituted method





## Test procedure below 30 MHz

- 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
- 3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum hold mode.

## Test procedure above 30 MHz

- 1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position closest to normal use as declared by the applicant.
- 2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
- 3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
- 4. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 6. The transmitter shall then the rotated through  $360^{\circ}$  in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- 7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 8. The maximum signal level detected by the measuring receiver shall be noted.
- 9. The transmitter shall be replaced by a horn (substitution antenna).
- 10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- 11. The substitution antenna shall be connected to a calibrated signal generator.
- 12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase he sensitivity of the measuring receiver.
- 13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- 14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- 15. 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.
- 16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- 17. The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.



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## Limit

FCC §22.913(a), the ERP of mobile transmitters must not exceed 7 watts. FCC §24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

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  $43 + 10\log(P) dB$ .



Test results (Below 30 M	łz)
Mode:	GPRS 850
Distance of measurement:	3 meter
Channel:	190

Frequency	Ant. Pol.	Ant. Pol. Spurious attenuation		Margin	
(MHz)	(MHz) (H/V) (dBc)		(dBc)	(dB)	
No spurious emissions were detected below 30 Mz					

Horizontal						Vertic	al		
				Spectrum Spectrum 2 3					
Ref Level 57.00 dBμV           Att         0 dB         SW	RBW (6dB) 200 F 13.4 ms VBW 3 kF			Ref Level 57.00 dBμ Att 0 d	V	BW (6dB) 200 Hz BW 3 kHz			
1Pk Max	13,4 ms • VBW 3 kP	12 Mode Auto FFT		1Pk Max	15 SWI 13.4 ms 🖝 V	BW 3 KH2	Mode Auto F	FT	
		M1[1]	-1.87 dBpV		1	1 1	M1[1]		-1.57 dB
S0 dBµV-			95.010 kHz	50 dBµV		+ +		E	95.010 k
10.02733				127122731					
40 dBµV				40 dBµV				0	
0 dBuV				30 dBuV				_	
					1 1	L L	1		
0 dBµV				20 dBµV		-		-	
0.220				10000					
0 dBuV				10 dBµV					
) dBuV-		11		0 dBuV-			61		
		1 A					N N		
10 dBuV	White means Montale rank	ment how where	murhamenation	-10 dBµV	an and the second	munico	and here	wanter	mounth hefter
20 dBµV				-20 dBµV					
30 dBµV	L L			-30 dBuV-					
40 dBµV				-40 dBµV					
itart 9.0 kHz arker	691 pt	5	Stop 150.0 kHz	Start 9.0 kHz Marker		691 pts		- 10	Stop 150.0 kH
pectrum Spectrur	n 2 🛞	Measuring	•••••	Spectrum St	95.01 kHz	-1.57 dBµV	Meas	uring 🌒 💷	(1111) <b>**</b>
Ref Level 57.00 dBµV	<ul> <li>RBW (6dB) 9 kHz</li> </ul>		- ///	Spectrum SI Ref Level 57.00 dBµ	pectrum 2 ⑧	W (6dB) 9 kHz		uring 🁥	
RefLevel 57.00 dBµV Att 0 dB SW		Mode Auto FFT		Spectrum SI Ref Level 57.00 dBµ	pectrum 2 🛞	W (6dB) 9 kHz	Mode Auto FFT	uring <b>II</b> III	[
Ref Level 57.00 dBµV Att 0 dB SW 1Pk Max	<ul> <li>RBW (6dB) 9 kHz</li> </ul>		(∰ ♥ 6.44 dBpV	Spectrum SI Ref Level 57.00 dBµ Att 0 d ● 1Pk Max	pectrum 2 ⑧	W (6dB) 9 kHz		uring <b>A</b>	5.25 dB
RefLevel 57.00 dBµV Att 0 dB SW 1Pk Max	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT		Spectrum St Ref Level 57.00 dBµ Att 0 d	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT	uring <b></b>	[
Ref Level 57.00 dBµV           Att         0 dB sw           1Pk Max           0 dBµV	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum SI Ref Level 57.00 dBµ Att 0 d ● 1Pk Max	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT	uring (() () () () () () () () () () () () ()	5.25 dB
Ref Level 57.00 dbµV           Att         0 db         SW           IPk Max         0         dbµV         0           0 dbµV         0         dbµV         0	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum         Si           Ref Level 57.00 dby         0 d           Att         0 d           1Pk Max         50 dby/-           40 dby/-         40 dby/-	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT	uring	5.25 dB
Ref Level 57.00 dbµV           Att         0 db         SW           IPk Max         0         dbµV         0           0 dbµV         0         dbµV         0	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum SI Ref Level 57.00 dbµ Att 0 d 1Pk Max 50 dbµV	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT	uring	5.25 dB
Ref Level 57.00 dBµV           Att         0 dB         SW           0 dBµV         0         0         BµV           0 dBµV         0         0         BµV         0           0 dBµV         0         0         BµV         0	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum         Si           Ref Lovel 57.00 dbj Att         0 d           0 dBjl/         0 d           30 dBjl/         0 d	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           Att         0 dB         SW           0 dBµV         0         0         BµV           0 dBµV         0         0         BµV         0           0 dBµV         0         0         BµV         0	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum         Si           Ref Level 57.00 dby         0 d           Att         0 d           1Pk Max         50 dby/-           40 dby/-         40 dby/-	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           tt         0 dB         SW           The Max         0         BµV           10 dBµV         0         BµV           10 dBµV         0         BµV           10 dBµV         0         BµV	<ul> <li>RBW (6dB) 9 kHz</li> </ul>	Mode Auto FFT	(∰ ♥ 6.44 dBpV	Spectrum         Si           Ref Lovel 57.00 dbj Att         0 d           0 d         19k Max           50 dbjv/-         40 dbjv/-           30 dbjv/-         30 dbjv/-	pectrum 2 ⑧	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
tert svvel         57.00         dBµV           0         dB         SW           0         dBµV         0         dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Sp           Ref Level 57.00 dBµ         0 d           Att         0 d           IPK Max         50 dBµV-           40 dBµV-         20 dBµV-           20 dBµV-         20 dBµV-           10 dBµV-         10 dBµV-           10 dBµV-         10 dBµV-	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           tt         0 dB         SW           The Max         0         BµV           10 dBµV         0         BµV           10 dBµV         0         BµV           10 dBµV         0         BµV           00 dBµV         0         BµV           00 dBµV         0         0	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	(∰ ♥ 6.44 dBpV	Spectrum         Sp           Ref Level 57.00 dBµ         0 d           Att         0 d           9 JPK Max         0 d           50 dBµV         40 dBµV           30 dBµV         20 dBµV	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           D dB SW           D dB SUV           0 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Sp           Ref Level 57.00 dBµ         0 d           Att         0 d           IPK Max         50 dBµV-           40 dBµV-         20 dBµV-           20 dBµV-         20 dBµV-           10 dBµV-         10 dBµV-           10 dBµV-         10 dBµV-	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           D dB SW           D dB SUV           0 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Si           Ref Level 57.00 dBy/ Att         0 d           ● JPk Max         0 d           50 dBy/         40 dBy/           40 dBy/         20 dBy/           10 dBy/         0 dBy/	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           0 dB SW           10 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Si           Ref Level 57.00 dBy/ Att         0 d           ● JPk Max         0 d           50 dBy/         40 dBy/           40 dBy/         20 dBy/           10 dBy/         0 dBy/	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           0 dB SW           10 dBµV           20 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Si           Ref Level 57.00 dbµ         Att         0 d           Att         0 d         0 dbµV           50 dbµV         40 dbµV         20 dbµV           30 dbµV         20 dbµV         20 dbµV           10 dbµV         -10 dbµV         -20 dbµV	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           0 dB SW           10 dBµV           20 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Si           Ref Level 57.00 dBµ         0 d           Att         0 d           TPk Max         0 d           S0 dBµV         40 dBµV           20 dBµV         20 dBµV           20 dBµV         40 dBµV           10 dBµV         10 dBµV	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           0 dB SW           10 dBµV           20 dBµV           20 dBµV           30 dBµV           30 dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT MI[1]	6,44 dbpV 172.0 kHz	Spectrum         Si           Ref Level 57.00 dbµ         Att         0 d           Att         0 d         0 dbµV           50 dbµV         40 dbµV         20 dbµV           30 dbµV         20 dbµV         20 dbµV           10 dbµV         -10 dbµV         -20 dbµV	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level         57.00         dBµV           Attr         0         dB         SW           Inter Max         0         dB         SW           10         dBµV         0         dBµV	RBW (6dB) 0 HHz     T 2.1 ms      VBW     100 HHz	Mode Auto FFT	6,44 dbpV 172.0 kHz	Spectrum         Si           Att         0.0           0.10         0.10           0.10         0.10           0.10         0.0           0.0         0.0	Pectrum 2 ⑧ swr 2,1 ms ● VB	W (6dB) 9 kHz	Mode Auto FFT		5.25 dB
Ref Level 57.00 dBµV           10 dB SW           10 dBµV           20 dBµV           10 dBµV	RBW (668) 9 kHz     I 2.1 ms + VBW     I 00 kHz     I 2.1 ms + VBW     I 00 kHz     I 0 0 kHz     I 0 kHz     I 0 0 kHz     I 0 KHz	Mode Auto FFT M3[1]	С.44 dBpV 172.0 kHr 172.0 kHr и и и и и и и и и и и и и и и и и и и	Spectrum         Signature           Att         0 d           Att         0 d           IPk Max         0 d           S0 dBuV         0 d           40 dBuV         20 dBuV           20 dBuV         20 dBuV           20 dBuV         20 dBuV           -10 dBuV         -20 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV	SWT 2.1 ms = VB	W (6dB) 9 kH2 W 100 kH2	Mode Auto FFT MI[1]		5.25 dB 215.0 k
Ref Level 57.00 dBuV         0 dB SW           0 dBuV         0 dBuV           10 dBuV         Tort 150.0 MHz           arker         1 rc	RBW (668) 9 142     T 2.1 ms # VBW 100 142     100 142	Mode Auto FFT M3[1]	6.44 dBpV 172.0 kHz	Spectrum         Sp           Ref Level 57.00 dby Att         0 db           0 IPk Max         0 db           50 dby//         0 db           40 dby//         0 db           30 dby//         0 db           0 dby//         0 db           0 dby//         0 db           -20 dby//         -20 db           -30 db         -30 db      -30 db	Stimulus	W (6d8) 9 kHz W 100 kHz	Mode Auto FFT		5.25 da 215.0 k
Def Level 57.00 dBµV           D dB SW           D dB SW           0 dBµV           10 dBµV	RBW (668) 9 kHz     I 2.1 ms + VBW     I 00 kHz     I 2.1 ms + VBW     I 00 kHz     I 0 0 kHz     I 0 kHz     I 0 0 kHz     I 0 KHz	Mode Auto FFT M3[1]	С.44 dBpV 172.0 kHr 172.0 kHr и и и и и и и и и и и и и и и и и и и	Spectrum         Signature           Att         0 d           Att         0 d           IPk Max         0 d           S0 dBuV         0 d           40 dBuV         20 dBuV           20 dBuV         20 dBuV           20 dBuV         20 dBuV           -10 dBuV         -20 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV           -30 dBuV         -30 dBuV	SWT 2.1 ms = VB	W (6dB) 9 kH2 W 100 kH2	Mode Auto FFT M1[1] d puper (hub) de Function		5.25 dB 215.0 k 215.0 k 215.0 k 215.0 k 215.0 k 215.0 k

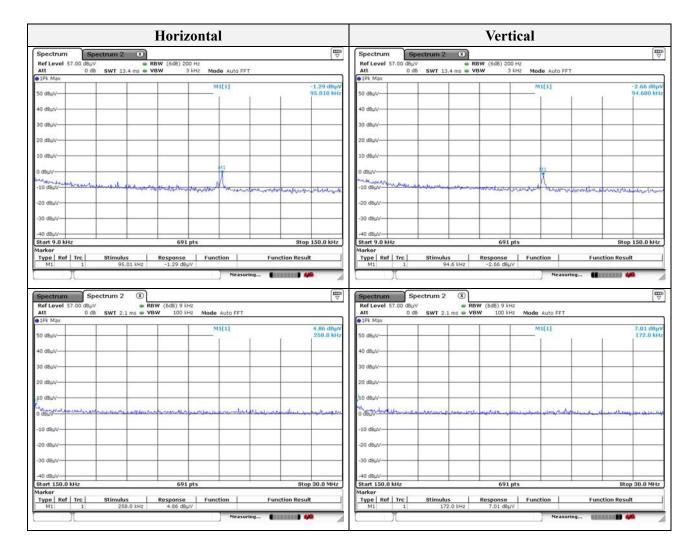
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Mode:	GPRS 1900
Distance of measurement:	3 meter

Channel:

Frequency	Ant. Pol.	Spurious attenuation	Limit	Margin	
(MHz)	(H/V)	(dBc)	(dBc)	(dB)	
No spurious emissions were detected below 30 Mtz					





Test results (Below 1	GHz)	
Mode:		GSM 850

190

Distance of measurement: 3 meter

Channel:

Frequency	Ant. Pol.	E.R.P.		
(MHz)	(H/V)	(dBm)	(W)	
836.50	Н	1.68	0.001	
836.50	V	10.35	0.108	

	Horizontal				Verti	cal		
Spectrum 2	8		Spectrum	pectrum 2 (X)				
Ref Level -10.00 dBm Att 10 dB SWT 94	<ul> <li>RBW 100 kHz</li> <li>88.1 µs</li> <li>VBW 300 kHz</li> <li>Mode Auto FFT</li> </ul>		Ref Level -10.00 d8 Att 10 c	m 😐 l IB SWT 948.1 µs 🖷 '	RBW 100 kHz VBW 300 kHz	Mode Auto FFT		
1Pk Max			1Pk Max					
1000 1000 1000 1000 1000 1000 1000 100	M1[1]	-27.49 dBm 836.50 MHz	10000000			M1[1]	M1	-20.38 dBr 836.50 MH
-20 dBm		141	-20 dBm					
-30 dBm			-30 dBm					-
-40 dBm			-40 dBm					_
-50 dBm			-50 dBm					_
-60 dBm			-60 dBm					
-70 dBm			-70 dBm					_
-80 d8m	الموليه ومعاورهم والمحوص ومطور ومناجر المراحل	- marchalt alumenter	-SQ dBm	Annalization		and the state of the state	Hanselwin	a
-90 dBm	and a start and a start		-90 dBm		Per al and a service			1.5.2 (0.1762.537)
-100 d8m			-100 dBm-					
Start 30.0 MHz	691 pts	Stop 1.0 GHz	Start 30.0 MHz		691 pts			Stop 1.0 GHz
larker			Marker					
Type Ref Trc Stimulu M1 1 836	IS Response Function	Function Result	Type Ref Trc	Stimulus 836.5 MHz	-20.38 dBm	Function	Function Re	sult
	Measu	ring (CALLERS) 🚧				Measuri	ing (AXXXXXX)	444



Mode:	GPRS 850
Distance of measurement:	3 meter
Channel:	190

Frequency	Ant. Pol.	E.R.P.	
(MHz)	(H/V)	(dBm)	(W)
836.50	Н	-10.08	0.0001
836.50	V	-0.95	0.0008

	Horizontal			Verti	cal	
Spectrum 2	8	⊴₿	Spectrum Spectr	um 2 🛞		
	■ RBW 100 kHz 1 µs ■ VBW 300 kHz Mode Auto FFT			<ul> <li>RBW 100 kHz</li> <li>WT 948.1 µs</li> <li>WBW 300 kHz</li> </ul>	Mode Auto FFT	
• 1Pk Məx	M1[1]	-39.25 dBm 836.50 MHz	• 1Pk Max		M1[1]	-31.68 dB
-20 dBm		830.50 MHZ	-20 dBm		1 1	836.50 MF
-30 dBm			-30 dBm			M1
-40 dBm		MI	-40 dBm			
-S0 dBm			-50 dBm			
-60 dBm			-60 dBm			
-70 dBm			-70 dBm-			
-80 dBm	ano and the providence where the manufacture and the second second second second second second second second se	Mulan work was when we we	u80 dBm	and and the second s	and a second second second	mathing when the mather
-90 dBm			-90 dBm			
-100 d8m-			-100 d8m-			
Start 30.0 MHz	691 pts	Stop 1.0 GHz	Stort 30.0 MHz	691 pt	s	Stop 1.0 GHz
Marker           Type         Ref         Trc         Stimulus           M1         1         836.5	Response Function	Function Result	Marker Type Ref Trc S M1 1	timulus Response 836.5 MHz -31.68 dBm	Function	Function Result
ma 1 830.5	MH2 -39.25 dBm Measur	ing 🗰 🖬 🚧		030.3 MH2 -31.08 GBM	Measuring.	(INNERS) 44



Mode:	GSM 1900
Distance of measurement:	3 meter
Channel:	661

1 0	Ant. Pol.	1	Limit	Margin	
(MHz)	(H/V)	(dBc)	(dBc)	(dB)	
No spurious emissions were detected below 1 GHz					

	Horizontal			Vertical	
Spectrum 2	8	Ē	Spectrum Spectrum	n 2 🛞	
Ref Level -10.00 d8m Att 10 d8 SWT 94	<ul> <li>RBW 100 kHz</li> <li>8.1 µs</li> <li>VBW 300 kHz</li> <li>Mode Auto FFT</li> </ul>		Ref Level -10.00 d8m Att 10 d8 SW	RBW 100 kHz T 948.1 µs	0
• 1Pk Max			• 1Pk Max		
-20 dBm			-20 dBm		
-30 dBm			-30 dBm		
-40 d8m			-40 dBm		
-50 dBm			-50 dBm		
-60 d8m			-60 d8m		
-70 dBm			-70 dBm		
-80 dBm	Aven race was a service and the service of the serv	annot and and and	WER dem and marked	warman war war and a strate of the second	- Marshan Manager Anna
-90 dBm			-90 dBm		
-100 d8m			-100 d8m		
Start 30.0 MHz	691 pts	Stop 1.0 GHz	Start 30.0 MHz	691 pts	Stop 1.0 GHz
Marker		· •••	(Marker		suring 🚺 🗰 🔥



Mode:	GPRS 1900	_
Distance of measurement:	3 meter	

Channel:

Frequency	Ant. Pol.	Spurious attenuation	Limit	Margin	
(MHz)	(H/V)	(dBc)	(dBc)	(dB)	
No spurious emissions were detected below 1 GHz					

Horizontal				Vertical	
Spectrum Spectrum 2	8	d III	Spectrum Spectru	m 2 🛪	B
	<ul> <li>RBW 100 kHz</li> <li>8.1 µs</li> <li>WBW 300 kHz</li> <li>Mode Auto FFT</li> </ul>			<ul> <li>RBW 100 kHz</li> <li>VT 948.1 µs</li> <li>VBW 300 kHz</li> <li>Mode A</li> </ul>	uto FFT
1Pk Max			•1Pk Max		
-20 dBm			-20 dBm		
-30 d8m			-30 dBm		
-40 dBm			-40 d8m		
-50 dBm			-50 dBm		
-60 dBm			-60 dBm		
-70 dBm			-70 dBm		
-80 dBm manuscription	warene grown and allow ment	querman trinkensenter	1990 dBm	where a shake a she was a she was	acounter marked and a second
-90 dBm			-90 dBm		
-100 d8m			-100 d8m		
Start 30.0 MHz	691 pts	Stop 1.0 GHz	Start 30.0 MHz	691 pts	Stop 1.0 GHz
Marker	Neasuring	(IIIIII) 🊧 🏑	Marker		Measuring



## Test results (above 1 GHz)

Mode:	GSM 850
Distance of measurement:	3 meter
Channel:	190

Frequency	Ant. Pol.	Spurious attenuation	Limit	Margin			
(MHz)	(H/V)	(dBc)	(dBc)	(dB)			
	No spurious emissions were detected above 1 GHz						

Horizontal				Ver	tical	
spectrum Spectrum 2 🛞			Spectrum Spectrum 2 3			
RefLevel 0.00 dBm Att 20 dB SWT : 1Pk Max	RBW 1 MHz     rms • VBW 3 MHz     Mode Auto Sw	eep	Ref Level 0.00 dBm Att 20 dB	SWT 27 ms VBW 3 MHz M	ode Auto Sweep	
-10 dBm			-10 dBm			
-20 dBm			-20 d8m			
-30 dBm			-30 d8m			
-40 dBm			-40 dBm			
-50 dBm	a set it is the set	udants A	-50 d8m		A American	
SER damate and the second second	and the second and the second and the second and the second s	when have a service and the service of the service	- ANG NEW SECTION AND A SECTIO	and the second and th	the second and the second he	and and and the second
-70 d8m			-70 d8m			
-80 dBm			-80 dBm			
-90 d8m			-90 d8m			
Start 1.0 GHz	691 pts	Stop 10.0 GHz	Start 1.0 GHz	69	L pts	Stop 10.0 GHz
Marker		Measuring	Marker		Measuring	



Mode:	GPRS 850	
Distance of measurement:	3 meter	
Channel:	190	

Frequency	Ant. Pol.	Spurious attenuation	Limit	Margin
(MHz)	(H/V)	(dBc)	(dBc)	(dB)
	No spu	rious emissions were detected	above 1 GHz	

Horizontal				Vertical	
Ref Level 0.00 d8m	0 d8m 🛛 🖷 RBW 1 MHz			e RBW 1 MHz	(T
Att 20 d8 SWT 27 ms • • 1Pk Max	VBW 3 MHz Mode Auto Sweep		Att 20 dB SWT 27 9 1Pk Max	ms - VBW 3 MHz Mode Auto Swe	eep
-10 dBm			-10 dBm		
-30 dBm			-30 dBm		
-40 dBm	with the second second with the second se	Antonio and and and	-40 dBm	والمتعادية والمعالية والمسترك والمعالية والمسترك	un hand have been
-70 dBm			-70 d8m		
-80 d8m			-80 dBm		
Start 1.0 GHz Marker	691 pts	Stop 10.0 GHz	Start 1.0 GHz Marker	691 pts	Stop 10.0 GHz
][	Measuring		][		Measuring 📲 🗰 🚧



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Mode:	GSM 1900
Distance of measurement:	3 meter

Channel:

Frequency	Ant. Pol.	E.F	R.P.
(MHz)	(H/V)	(dBm)	(W)
1 881.30	Н	19.62	0.092
1 881.30	V	25.07	0.321

Horizontal						Vertic	al		
Spectrum 2 🛞	Spectrum	Spectrum 2 🛞				6			
	SW 1 MHz	na manyana in		Ref Level 0.00					
Att 20 dB SWT 2 ms = VE 1Pk Max	W 3 MHz Mode A	uto Sweep		Att 2	20 dB SWT 2 ms 🖶 VBW	3 MHz Mode Aut	to Sweep		
		M1[1]	-9,49 d	Bm			M1[1]		-5.60 dB
10 dBm	MI		1.88130	-10 dBm		MI			1.88130 G
0 dBm				-20 dBm				0	
0 dBm				-30 d8m					
				-50 0.011					
dBm				-40 dBm					-
) dBm				-50 d8m					
J GBM				-50 08m					
a dam the share have been and the	and manus	and a state of the	Hard and an and a start of the	-68. dBth - 68. dBth - 60000	outris and a line and a second	- contraction and	and the second	forman	
				-70 d8m					
0 dBm				-70 dbm					
dBm	_			-80 dBm				-	
				00 d0m					
) dBm				-90 d8m					
art 1.0 GHz	691 pts		Stop 3.0 G	Iz Start 1.0 GHz		691 pts			Stop 3.0 G
rpe Ref Trc Stimulus M1 1 1.8813 GHz	z   -9.49 dBm	Function Heasuring		Marker Type Ref Tr M1	1 1.8813 GHz	Response -5.60 dBm	Function	Function	
Vpe         Ref         Trc         Stimulus           M1         1         1.6813 GHz         GHz           pectrum         Spectrum 2         C         C           of Level 87.00 dbµV         C         C         C	z -9.49 dBm	Measuring		Type         Ref         Tr           M1         Image: Constraint of the second secon	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.0813 GHz           M1         1         1.0813 GHz           Sectrum         Spectrum 2         E           of Level 87.00 dbµV         0 db SWT 45 ms	2 -9.49 dBm	Measuring		Type Ref Tr M1	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.0013 GHz           M1         1         1.0013 GHz           Sectrum         Spectrum 2         Sectrum 3           fLevel 07.00 dbµV         0 db SWT 45 ms	z -9.49 dBm	Measuring		Type         Ref         Tr           M1         Image: Spectrum         Image: Spectrum         Image: Spectrum           Ref Level 87.0         Att         Att         Image: Spectrum	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.0812 GHz           Dectrum         Spectrum 2         C           of Level 87.00 dbp/v         0         B           Pk Max         0         B         SWT 45 ms	z -9.49 dBm	Measuring		Type         Ref         Tr           M1         Image: Spectrum         Image: Spectrum         Image: Spectrum           Ref Level 87.0         Att         Att         Image: Spectrum	1 1.8813 GHz	-5.60 dBm	Measur		
Open         Ref         Trc         Stimulus           M1         1         1.0013 GHz         1.0013 GHz           Opentrum         Spectrum 2         Image: Comparison of the second day V         Image: Comparison of the second day V           Pit Level 87.00 dby.V         Image: Comparison of the second day V         Image: Comparison of the second day V         Image: Comparison of the second day V           Pit Max         Image: Comparison of the second day V         Image: Comparison of the second day V	z -9.49 dBm	Measuring		Type Ref Tr           M1           Spectrum           Ref Level 87.00           Att 0           91% Max           80 dsuv	1 1.8813 GHz	-5.60 dBm	Measur		
Open         Ref         Trc         Stimulus           M1         1         1.0013 GHz         1.0013 GHz           Opentrum         Spectrum 2         Image: Comparison of the second day V         Image: Comparison of the second day V           Pit Level 87.00 dby.V         Image: Comparison of the second day V         Image: Comparison of the second day V         Image: Comparison of the second day V           Pit Max         Image: Comparison of the second day V         Image: Comparison of the second day V	z -9.49 dBm	Measuring		Type         Ref         Tr           M1         M1         M1           Spectrum         Ref Level 87.0 Att         M1           ● 1Pk Max         Max	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.0813 GHz           M1         1         1.0813 GHz           ectrum         Spectrum 2         (£)           of Level 87.00 dBµV         0         8WT 45 ms           Pk Max         0         8WT 45 ms           dBµV         0         8WT 45 ms	z -9.49 dBm	Measuring		Type Ref Tr M1           Spectrum           Ref Level 67.0 Att           0 1Pk Max           0 0 8UV           70 8UV	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.0813 GHz           M1         1         1.0813 GHz           ectrum         Spectrum 2         (£)           of Level 87.00 dBµV         0         8WT 45 ms           Pk Max         0         8WT 45 ms           dBµV         0         8WT 45 ms	z -9.49 dBm	Measuring		Type Ref Tr           M1           Spectrum           Ref Level 87.00           Att 0           91% Max           80 dsuv	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           of Level 87.00 dBµV         0         0           ft Level 87.00 dBµV         0         0           sk Max         0         0         8WT 45 ms           dBµV         0         0         8WT 45 ms           dBµV         0         0         8WT 45 ms	z -9.49 dBm	Measuring		Type Ref Tr M1           Spectrum           Ref Level 67.0 Att           0 1Pk Max           0 0 8UV           70 8UV	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           of Level 87.00 dbµV         0         0           rt Level 87.00 dbµV         0         0           bk Max         0         0         SWT 45 ms           dbµV         0         0         dbµV           dbµV         0         dbµV         0	z -9.49 dBm	Measuring		Type Ref Tr M1           Spectrum           Ref Lovel 87.0 Att           0 19k Max           80 d8µV           70 d8µV           60 d8µV           50 d8µV	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           of Level 07.00 dBµV         0         BWT 45 ms           kt         0 dB         SWT 45 ms           dBµV         0         dB           dBµV         0         dB           dBµV         0         dB           dBµV         0         dB	z -9.49 dBm	Measuring		Type Ref Tr M1           Spectrum           Ref Level 87.0 Att           9 1% Max           80 d8uV           70 d8uV           60 d8uV           50 d8uV           40 d8uV	1 1.8813 GHz	-5.60 dBm	Measur		
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         (E           of Level 87.00 dbµV         0         0           dbµV         0         0         0	E -9.49 dBm	Measuring      P Auto Sweep		Type Ref Tr M1           Spectrum           Ref Level 87.0 Att           • 1Pk Max           • 0 d8uV           70 d8uV           60 d8uV           50 d8uV           40 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         C         C           If Level 87.00 dbµV         Image: Comparison of the second dbµV         Image: Comparison of the second dbµV           t         0 db         SWT 45 ms         Image: Comparison of the second dbµV           t         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV           dbµV         0 db         SWT 45 ms         Image: Comparison of the second dbµV	E -9.49 dBm	Measuring		Type Ref Tr M1           Spectrum           Ref Level 87.0 Att           9 1% Max           80 d8uV           70 d8uV           60 d8uV           50 d8uV           40 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           of Level 87.00 dBµV         0 dB         SWT 45 ms           ofk Max         0 dB         SWT 45 ms           dBµV         0 dB         SWT 45 ms	E -9.49 dBm	Measuring      P Auto Sweep		Type Ref Tr M1           Spectrum           Ref Level 87.0 Att           • 1Pk Max           • 0 d8uV           70 d8uV           60 d8uV           50 d8uV           40 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
Open         Ref         Trc         Stimulus           M1         1         1.8813 GHz           Image: Spectrum         Spectrum         2         (E           of Level         0.00 dBµV         0         8WT 45 ms           of Level         0.00 dBµV         0         8WT 45 ms           dBµV         0.00 dBµV         0         0           dBµV         0.00 dBµV         0.00 dBµV         0	E -9.49 dBm	Measuring      P Auto Sweep		Type Ref Tr M1           Spectrum Reflevel 87.0 Att           0 384/V           6 18k Max           80 d8uV           70 d8uV           50 d8uV           40 d8uV           30 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
Stimulus         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         2         (E           of Level         0.00 dbµV         (IIII)           of Level         0.00 dbµV         (IIIII)           bk         0.08         SWT 45 ms           bk         0.08         SWT 45 ms           dbµV         0.09         SWT 45 ms           dbµV         0.09         0.00           dbµV         0.00         0.00           dbµV         0.00         0.00           dbµV         0.00         0.00	E -9.49 dBm	Measuring      P Auto Sweep		Type Ref Tr M1           Spectrum Reflevel 87.0 Att           0 384/V           6 18k Max           80 d8uV           70 d8uV           50 d8uV           40 d8uV           30 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
ppel         Ref         Trc         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           rf Level 87.00 dbµV         0         BWT 45 ms           rf Level 87.00 dbµV         0         BWT 45 ms           dbµV         0         dbµV	E -9.49 dBm	Measuring      P Auto Sweep		Type         Ref         Tr           M1         Tr         M1         Tr           Spectrum         Ref Level 87.0         Att         Tr           M1         Tr         M1         Tr         Tr           M1         Tr         Tr         M1         Tr           M1         Tr         Tr         Tr         M1         Tr           M1         Tr         Tr         Tr         M1         Tr         Tr          M1         Tr         Tr         Tr         Tr          M2         Tr         Tr         Tr          M2         Tr         Tr          M2         Tr          M3         Tr          M2         Tr          M3         Tr          M3         Tr          M3         Tr          M3         Tr          M3         Tr          M3	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
ppel         Ref         Trc         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         C           rf Level 87.00 dbµV         0         BWT 45 ms           rf Level 87.00 dbµV         0         BWT 45 ms           dbµV         0         dbµV	E -9.49 dBm	Measuring      P Auto Sweep		Type Ref Tr           M1           Spectrum           Ref Level 87.0           Att           9 JPk Max           80 d8uV           70 d8uV           60 d8uV           50 d8uV           40 d8uV           20 d8uV           20 d8uV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
Spectrum         Stimulus           M1         1         1.8813 GHz           M1         1         1.8813 GHz           Spectrum         Spectrum 2         (£)           GBUV         0 dB         SWT 45 ms           BUV         0 dB         SWT 45 ms           dBUV         0 dB         SWT 45 ms	E -9.49 dBm	Measuring      P Auto Sweep		Type         Ref         Tr           MI         Spectrum         Ref tavel 87.0.           B0         BWV         B0           0         BWV         B0           70         BWV         B0           50         BWV         B0           70         BWV         B0           90         BWV         B0	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	
M1         1         1.8813 GHz           pectrum         Spectrum 2         (E           of Level 87.00 dBµV         0 dB         SWT 45 ms           y         0 dBµV         0	E -9.49 dBm	e Auto Sweep		Type Ref Tr M1           Spectrum           Ref Level 87.0 Att           ● 19k Max           80 dBuV           70 dBuV           60 dBuV           20 dBuV           20 dBuV           10 dBuV           0 dBuV           10 dBuV	1 1.8813 GHz	-5.60 dBm	Auto Sweep	ing	



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Mode:	GPRS 1900
Distance of measurement:	3 meter

Channel:

Frequency	Ant. Pol.	E.F	R.P.
(MHz)	(H/V)	(dBm)	(W)
1 881.30	Н	19.52	0.090
1 881.30	V	25.06	0.321

Horizontal				Vertical					
Spectrum 2 3				Spectrum Spectrum 2 🛞					
	RBW 1 MHz			Ref Level 0.00 dBm Att 20 dB	RBW 1 M		<u></u>		
Att 20 dB SWT 2 ms 🖷 1 1Pk Max	YOW 3 MHZ Mode A	uto Sweep		1Pk Max	SWT 2 ms  VBW 3 M	H2 Mode Auto	Sweep		
		M1[1]	-9,59 dBm				M1[1]		-5.61 dB
10 dBm	MI		1.88130 GHz	-10 dBm		M1			1.88130 CH
o donn				10 000					
0 dBm				-20 d8m			-		-
				03002					
māb C				-30 dBm					
0 dBm				-40 dBm					
) dBm				-50 dBm					+
	12 11 12	C 201 1327 1729	and the based should	60 dament	1 4 m	e entre		La L	a water to
B & Barris - Surry Astronechterson the	war we had a fair of the start	Same and and the state of the	and the state of the second second second	HOLD CALIFIC CONFIDENCE	Course of the Charles of the		and the second s		
) d8m				-70 dBm					-
				100000000					
i dBm				-80 d8m					1
				00 49m					
) dBm				-90 dBm					
art 1.0 GHz	691 pts		Stop 3.0 GHz	Start 1.0 GHz		691 pts			top 3.0 Gł
Ref         Trc         Stimulus           M1         1         1.8813 G	_	Function Measuring	Function Result	Type Ref Trc	1.8813 GHz	-5.61 dBm	Measuring	Function Resu	<u>14</u>
ype         Ref         Trc         Stimulus           M1         1         1.0813 G         0           pectrum         Spectrum         Spectrum 2 (         0           of Level 87.00 dBµV         0         0         0	Hz -9.59 dBm	Measuring		M1 1 Spectrum Sp Ref Level 87.00 dBµV	1.8813 GHz	-5.61 dBm	Measuring		<u>14</u>
M1 1 1.8813 G	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dBµV	1.8813 GHz	-5.61 dBm	Measuring		
Spectrum         Spectrum 2         G           of Level 87.00 dByU         0         8WT 45 ms	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dBµv Att 0 dB	1.8813 GHz	-5.61 dBm	Measuring		<u>84</u>
Open End         Trc         Stimulus           M1         1         1.0813 GI           Descrum         Spectrum 2         (           off Level 87.00 dbg/v         Spectrum 2         (           ef Level 87.00 dbg/v         0 db SWT 45 ms         Pk Max	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dBµv Att 0 dB	1.8813 GHz	-5.61 dBm	Measuring		<u>84</u>
Ope         Ref         Trc         Stimulus           M1         1         1.8813 Gl           Dectrum         Spectrum 2         (           ft Level 87.00 dBµV         Spectrum 2         (           pk Max         0 dB SWT 45 ms         (	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1         1           Spectrum         Sp           Ref Level 97.00 dBµV         0 dB           Att         0 dB           9 JPk Max         0 dB	1.8813 GHz	-5.61 dBm	Measuring		<u>14</u>
Ope         Ref         Trc         Stimulus           M1         1         1.8813 Gl           Image: Straight of the	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dBµ/ Att 0 dB ● 1Pk Max	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
ppe         Ref         Trc         Stimulus           M1         1         1.8813 Git         1.8813 Git           Dectrum         Image: Second Structure         Image: Second Structure         1mage: Second Structure           Off Level         87.00 dBµV         Image: Second Structure         Image: Second Structure         Image: Second Structure           View         Image: Second Structure         Image: Second Structure         Image: Second Structure         Image: Second Structure           View         Image: Second Structure         Image: Second Structu	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dbµ/ M1 0 db 1Pk Max 80 dbµ/ 70 dbµ/	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
gpe         Ref         Trc         Stimulus           M1         1         1.8813 Gl           M1         1         1.8813 Gl           Image: Strategy of the strategy o	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1         1           Spectrum         Sp           Ref Level 97.00 dBµV         0 dB           Att         0 dB           9 JPk Max         0 dB	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
Spectrum         Spectrum         C           I         1         1.8813 GI           I         1         1.8813 GI           I         Image: Spectrum 2         C           If Level 87.00 dBµV         0 dB         SWT 45 ms 4           If Level 87.00 dBµV         0 dB         SWT 45 ms 4           If dBµV         0 dB         SWT 45 ms 4           dBµV         0         dB         SWT 45 ms 4	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1         1           Spectrum         Sp           Ref Level 87.00 dBµV         0 dB           0 IPK Max         0 dB           80 dBµV         0           70 dBµV         60 dBµV	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
Ope         Ref         Trc         Stimulus           M1         1         1.0813 G           Image: Sector of the sect	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1 1 Spectrum Sp Ref Level 87.00 dbµ/ M1 0 db 1Pk Max 80 dbµ/ 70 dbµ/	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
Spectrum         Spectrum         Clip           M1         1         1.0813 G           V         V         V           Spectrum         Clip         V           V         0 dB V         V           tt         0 dB SWT 45 ms         V           dBuV         0 dB SWT 45 ms         V           dBuV         0 dB V         V	Hz -9.59 dBm	Measuring	(INITERS) 🦇 //	M1         1           Spectrum         Sp           Ref Level 87.00 dBµV         0 dB           M1         0 dB           1Fk Max         0 dB           80 dBµV         0 dB           70 dBµV         0           60 dBµV         50 dBµV	1.8813 GHz	-5.61 dBm	Measuring		<u> </u>
Ope         Ref         Trc         Stimulus           M1         1         1.0813 G           J         1.0813 G           J         Spectrum 2         G           of Level 87.00 dbgV         0 db         SWT 45 ms           bk Max         0 db         SWT 45 ms           dbgV         0 db         SWT 45 ms	Hz -9.59 dBm	Measuring		M1         1           Spectrum         Sp           Ref Level 87.00 dBµV         0 dB           Att 20 dBµV         0 dB           70 dBµV         0 dBµV           60 dBµV         50 dBµV           50 dBµV         40 dBµV	1.8913 GHz	-5.61 dBm	Measuring		
ppe         Ref         Trc         Stimulus           M1         1         1.8813 G           Image: Strength and Strengend and Strength and Strengt and Strength and Strengend and Str	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep	(INITERS) 🦇 //	M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ 40         0 db           •1Pk Max         0 db           80 dbµ/         0 dbµ/           00 dbµ/         0 dbµ/           50 dbµ/         0 dbµ/           50 dbµ/         0 dbµ/           40 dbµ/         0 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		
ppe         Ref         Trc         Stimulus           M1         1         1.8813 G           Image: Strength and Strengend and Strength and Strengt and Strength and Strengend and Str	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	Measuring		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/         0 db           1Pk Max         0 db           90 dbµ/         0 db           70 dbµ/         0 dbµ/           60 dbµ/         50 dbµ/           40 dbµ/         40 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		
Ope         Ref         Trc         Stimulus           M1         1         1.0813 G           Image: Spectrum         Spectrum 2         (Image: Spectrum 2           of Level 87.00 dByV         0 dB SWT 45 ms 4           than 0         0 dB SWT 45 ms 4           dByV         0 dB SWT 45 ms 4	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/         0 db           1Pk Max         0 db           90 dbµ/         0 db           70 dbµ/         0 dbµ/           60 dbµ/         50 dbµ/           40 dbµ/         40 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		
Ope         Ref         Trc         Stimulus           M1         1         1.0813 G           Image: Spectrum         Spectrum 2         (Image: Spectrum 2           of Level 87.00 dByV         0 dB SWT 45 ms 4           than 0         0 dB SWT 45 ms 4           dByV         0 dB SWT 45 ms 4	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ Att         0 db           0 IPk Max         0 db           80 dbµ/         0 db           70 dbµ/         0 db           60 dbµ/         0 db           50 dbµ/         0 db           30 dbµ/         0 db	1.8913 GHz	-5.61 dBm	Uto Sweep		
Ope         Eff         Trc         Stimulus           M1         1         1.0813 G           J         0.08 SWT 45 ms	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ Att         0 db           0 IPk Max         0 db           80 dbµ/         0 db           70 dbµ/         0 db           60 dbµ/         0 db           50 dbµ/         0 db           30 dbµ/         0 db	1.8913 GHz	-5.61 dBm	Uto Sweep		
Ope         Eff         Trc         Stimulus           M1         1         1.0813 G           J         0.08 SWT 45 ms	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ Mt         0 db           0 17k Max         0 db           80 dbµ/         0 db           70 dbµ/         0 dbµ/           60 dbµ/         0 db           50 dbµ/         0 db           30 dbµ/         0 dbµ/           20 dbµ/         20 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		<u>14</u>
Open         Int         Stimulus           M1         1         1.8813 G	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ Mt         0 db           0 17k Max         0 db           80 dbµ/         0 db           70 dbµ/         0 dbµ/           60 dbµ/         0 db           50 dbµ/         0 db           30 dbµ/         0 dbµ/           20 dbµ/         20 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		
Constraint         Stemulus           M1         1         1.6813 G           M1         1         1.8813 G           M1         1         1.8813 G           Spectrum         Spectrum 2         (r           return         Spectrum 2         (r           return         0.88 SWT 45 ms /         (r           dBuV         0.88 SWT 45 ms /         (r	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	# Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dbµ/ 1Pk Max         0 db           0 1Pk Max         0 db           0 dbµ/         0 dbµ/           0 dbµ/         0 dbµ/           10 dbµ/         0 dbµ/           10 dbµ/         0 dbµ/	1.8913 GHz	-5.61 dBm	Uto Sweep		
Spectrum         Spectrum         C           0	-9.59 dBm     -9.59 dBm     RBW 1 MHz     VBW 3 MHz Mode	e Auto Sweep		M1         1           Spectrum         Sp           Ref Level 87.00 dby/ 40 fbk Max         0 db           90 dby/ 60 dby/ 40 dby/ 30 dby/ 20 dby/ 20 dby/ 10 dby/ 10 dby/         0 db	1.8913 GHz	-5.61 dBm	Uto Sweep		



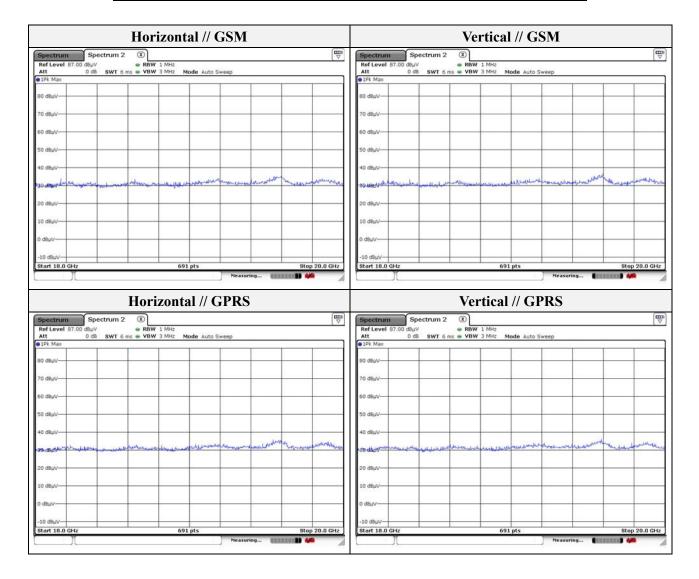
Channel:

KES Co., Ltd. C-3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Korea Tel: +82-31-425-6200 / Fax: +82-31-424-0450 www.kes.co.kr

Mode:	GSM 1900 // GPRS 1900

Distance of measurement: 3 meter

Frequency	Ant. Pol. Spurious attenuation		Limit	Margin	
(MHz)	(H/V)	(dBc)	(dBc)	(dB)	
No spurious emissions were detected above 18 GHz					





#### Calibration Calibration Manufacturer Model Serial No. Equipment interval due FSV30 10076 2017.07.06 Spectrum Analyzer R&S 1 year 8360B Series Swept HP 83630B 3844A00786 1 year 2017.01.25 Signal Generator PSG Analog AGILENT E8257C US42340237 1 year 2017.07.05 Signal Generator HP DC Power Supply 6674A US36370369 2017.07.04 1 year Radio Communication R&S 2017.07.04 **CMW500** 104198 1 year Tester Attenuator Agilent 8493C 51401 2017.07.05 1 year HFH2-Loop Antenna R&S 826532 2 years 2017.03.03 Z2.335.4711.52 Trilog-broadband SCHWARZBECK **VULB 9163** 9168-713 2 years 2017.05.15 antenna Horn Antenna A.H. SAS-571 781 2 years 2017.05.07 SCHWARZBECK **BBHA9170** BBHA9170550 2017.04.30 Horn Antenna 2 years WAINWRIGHT WHJS3000-10TT 1 2017.07.04 High Pass Filter 1 year **INSTRUMENT** Low Pass Filter WEINSCHEL WLK1.0/18G-10TT 1 1 year 2017.07.04 Preamplifier SCHWARZBECK BBV-9718 9718-246 1 year 2016.10.23 SCHWARZBECK BBV-9721 PS9721-003 2017.01.25 **Broadband Amplifier** 1 year EMI Test Receiver R&S ESR3 101781 2017.05.03 1 year 1 year EMI Test Receiver R&S ESU26 100552 2017.04.24

## Appendix A. Measurement equipment

## **Peripheral devices**

Device	Manufacturer	Model No.	Serial No.
Notebook	SAMSUNG	NT-R519-BA24J	ZKPA93ES900086Z